# URL: https://en.wikipedia.org/wiki/Main\_Page

Title: Wikipedia, the free encyclopedia

Content: <!DOCTYPE html><html class="client-nojs vector-feature-language-in-header-enabled vector-feature-language-in-main-page-header-disabled vector-feature-sticky-header-disabled vector-feature-page-tools-pinned-disabled vector-feature-toc-pinned-clientpref-1 vector-feature-main-menu-pinned-disabled vector-feature-limited-width-clientpref-1 vector-feature-limited-width-content-enabled vector-feature-zebra-design-disabled vector-feature-custom-font-size-clientpref-0 vector-feature-client-preferences-disabled vector-feature-typography-survey-disabled vector-toc-not-available" lang="en" dir="ltr"><head><meta charset="UTF-8"><title>Wikipedia, the free encyclopedia</title><script>(function(){var className="client-js vector-feature-language-in-header-enabled vector-feature-language-in-main-page-header-disabled vector-feature-sticky-header-disabled vector-feature-page-tools-pinned-disabled vector-feature-toc-pinned-clientpref-1 vector-feature-main-menu-pinned-disabled vector-feature-limited-width-clientpref-1 vector-feature-limited-width-content-enabled vector-feature-zebra-design-disabled vector-feature-custom-font-size-clientpref-0 vector-feature-client-preferences-disabled vector-feature-typography-survey-disabled vector-toc-not-available";var cookie=document.cookie.match(/(?:^|; )enwikimwclientpreferences=([^;]+)/);if(cookie){cookie[1].split('%2C').forEach(function(pref){className=className.replace(new RegExp('(^| )'+pref.replace(/-clientpref-\w+$|[^\w-]+/g,'')+'-clientpref-\\w+( |$)'),'$1'+pref+'$2');});}document.documentElement.className=className;}());RLCONF={"wgBreakFrames":false,"wgSeparatorTransformTable":["",""],"wgDigitTransformTable":["",""],"wgDefaultDateFormat":"dmy","wgMonthNames":["","January","February","March","April","May","June","July","August","September","October","November","December"],"wgRequestId":"b5165821-eb0b-47bb-a567-c2374be225c1","wgCanonicalNamespace":"","wgCanonicalSpecialPageName":false,"wgNamespaceNumber":0,"wgPageName":"Main\_Page","wgTitle":"Main 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rel="stylesheet" href="/w/load.php?lang=en&amp;modules=codex-search-styles%7Cext.uls.interlanguage%7Cext.visualEditor.desktopArticleTarget.noscript%7Cext.wikimediaBadges%7Cskins.vector.icons%2Cstyles&amp;only=styles&amp;skin=vector-2022"><script async="" src="/w/load.php?lang=en&amp;modules=startup&amp;only=scripts&amp;raw=1&amp;skin=vector-2022"></script><meta name="ResourceLoaderDynamicStyles" content=""><link rel="stylesheet" href="/w/load.php?lang=en&amp;modules=site.styles&amp;only=styles&amp;skin=vector-2022"><meta name="generator" content="MediaWiki 1.42.0-wmf.5"><meta name="referrer" content="origin"><meta name="referrer" content="origin-when-cross-origin"><meta name="robots" content="max-image-preview:standard"><meta name="format-detection" content="telephone=no"><meta property="og:image" content="https://upload.wikimedia.org/wikipedia/commons/thumb/9/99/JFK\_WHPO.tif/lossy-page1-1200px-JFK\_WHPO.tif.jpg"><meta property="og:image:width" content="1200"><meta property="og:image:height" content="1532"><meta property="og:image" content="https://upload.wikimedia.org/wikipedia/commons/thumb/9/99/JFK\_WHPO.tif/lossy-page1-800px-JFK\_WHPO.tif.jpg"><meta property="og:image:width" content="800"><meta property="og:image:height" content="1021"><meta property="og:image" content="https://upload.wikimedia.org/wikipedia/commons/thumb/9/99/JFK\_WHPO.tif/lossy-page1-640px-JFK\_WHPO.tif.jpg"><meta property="og:image:width" content="640"><meta property="og:image:height" content="817"><meta name="viewport" content="width=1000"><meta property="og:title" content="Wikipedia, the free encyclopedia"><meta property="og:type" content="website"><link rel="preconnect" href="//upload.wikimedia.org"><link rel="alternate" media="only screen and (max-width: 720px)" href="//en.m.wikipedia.org/wiki/Main\_Page"><link rel="alternate" type="application/atom+xml" title="Wikipedia picture of the day feed" href="/w/api.php?action=featuredfeed&amp;feed=potd&amp;feedformat=atom"><link rel="alternate" type="application/atom+xml" title="Wikipedia featured articles feed" href="/w/api.php?action=featuredfeed&amp;feed=featured&amp;feedformat=atom"><link rel="alternate" type="application/atom+xml" title="Wikipedia &quot;On this day...&quot; feed" href="/w/api.php?action=featuredfeed&amp;feed=onthisday&amp;feedformat=atom"><link rel="apple-touch-icon" href="/static/apple-touch/wikipedia.png"><link rel="icon" href="/static/favicon/wikipedia.ico"><link rel="search" type="application/opensearchdescription+xml" href="/w/opensearch\_desc.php" title="Wikipedia (en)"><link rel="EditURI" type="application/rsd+xml" href="//en.wikipedia.org/w/api.php?action=rsd"><link rel="canonical" href="https://en.wikipedia.org/wiki/Main\_Page"><link rel="license" href="https://creativecommons.org/licenses/by-sa/4.0/deed.en"><link rel="alternate" type="application/atom+xml" title="Wikipedia Atom feed" href="/w/index.php?title=Special:RecentChanges&amp;feed=atom"><link rel="dns-prefetch" href="//meta.wikimedia.org" /><link rel="dns-prefetch" href="//login.wikimedia.org"></head><body class="skin-vector skin-vector-search-vue mediawiki ltr sitedir-ltr mw-hide-empty-elt ns-0 ns-subject page-Main\_Page rootpage-Main\_Page skin-vector-2022 action-view"><a class="mw-jump-link" href="#bodyContent">Jump to content</a><div class="vector-header-container"><header class="vector-header mw-header"><div class="vector-header-start"><nav class="vector-main-menu-landmark" aria-label="Site" role="navigation"><div id="vector-main-menu-dropdown" class="vector-dropdown vector-main-menu-dropdown vector-button-flush-left vector-button-flush-right" ><input type="checkbox" id="vector-main-menu-dropdown-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-main-menu-dropdown" class="vector-dropdown-checkbox " aria-label="Main menu" ><label id="vector-main-menu-dropdown-label" for="vector-main-menu-dropdown-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only " aria-hidden="true" ><span class="vector-icon mw-ui-icon-menu mw-ui-icon-wikimedia-menu"></span><span class="vector-dropdown-label-text">Main menu</span></label><div class="vector-dropdown-content"><div id="vector-main-menu-unpinned-container" class="vector-unpinned-container"><div id="vector-main-menu" class="vector-main-menu vector-pinnable-element"><divclass="vector-pinnable-header vector-main-menu-pinnable-header vector-pinnable-header-unpinned"data-feature-name="main-menu-pinned"data-pinnable-element-id="vector-main-menu"data-pinned-container-id="vector-main-menu-pinned-container"data-unpinned-container-id="vector-main-menu-unpinned-container"><div class="vector-pinnable-header-label">Main menu</div><button class="vector-pinnable-header-toggle-button vector-pinnable-header-pin-button" data-event-name="pinnable-header.vector-main-menu.pin">move to sidebar</button><button class="vector-pinnable-header-toggle-button vector-pinnable-header-unpin-button" data-event-name="pinnable-header.vector-main-menu.unpin">hide</button></div><div id="p-navigation" class="vector-menu mw-portlet mw-portlet-navigation" ><div class="vector-menu-heading">Navigation</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="n-mainpage-description" class="mw-list-item"><a href="/wiki/Main\_Page" title="Visit the main page [z]" accesskey="z"><span>Main page</span></a></li><li id="n-contents" class="mw-list-item"><a href="/wiki/Wikipedia:Contents" title="Guides to browsing Wikipedia"><span>Contents</span></a></li><li id="n-currentevents" class="mw-list-item"><a href="/wiki/Portal:Current\_events" title="Articles related to current events"><span>Current events</span></a></li><li id="n-randompage" class="mw-list-item"><a href="/wiki/Special:Random" title="Visit a randomly selected article [x]" accesskey="x"><span>Random article</span></a></li><li id="n-aboutsite" class="mw-list-item"><a href="/wiki/Wikipedia:About" title="Learn about Wikipedia and how it works"><span>About Wikipedia</span></a></li><li id="n-contactpage" class="mw-list-item"><a href="//en.wikipedia.org/wiki/Wikipedia:Contact\_us" title="How to contact Wikipedia"><span>Contact us</span></a></li><li id="n-sitesupport" class="mw-list-item"><a href="https://donate.wikimedia.org/wiki/Special:FundraiserRedirector?utm\_source=donate&amp;utm\_medium=sidebar&amp;utm\_campaign=C13\_en.wikipedia.org&amp;uselang=en" title="Support us by donating to the Wikimedia Foundation"><span>Donate</span></a></li></ul></div></div><div id="p-interaction" class="vector-menu mw-portlet mw-portlet-interaction" ><div class="vector-menu-heading">Contribute</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="n-help" class="mw-list-item"><a href="/wiki/Help:Contents" title="Guidance on how to use and edit Wikipedia"><span>Help</span></a></li><li id="n-introduction" class="mw-list-item"><a href="/wiki/Help:Introduction" title="Learn how to edit Wikipedia"><span>Learn to edit</span></a></li><li id="n-portal" class="mw-list-item"><a href="/wiki/Wikipedia:Community\_portal" title="The hub for editors"><span>Community portal</span></a></li><li id="n-recentchanges" class="mw-list-item"><a href="/wiki/Special:RecentChanges" title="A list of recent changes to Wikipedia [r]" accesskey="r"><span>Recent changes</span></a></li><li id="n-upload" class="mw-list-item"><a href="/wiki/Wikipedia:File\_upload\_wizard" title="Add images or other media for use on Wikipedia"><span>Upload file</span></a></li></ul></div></div></div></div></div></div></nav><a href="/wiki/Main\_Page" class="mw-logo"><img class="mw-logo-icon" src="/static/images/icons/wikipedia.png" alt="" aria-hidden="true" height="50" width="50"><span class="mw-logo-container"><img class="mw-logo-wordmark" alt="Wikipedia" src="/static/images/mobile/copyright/wikipedia-wordmark-en.svg" style="width: 7.5em; height: 1.125em;"><img class="mw-logo-tagline" alt="The Free Encyclopedia" src="/static/images/mobile/copyright/wikipedia-tagline-en.svg" width="117" height="13" style="width: 7.3125em; height: 0.8125em;"></span></a></div><div class="vector-header-end"><div id="p-search" role="search" class="vector-search-box-vue vector-search-box-collapses vector-search-box-show-thumbnail vector-search-box-auto-expand-width vector-search-box"><a href="/wiki/Special:Search" class="cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only search-toggle" id="" title="Search Wikipedia [f]" accesskey="f"><span class="vector-icon mw-ui-icon-search mw-ui-icon-wikimedia-search"></span><span>Search</span></a><div class="vector-typeahead-search-container"><div class="cdx-typeahead-search cdx-typeahead-search--show-thumbnail cdx-typeahead-search--auto-expand-width"><form action="/w/index.php" id="searchform" class="cdx-search-input cdx-search-input--has-end-button"><div id="simpleSearch" class="cdx-search-input\_\_input-wrapper" data-search-loc="header-moved"><div class="cdx-text-input cdx-text-input--has-start-icon"><inputclass="cdx-text-input\_\_input" type="search" name="search" placeholder="Search Wikipedia" aria-label="Search Wikipedia" autocapitalize="sentences" title="Search Wikipedia [f]" accesskey="f" id="searchInput"><span class="cdx-text-input\_\_icon cdx-text-input\_\_start-icon"></span></div><input type="hidden" name="title" value="Special:Search"></div><button class="cdx-button cdx-search-input\_\_end-button">Search</button></form></div></div></div><nav class="vector-user-links vector-user-links-wide" aria-label="Personal tools" role="navigation" ><div class="vector-user-links-main"><div id="p-vector-user-menu-preferences" class="vector-menu mw-portlet emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div><div id="p-vector-user-menu-userpage" class="vector-menu mw-portlet emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div><div id="p-vector-user-menu-notifications" class="vector-menu mw-portlet emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div><div id="p-vector-user-menu-overflow" class="vector-menu mw-portlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="pt-createaccount-2" class="user-links-collapsible-item mw-list-item user-links-collapsible-item"><a data-mw="interface" href="/w/index.php?title=Special:CreateAccount&amp;returnto=Main+Page" title="You are encouraged to create an account and log in; however, it is not mandatory" class=""><span>Create account</span></a></li><li id="pt-login-2" class="user-links-collapsible-item mw-list-item user-links-collapsible-item"><a data-mw="interface" href="/w/index.php?title=Special:UserLogin&amp;returnto=Main+Page" title="You&#039;re encouraged to log in; however, it&#039;s not mandatory. [o]" accesskey="o" class=""><span>Log in</span></a></li></ul></div></div></div><div id="vector-user-links-dropdown" class="vector-dropdown vector-user-menu vector-button-flush-right vector-user-menu-logged-out" title="Log in and more options" ><input type="checkbox" id="vector-user-links-dropdown-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-user-links-dropdown" class="vector-dropdown-checkbox " aria-label="Personal tools" ><label id="vector-user-links-dropdown-label" for="vector-user-links-dropdown-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only " aria-hidden="true" ><span class="vector-icon mw-ui-icon-ellipsis mw-ui-icon-wikimedia-ellipsis"></span><span class="vector-dropdown-label-text">Personal tools</span></label><div class="vector-dropdown-content"><div id="p-personal" class="vector-menu mw-portlet mw-portlet-personal user-links-collapsible-item" title="User menu" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="pt-createaccount" class="user-links-collapsible-item mw-list-item"><a href="/w/index.php?title=Special:CreateAccount&amp;returnto=Main+Page" title="You are encouraged to create an account and log in; however, it is not mandatory"><span class="vector-icon mw-ui-icon-userAdd mw-ui-icon-wikimedia-userAdd"></span> <span>Create account</span></a></li><li id="pt-login" class="user-links-collapsible-item mw-list-item"><a href="/w/index.php?title=Special:UserLogin&amp;returnto=Main+Page" title="You&#039;re encouraged to log in; however, it&#039;s not mandatory. [o]" accesskey="o"><span class="vector-icon mw-ui-icon-logIn mw-ui-icon-wikimedia-logIn"></span> <span>Log in</span></a></li></ul></div></div><div id="p-user-menu-anon-editor" class="vector-menu mw-portlet mw-portlet-user-menu-anon-editor" ><div class="vector-menu-heading">Pages for logged out editors <a href="/wiki/Help:Introduction" aria-label="Learn more about editing"><span>learn more</span></a></div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="pt-anoncontribs" class="mw-list-item"><a href="/wiki/Special:MyContributions" title="A list of edits made from this IP address [y]" accesskey="y"><span>Contributions</span></a></li><li id="pt-anontalk" class="mw-list-item"><a href="/wiki/Special:MyTalk" title="Discussion about edits from this IP address [n]" accesskey="n"><span>Talk</span></a></li></ul></div></div></div></div></nav></div></header></div><div class="mw-page-container"><div class="mw-page-container-inner"><div class="vector-sitenotice-container"><div id="siteNotice"><!-- CentralNotice --></div></div><div class="vector-main-menu-container"><div id="mw-navigation"><nav id="mw-panel" class="vector-main-menu-landmark" aria-label="Site" role="navigation"><div id="vector-main-menu-pinned-container" class="vector-pinned-container"></div></nav></div></div><div class="mw-content-container"><main id="content" class="mw-body" role="main"><header class="mw-body-header vector-page-titlebar vector-page-titlebar-blank"><h1 id="firstHeading" class="firstHeading mw-first-heading" style="display: none"><span class="mw-page-title-main">Main Page</span></h1><div class="mw-indicators"></div></header><div class="vector-page-toolbar"><div class="vector-page-toolbar-container"><div id="left-navigation"><nav aria-label="Namespaces"><div id="p-associated-pages" class="vector-menu vector-menu-tabs mw-portlet mw-portlet-associated-pages" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="ca-nstab-main" class="selected vector-tab-noicon mw-list-item"><a href="/wiki/Main\_Page" title="View the content page [c]" accesskey="c"><span>Main Page</span></a></li><li id="ca-talk" class="vector-tab-noicon mw-list-item"><a href="/wiki/Talk:Main\_Page" rel="discussion" title="Discuss improvements to the content page [t]" accesskey="t"><span>Talk</span></a></li></ul></div></div><div id="p-variants" class="vector-dropdown emptyPortlet" ><input type="checkbox" id="p-variants-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-p-variants" class="vector-dropdown-checkbox " aria-label="Change language variant" ><label id="p-variants-label" for="p-variants-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet" aria-hidden="true" ><span class="vector-dropdown-label-text">English</span></label><div class="vector-dropdown-content"><div id="p-variants" class="vector-menu mw-portlet mw-portlet-variants emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div></div></div></nav></div><div id="right-navigation" class="vector-collapsible"><nav aria-label="Views"><div id="p-views" class="vector-menu vector-menu-tabs mw-portlet mw-portlet-views" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="ca-view" class="selected vector-tab-noicon mw-list-item"><a href="/wiki/Main\_Page"><span>Read</span></a></li><li id="ca-viewsource" class="vector-tab-noicon mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;action=edit" title="This page is protected.&#10;You can view its source [e]" accesskey="e"><span>View source</span></a></li><li id="ca-history" class="vector-tab-noicon mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;action=history" title="Past revisions of this page [h]" accesskey="h"><span>View history</span></a></li></ul></div></div></nav><nav class="vector-page-tools-landmark" aria-label="Page tools"><div id="vector-page-tools-dropdown" class="vector-dropdown vector-page-tools-dropdown" ><input type="checkbox" id="vector-page-tools-dropdown-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-page-tools-dropdown" class="vector-dropdown-checkbox " aria-label="Tools" ><label id="vector-page-tools-dropdown-label" for="vector-page-tools-dropdown-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet" aria-hidden="true" ><span class="vector-dropdown-label-text">Tools</span></label><div class="vector-dropdown-content"><div id="vector-page-tools-unpinned-container" class="vector-unpinned-container"><div id="vector-page-tools" class="vector-page-tools vector-pinnable-element"><divclass="vector-pinnable-header vector-page-tools-pinnable-header vector-pinnable-header-unpinned"data-feature-name="page-tools-pinned"data-pinnable-element-id="vector-page-tools"data-pinned-container-id="vector-page-tools-pinned-container"data-unpinned-container-id="vector-page-tools-unpinned-container"><div class="vector-pinnable-header-label">Tools</div><button class="vector-pinnable-header-toggle-button vector-pinnable-header-pin-button" data-event-name="pinnable-header.vector-page-tools.pin">move to sidebar</button><button class="vector-pinnable-header-toggle-button vector-pinnable-header-unpin-button" data-event-name="pinnable-header.vector-page-tools.unpin">hide</button></div><div id="p-cactions" class="vector-menu mw-portlet mw-portlet-cactions emptyPortlet vector-has-collapsible-items" title="More options" ><div class="vector-menu-heading">Actions</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="ca-more-view" class="selected vector-more-collapsible-item mw-list-item"><a href="/wiki/Main\_Page"><span>Read</span></a></li><li id="ca-more-viewsource" class="vector-more-collapsible-item mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;action=edit"><span>View source</span></a></li><li id="ca-more-history" class="vector-more-collapsible-item mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;action=history"><span>View history</span></a></li></ul></div></div><div id="p-tb" class="vector-menu mw-portlet mw-portlet-tb" ><div class="vector-menu-heading">General</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="t-whatlinkshere" class="mw-list-item"><a href="/wiki/Special:WhatLinksHere/Main\_Page" title="List of all English Wikipedia pages containing links to this page [j]" accesskey="j"><span>What links here</span></a></li><li id="t-recentchangeslinked" class="mw-list-item"><a href="/wiki/Special:RecentChangesLinked/Main\_Page" rel="nofollow" title="Recent changes in pages linked from this page [k]" accesskey="k"><span>Related changes</span></a></li><li id="t-upload" class="mw-list-item"><a href="/wiki/Wikipedia:File\_Upload\_Wizard" title="Upload files [u]" accesskey="u"><span>Upload file</span></a></li><li id="t-specialpages" class="mw-list-item"><a href="/wiki/Special:SpecialPages" title="A list of all special pages [q]" accesskey="q"><span>Special pages</span></a></li><li id="t-permalink" class="mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;oldid=1114291180" title="Permanent link to this revision of this page"><span>Permanent link</span></a></li><li id="t-info" class="mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;action=info" title="More information about this page"><span>Page information</span></a></li><li id="t-cite" class="mw-list-item"><a href="/w/index.php?title=Special:CiteThisPage&amp;page=Main\_Page&amp;id=1114291180&amp;wpFormIdentifier=titleform" title="Information on how to cite this page"><span>Cite this page</span></a></li><li id="t-urlshortener" class="mw-list-item"><a href="/w/index.php?title=Special:UrlShortener&amp;url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FMain\_Page"><span>Get shortened URL</span></a></li><li id="t-wikibase" class="mw-list-item"><a href="https://www.wikidata.org/wiki/Special:EntityPage/Q5296" title="Structured data on this page hosted by Wikidata [g]" accesskey="g"><span>Wikidata item</span></a></li></ul></div></div><div id="p-coll-print\_export" class="vector-menu mw-portlet mw-portlet-coll-print\_export" ><div class="vector-menu-heading">Print/export</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="coll-download-as-rl" class="mw-list-item"><a href="/w/index.php?title=Special:DownloadAsPdf&amp;page=Main\_Page&amp;action=show-download-screen" title="Download this page as a PDF file"><span>Download as PDF</span></a></li><li id="t-print" class="mw-list-item"><a href="/w/index.php?title=Main\_Page&amp;printable=yes" title="Printable version of this page [p]" accesskey="p"><span>Printable version</span></a></li></ul></div></div><div id="p-wikibase-otherprojects" class="vector-menu mw-portlet mw-portlet-wikibase-otherprojects" ><div class="vector-menu-heading">In other projects</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li class="wb-otherproject-link wb-otherproject-commons mw-list-item"><a href="https://commons.wikimedia.org/wiki/Main\_Page" hreflang="en"><span>Wikimedia Commons</span></a></li><li class="wb-otherproject-link wb-otherproject-foundation mw-list-item"><a href="https://foundation.wikimedia.org/wiki/Home" hreflang="en"><span>Wikimedia Foundation</span></a></li><li class="wb-otherproject-link wb-otherproject-mediawiki mw-list-item"><a href="https://www.mediawiki.org/wiki/MediaWiki" hreflang="en"><span>MediaWiki</span></a></li><li class="wb-otherproject-link wb-otherproject-meta mw-list-item"><a href="https://meta.wikimedia.org/wiki/Main\_Page" hreflang="en"><span>Meta-Wiki</span></a></li><li class="wb-otherproject-link wb-otherproject-outreach mw-list-item"><a href="https://outreach.wikimedia.org/wiki/Main\_Page" hreflang="en"><span>Wikimedia Outreach</span></a></li><li class="wb-otherproject-link wb-otherproject-sources mw-list-item"><a href="https://wikisource.org/wiki/Main\_Page" hreflang="en"><span>Multilingual Wikisource</span></a></li><li class="wb-otherproject-link wb-otherproject-species mw-list-item"><a href="https://species.wikimedia.org/wiki/Main\_Page" hreflang="en"><span>Wikispecies</span></a></li><li class="wb-otherproject-link wb-otherproject-wikibooks mw-list-item"><a href="https://en.wikibooks.org/wiki/Main\_Page" hreflang="en"><span>Wikibooks</span></a></li><li class="wb-otherproject-link wb-otherproject-wikidata mw-list-item"><a href="https://www.wikidata.org/wiki/Wikidata:Main\_Page" hreflang="en"><span>Wikidata</span></a></li><li class="wb-otherproject-link wb-otherproject-wikifunctions mw-list-item"><a href="https://www.wikifunctions.org/wiki/Wikifunctions:Main\_Page" hreflang="en"><span>Wikifunctions</span></a></li><li class="wb-otherproject-link wb-otherproject-wikimania badge-Q70893996 mw-list-item" title=""><a href="https://wikimania.wikimedia.org/wiki/Wikimania" hreflang="en"><span>Wikimania</span></a></li><li class="wb-otherproject-link wb-otherproject-wikinews mw-list-item"><a href="https://en.wikinews.org/wiki/Main\_Page" hreflang="en"><span>Wikinews</span></a></li><li class="wb-otherproject-link wb-otherproject-wikiquote mw-list-item"><a href="https://en.wikiquote.org/wiki/Main\_Page" hreflang="en"><span>Wikiquote</span></a></li><li class="wb-otherproject-link wb-otherproject-wikisource mw-list-item"><a href="https://en.wikisource.org/wiki/Main\_Page" hreflang="en"><span>Wikisource</span></a></li><li class="wb-otherproject-link wb-otherproject-wikiversity mw-list-item"><a href="https://en.wikiversity.org/wiki/Wikiversity:Main\_Page" hreflang="en"><span>Wikiversity</span></a></li><li class="wb-otherproject-link wb-otherproject-wikivoyage mw-list-item"><a href="https://en.wikivoyage.org/wiki/Main\_Page" hreflang="en"><span>Wikivoyage</span></a></li><li class="wb-otherproject-link wb-otherproject-wiktionary mw-list-item"><a href="https://en.wiktionary.org/wiki/Wiktionary:Main\_Page" hreflang="en"><span>Wiktionary</span></a></li></ul></div></div></div></div></div></div></nav></div></div></div><div class="vector-column-end"><nav class="vector-page-tools-landmark vector-sticky-pinned-container" aria-label="Page tools"><div id="vector-page-tools-pinned-container" class="vector-pinned-container"></div></nav></div><div id="bodyContent" class="vector-body" aria-labelledby="firstHeading" data-mw-ve-target-container><div class="vector-body-before-content"><div id="siteSub" class="noprint">From Wikipedia, the free encyclopedia</div></div><div id="contentSub"><div id="mw-content-subtitle"></div></div><div id="mw-content-text" class="mw-body-content"><div class="mw-content-ltr mw-parser-output" lang="en" dir="ltr"><style data-mw-deduplicate="TemplateStyles:r1131603205">.mw-parser-output .mp-box{border:1px solid #aaa;padding:0 0.5em 0.5em;margin-top:4px}.mw-parser-output .mp-h2,body.skin-timeless .mw-parser-output .mp-h2{border:1px solid #aaa;margin:0.5em 0;padding:0.2em 0.4em;font-size:120%;font-weight:bold;font-family:inherit}.mw-parser-output .mp-later{font-size:85%;font-weight:normal}.mw-parser-output #mp-topbanner{background:#f9f9f9;border-color:#ddd}.mw-parser-output #mp-welcomecount{text-align:center;margin:0.4em}.mw-parser-output #mp-welcome{font-size:162%;padding:0.1em}.mw-parser-output #mp-welcome h1{font-size:inherit;font-family:inherit;display:inline;border:none}.mw-parser-output #mp-free{font-size:95%}.mw-parser-output #articlecount{font-size:85%}.mw-parser-output .mp-contains-float::after{content:"";display:block;clear:both}.mw-parser-output #mp-banner{background:#fffaf5;border-color:#f2e0ce}.mw-parser-output #mp-left{background:#f5fffa;border-color:#cef2e0}.mw-parser-output #mp-left .mp-h2{background:#cef2e0;border-color:#a3bfb1}.mw-parser-output #mp-right{background:#f5faff;border-color:#cedff2}.mw-parser-output #mp-right .mp-h2{background:#cedff2;border-color:#a3b0bf}.mw-parser-output #mp-middle{background:#fff5fa;border-color:#f2cedd}.mw-parser-output #mp-middle .mp-h2{background:#f2cedd;border-color:#bfa3af}.mw-parser-output #mp-lower{background:#faf5ff;border-color:#ddcef2}.mw-parser-output #mp-lower .mp-h2{background:#ddcef2;border-color:#afa3bf}.mw-parser-output #mp-bottom{border-color:#e2e2e2}.mw-parser-output #mp-bottom .mp-h2{background:#eee;border-color:#ddd}@media(max-width:875px){.mw-parser-output #mp-tfp table,.mw-parser-output #mp-tfp tr,.mw-parser-output #mp-tfp td,.mw-parser-output #mp-tfp tbody{display:block!important;width:100%!important;box-sizing:border-box}.mw-parser-output #mp-tfp tr:first-child td:first-child a{text-align:center;display:table;margin:0 auto}}@media(min-width:875px){.mw-parser-output #mp-upper{display:flex}.mw-parser-output #mp-left{flex:1 1 55%;margin-right:2px}.mw-parser-output #mp-right{flex:1 1 45%;margin-left:2px}}</style><div id="mp-topbanner" class="mp-box"><div id="mp-welcomecount"><div id="mp-welcome"><h1><span class="mw-headline" id="Welcome\_to\_Wikipedia">Welcome to <a href="/wiki/Wikipedia" title="Wikipedia">Wikipedia</a></span></h1>,</div><div id="mp-free">the <a href="/wiki/Free\_content" title="Free content">free</a> <a href="/wiki/Encyclopedia" title="Encyclopedia">encyclopedia</a> that <a href="/wiki/Help:Introduction\_to\_Wikipedia" title="Help:Introduction to Wikipedia">anyone can edit</a>.</div><div id="articlecount"><a href="/wiki/Special:Statistics" title="Special:Statistics">6,748,631</a> articles in <a href="/wiki/English\_language" title="English language">English</a></div></div></div><div id="mp-upper"><div id="mp-left" class="MainPageBG mp-box"><h2 id="mp-tfa-h2" class="mp-h2"><span id="From\_today.27s\_featured\_article"></span><span class="mw-headline" id="From\_today's\_featured\_article">From today's featured article</span></h2><div id="mp-tfa" class="mp-contains-float"><div id="mp-tfa-img" style="float: left; margin: 0.5em 0.9em 0.4em 0em;"><div class="thumbinner mp-thumb" style="background: transparent; border: none; padding: 0; max-width: 124px;"><span typeof="mw:File"><a href="/wiki/File:JFK\_WHPO.tif" class="mw-file-description" title="Kennedy in 1961"><img alt="Kennedy in 1961" src="//upload.wikimedia.org/wikipedia/commons/thumb/9/99/JFK\_WHPO.tif/lossy-page1-124px-JFK\_WHPO.tif.jpg" decoding="async" width="124" height="158" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/9/99/JFK\_WHPO.tif/lossy-page1-186px-JFK\_WHPO.tif.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/9/99/JFK\_WHPO.tif/lossy-page1-248px-JFK\_WHPO.tif.jpg 2x" data-file-width="1200" data-file-height="1532" /></a></span><div class="thumbcaption" style="padding: 0.25em 0; word-wrap: break-word;">Kennedy in 1961</div></div></div><p>The <b><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy" title="Assassination of John F. Kennedy">assassination of John F. Kennedy</a></b>, <a href="/wiki/List\_of\_presidents\_of\_the\_United\_States" title="List of presidents of the United States">the 35th U.S. president</a>, occurred on November 22, 1963, while <a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">Kennedy</a> was riding in a motorcade through <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a> in <a href="/wiki/Dallas" title="Dallas">Dallas, Texas</a>. He was shot from the <a href="/wiki/Texas\_School\_Book\_Depository" title="Texas School Book Depository">Texas School Book Depository</a> by <a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a>. Kennedy was pronounced dead at <a href="/wiki/Parkland\_Memorial\_Hospital" title="Parkland Memorial Hospital">Parkland Memorial Hospital</a>. Vice President <a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson</a> was sworn in as president later that day. Oswald was arrested and charged with murder. Two days later, he was shot dead by <a href="/wiki/Jack\_Ruby" title="Jack Ruby">Jack Ruby</a> on live television. The <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a> concluded that Oswald killed Kennedy, acting alone; most later federal investigations have agreed with its general findings. The event is still the subject of debate and conspiracy theories, in which many Americans believe. Kennedy's killing had a profound impact and was the first of four major assassinations during the <a href="/wiki/Timeline\_of\_United\_States\_history\_(1950%E2%80%931969)#1960s" title="Timeline of United States history (1950–1969)">1960s in the U.S.</a>, including <a href="/wiki/Assassination\_of\_Robert\_F.\_Kennedy" title="Assassination of Robert F. Kennedy">that of Kennedy's brother Robert</a> in 1968. Kennedy was the fourth U.S. president to be assassinated and the most recent to have <a href="/wiki/List\_of\_presidents\_of\_the\_United\_States\_who\_died\_in\_office" title="List of presidents of the United States who died in office">died in office</a>. (<b><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy" title="Assassination of John F. Kennedy">Full&#160;article...</a></b>)</p><div class="tfa-recent" style="text-align: right;">Recently featured: <style data-mw-deduplicate="TemplateStyles:r1129693374">.mw-parser-output .hlist dl,.mw-parser-output .hlist ol,.mw-parser-output .hlist ul{margin:0;padding:0}.mw-parser-output .hlist dd,.mw-parser-output .hlist dt,.mw-parser-output .hlist li{margin:0;display:inline}.mw-parser-output .hlist.inline,.mw-parser-output .hlist.inline dl,.mw-parser-output .hlist.inline ol,.mw-parser-output .hlist.inline ul,.mw-parser-output .hlist dl dl,.mw-parser-output .hlist dl ol,.mw-parser-output .hlist dl ul,.mw-parser-output .hlist ol dl,.mw-parser-output .hlist ol ol,.mw-parser-output .hlist ol ul,.mw-parser-output .hlist ul dl,.mw-parser-output .hlist ul ol,.mw-parser-output .hlist ul ul{display:inline}.mw-parser-output .hlist .mw-empty-li{display:none}.mw-parser-output .hlist dt::after{content:": "}.mw-parser-output .hlist dd::after,.mw-parser-output .hlist li::after{content:" · ";font-weight:bold}.mw-parser-output .hlist dd:last-child::after,.mw-parser-output .hlist dt:last-child::after,.mw-parser-output .hlist li:last-child::after{content:none}.mw-parser-output .hlist dd dd:first-child::before,.mw-parser-output .hlist dd dt:first-child::before,.mw-parser-output .hlist dd li:first-child::before,.mw-parser-output .hlist dt dd:first-child::before,.mw-parser-output .hlist dt dt:first-child::before,.mw-parser-output .hlist dt li:first-child::before,.mw-parser-output .hlist li dd:first-child::before,.mw-parser-output .hlist li dt:first-child::before,.mw-parser-output .hlist li li:first-child::before{content:" (";font-weight:normal}.mw-parser-output .hlist dd dd:last-child::after,.mw-parser-output .hlist dd dt:last-child::after,.mw-parser-output .hlist dd li:last-child::after,.mw-parser-output .hlist dt dd:last-child::after,.mw-parser-output .hlist dt dt:last-child::after,.mw-parser-output .hlist dt li:last-child::after,.mw-parser-output .hlist li dd:last-child::after,.mw-parser-output .hlist li dt:last-child::after,.mw-parser-output .hlist li li:last-child::after{content:")";font-weight:normal}.mw-parser-output .hlist ol{counter-reset:listitem}.mw-parser-output .hlist ol>li{counter-increment:listitem}.mw-parser-output .hlist ol>li::before{content:" "counter(listitem)"\a0 "}.mw-parser-output .hlist dd ol>li:first-child::before,.mw-parser-output .hlist dt ol>li:first-child::before,.mw-parser-output .hlist li ol>li:first-child::before{content:" ("counter(listitem)"\a0 "}</style><div class="hlist inline"><ul><li><a href="/wiki/Sarcophagus\_of\_Eshmunazar\_II" title="Sarcophagus of Eshmunazar II">Sarcophagus of Eshmunazar&#160;II</a></li><li><a href="/wiki/Quine%E2%80%93Putnam\_indispensability\_argument" title="Quine–Putnam indispensability argument">Quine–Putnam indispensability argument</a></li><li><a href="/wiki/To\_Be\_Loved\_(Adele\_song)" title="To Be Loved (Adele song)">"To Be Loved" (Adele song)</a></li></ul></div></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist tfa-footer noprint" style="text-align:right;"><ul><li><b><a href="/wiki/Wikipedia:Today%27s\_featured\_article/November\_2023" title="Wikipedia:Today&#39;s featured article/November 2023">Archive</a></b></li><li><b><a href="https://lists.wikimedia.org/postorius/lists/daily-article-l.lists.wikimedia.org/" class="extiw" title="mail:daily-article-l">By email</a></b></li><li><b><a href="/wiki/Wikipedia:Featured\_articles" title="Wikipedia:Featured articles">More featured articles</a></b></li><li><b><a href="/wiki/Wikipedia:About\_Today%27s\_featured\_article" title="Wikipedia:About Today&#39;s featured article">About</a></b></li></ul></div></div><h2 id="mp-dyk-h2" class="mp-h2"><span class="mw-headline" id="Did\_you\_know\_...">Did you know&#160;...</span></h2><div id="mp-dyk" class="mp-contains-float"><div class="dyk-img" style="float: right; margin-left: 0.5em;"><div class="thumbinner mp-thumb" style="background: transparent; border: none; padding: 0; max-width: 162px;"><span typeof="mw:File"><a href="/wiki/File:Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png" class="mw-file-description" title="Deshong Art Museum"><img alt="Deshong Art Museum" src="//upload.wikimedia.org/wikipedia/commons/thumb/d/d2/Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png/162px-Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png" decoding="async" width="162" height="120" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/d/d2/Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png/243px-Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/d/d2/Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png/324px-Image\_of\_Deshong\_Art\_Museum\_from\_The\_Architectural\_Review\_Magazine.png 2x" data-file-width="682" data-file-height="507" /></a></span><div class="thumbcaption" style="padding: 0.25em 0; word-wrap: break-word;">Deshong Art Museum</div></div></div><ul><li>... that a teenage boy stole over $300,000 worth of paintings from the <b><a href="/wiki/Deshong\_Art\_Museum" title="Deshong Art Museum">Deshong Art Museum</a></b> <i>(pictured)</i> by simply taking them off the wall and sliding them through a window?</li><li>... that Turkish <a href="/wiki/Carom\_billiards" title="Carom billiards">carom billiards</a> champion <b><a href="/wiki/G%C3%BCzin\_M%C3%BCjde\_Karaka%C5%9Fl%C4%B1" title="Güzin Müjde Karakaşlı">Güzin Müjde Karakaşlı</a></b> grew up playing volleyball for about 12 years?</li><li>... that <b><a href="/wiki/North\_Nias\_Regency" title="North Nias Regency">North Nias Regency</a></b> demolished its own government buildings in 2018 for <a href="/wiki/Urban\_renewal" title="Urban renewal">urban renewal</a>?</li><li>... that pollution in rivers scatters <a href="/wiki/Far-red\_light" title="Far-red light">far-red light</a>, making it harder for plants like <i><b><a href="/wiki/Noveloa" title="Noveloa">Noveloa</a></b></i> to <a href="/wiki/Germination" title="Germination">germinate</a>?</li><li>... that while writing <i><b><a href="/wiki/Lessons\_in\_Chemistry\_(novel)" title="Lessons in Chemistry (novel)">Lessons in Chemistry</a></b></i>, the author self-studied chemistry and was a full-time copywriter?</li><li>... that <b><a href="/wiki/Martha\_Poma" title="Martha Poma">Martha Poma</a></b> worked as a <a href="/wiki/Textile\_arts\_of\_the\_Indigenous\_peoples\_of\_the\_Americas" title="Textile arts of the Indigenous peoples of the Americas">textile artisan</a> in <a href="/wiki/El\_Alto" title="El Alto">El Alto</a> before being elected to the <a href="/wiki/Chamber\_of\_Senators\_(Bolivia)" title="Chamber of Senators (Bolivia)">Bolivian senate</a>?</li><li>... that <a href="/wiki/Benjamin\_Britten" title="Benjamin Britten">Benjamin Britten</a> composed <i><b><a href="/wiki/Canticle\_I:\_My\_beloved\_is\_mine\_and\_I\_am\_his" title="Canticle I: My beloved is mine and I am his">Canticle I: My beloved is mine and I am his</a></b></i> for the tenor voice of <a href="/wiki/Peter\_Pears" title="Peter Pears">Peter Pears</a>, using poetry from <i>A Divine Rapture</i> by <a href="/wiki/Francis\_Quarles" title="Francis Quarles">Francis Quarles</a>?</li><li>... that in 1790, ten years before the discovery of infrared heating of the Earth by the Sun, <b><a href="/wiki/Pictet%27s\_experiment" title="Pictet&#39;s experiment">Marc-Auguste Pictet demonstrated the apparent reflection of cold by mirrors</a></b>?</li></ul><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist dyk-footer noprint" style="margin-top: 0.5em; text-align: right;"><ul><li><b><a href="/wiki/Wikipedia:Recent\_additions" title="Wikipedia:Recent additions">Archive</a></b></li><li><b><a href="/wiki/Help:Your\_first\_article" title="Help:Your first article">Start a new article</a></b></li><li><b><a href="/wiki/Template\_talk:Did\_you\_know" title="Template talk:Did you know">Nominate an article</a></b></li></ul></div></div></div><div id="mp-right" class="MainPageBG mp-box"><h2 id="mp-itn-h2" class="mp-h2"><span class="mw-headline" id="In\_the\_news">In the news</span></h2><div id="mp-itn" class="mp-contains-float"><style data-mw-deduplicate="TemplateStyles:r1053378754">.mw-parser-output .itn-img{float:right;margin-left:0.5em;margin-top:0.2em}</style><div role="figure" class="itn-img"><div class="thumbinner mp-thumb" style="background: transparent; border: none; padding: 0; max-width: 125px;"><span typeof="mw:File"><a href="/wiki/File:Javier\_Milei\_VIVA22\_(cropped).jpg" class="mw-file-description" title="Javier Milei in October 2022"><img alt="Javier Milei in October 2022" src="//upload.wikimedia.org/wikipedia/commons/thumb/d/da/Javier\_Milei\_VIVA22\_%28cropped%29.jpg/125px-Javier\_Milei\_VIVA22\_%28cropped%29.jpg" decoding="async" width="125" height="158" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/d/da/Javier\_Milei\_VIVA22\_%28cropped%29.jpg/188px-Javier\_Milei\_VIVA22\_%28cropped%29.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/d/da/Javier\_Milei\_VIVA22\_%28cropped%29.jpg/250px-Javier\_Milei\_VIVA22\_%28cropped%29.jpg 2x" data-file-width="1967" data-file-height="2484" /></a></span><div class="thumbcaption" style="padding: 0.25em 0; word-wrap: break-word; text-align: left;">Javier Milei</div></div></div><ul><li><a href="/wiki/Javier\_Milei" title="Javier Milei">Javier Milei</a> <i>(pictured)</i> <b><a href="/wiki/2023\_Argentine\_general\_election" title="2023 Argentine general election">is elected</a></b> <a href="/wiki/President\_of\_Argentina" title="President of Argentina">president of Argentina</a>.</li><li><a href="/wiki/2023\_Cricket\_World\_Cup" title="2023 Cricket World Cup">The Cricket World Cup</a> concludes with <a href="/wiki/Australia\_national\_cricket\_team" title="Australia national cricket team">Australia</a> defeating <a href="/wiki/India\_national\_cricket\_team" title="India national cricket team">India</a> in <b><a href="/wiki/2023\_Cricket\_World\_Cup\_final" title="2023 Cricket World Cup final">the final</a></b>.</li><li><a href="/wiki/Pedro\_S%C3%A1nchez" title="Pedro Sánchez">Pedro Sánchez</a> <b><a href="/wiki/2023\_Spanish\_government\_formation" title="2023 Spanish government formation">is invested</a></b> as <a href="/wiki/Prime\_Minister\_of\_Spain" title="Prime Minister of Spain">Prime Minister of Spain</a>, after proposing amnesty for <a href="/wiki/Catalan\_independence\_movement" title="Catalan independence movement">Catalan separatists</a> and then receiving support from them.</li><li><a href="/wiki/Joseph\_Boakai" title="Joseph Boakai">Joseph Boakai</a> <b><a href="/wiki/2023\_Liberian\_general\_election" title="2023 Liberian general election">is elected</a></b> <a href="/wiki/President\_of\_Liberia" title="President of Liberia">President of Liberia</a> in the runoff, defeating incumbent president <a href="/wiki/George\_Weah" title="George Weah">George Weah</a>.</li></ul><div class="itn-footer" style="margin-top: 0.5em;"><div><b><a href="/wiki/Portal:Current\_events" title="Portal:Current events">Ongoing</a></b>: <link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist inline"><ul><li><a href="/wiki/2023\_Israel%E2%80%93Hamas\_war" title="2023 Israel–Hamas war">Israel–Hamas war</a></li><li><a href="/wiki/Myanmar\_civil\_war\_(2021%E2%80%93present)" title="Myanmar civil war (2021–present)"> Myanmar civil war </a></li><li><a href="/wiki/Russian\_invasion\_of\_Ukraine" title="Russian invasion of Ukraine">Russian invasion of Ukraine</a><ul><li><a href="/wiki/Timeline\_of\_the\_Russian\_invasion\_of\_Ukraine\_(1\_September\_2023\_%E2%80%93\_present)" title="Timeline of the Russian invasion of Ukraine (1 September 2023 – present)">timeline</a></li></ul></li><li><a href="/wiki/War\_in\_Sudan\_(2023)" title="War in Sudan (2023)">War in Sudan</a></li></ul></div></div><div><b><a href="/wiki/Deaths\_in\_2023" title="Deaths in 2023">Recent deaths</a></b>&#58; <link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist inline"><ul><li><a href="/wiki/Rosalynn\_Carter" title="Rosalynn Carter">Rosalynn Carter</a></li><li><a href="/wiki/Claude\_Kahn" title="Claude Kahn">Claude Kahn</a></li><li><a href="/wiki/Worta\_McCaskill-Stevens" title="Worta McCaskill-Stevens">Worta McCaskill-Stevens</a></li><li><a href="/wiki/Subrata\_Roy" title="Subrata Roy">Subrata Roy</a></li><li><a href="/wiki/Tengiz\_Kitovani" title="Tengiz Kitovani">Tengiz Kitovani</a></li><li><a href="/wiki/Neville\_Garrick" title="Neville Garrick">Neville Garrick</a></li></ul></div></div></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist itn-footer noprint" style="text-align:right;"><ul><li><b><a href="/wiki/Wikipedia:In\_the\_news/Candidates" title="Wikipedia:In the news/Candidates">Nominate an article</a></b></li></ul></div></div><h2 id="mp-otd-h2" class="mp-h2"><span class="mw-headline" id="On\_this\_day">On this day</span></h2><div id="mp-otd" class="mp-contains-float"><p><b><a href="/wiki/November\_22" title="November 22">November 22</a></b></p><div style="float:right;margin-left:0.5em;" id="mp-otd-img"><div class="thumbinner mp-thumb" style="background: transparent; border: none; padding: 0; max-width: 140px;"><span typeof="mw:File"><a href="/wiki/File:World\_Chess\_Championship\_2021,\_game\_07,\_Magnus\_Carlsen\_(SQ-cropped).jpg" class="mw-file-description" title="Magnus Carlsen"><img alt="Magnus Carlsen" src="//upload.wikimedia.org/wikipedia/commons/thumb/a/a3/World\_Chess\_Championship\_2021%2C\_game\_07%2C\_Magnus\_Carlsen\_%28SQ-cropped%29.jpg/140px-World\_Chess\_Championship\_2021%2C\_game\_07%2C\_Magnus\_Carlsen\_%28SQ-cropped%29.jpg" decoding="async" width="140" height="140" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/a/a3/World\_Chess\_Championship\_2021%2C\_game\_07%2C\_Magnus\_Carlsen\_%28SQ-cropped%29.jpg/210px-World\_Chess\_Championship\_2021%2C\_game\_07%2C\_Magnus\_Carlsen\_%28SQ-cropped%29.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/a/a3/World\_Chess\_Championship\_2021%2C\_game\_07%2C\_Magnus\_Carlsen\_%28SQ-cropped%29.jpg/280px-World\_Chess\_Championship\_2021%2C\_game\_07%2C\_Magnus\_Carlsen\_%28SQ-cropped%29.jpg 2x" data-file-width="600" data-file-height="600" /></a></span><div class="thumbcaption" style="padding: 0.25em 0; word-wrap: break-word;">Magnus Carlsen</div></div></div><ul><li><a href="/wiki/1574" title="1574">1574</a> – The Spanish explorer <b><a href="/wiki/Juan\_Fern%C3%A1ndez\_(explorer)" title="Juan Fernández (explorer)">Juan Fernández</a></b> discovered <a href="/wiki/Juan\_Fern%C3%A1ndez\_Islands" title="Juan Fernández Islands">the islands off the coast of Chile</a> which now bear his name.</li><li><a href="/wiki/1797" title="1797">1797</a> – The <b><a href="/wiki/Geisel\_School\_of\_Medicine" title="Geisel School of Medicine">Geisel School of Medicine</a></b>, the fourth oldest medical school in the United States, was founded by the physician <a href="/wiki/Nathan\_Smith\_(physician,\_born\_1762)" title="Nathan Smith (physician, born 1762)">Nathan Smith</a>.</li><li><a href="/wiki/1968" title="1968">1968</a> – <a href="/wiki/The\_Beatles" title="The Beatles">The Beatles</a> released their eponymous double album, popularly known as the <b><a href="/wiki/The\_Beatles\_(album)" title="The Beatles (album)">White Album</a></b>.</li><li><a href="/wiki/1987" title="1987">1987</a> – Two television stations in Chicago <b><a href="/wiki/Max\_Headroom\_signal\_hijacking" title="Max Headroom signal hijacking">had their broadcast signals hijacked</a></b> with footage of an unknown person wearing a <a href="/wiki/Max\_Headroom" title="Max Headroom">Max Headroom</a> mask and costume.</li><li><a href="/wiki/2013" title="2013">2013</a> – Norwegian chess grandmaster <b><a href="/wiki/Magnus\_Carlsen" title="Magnus Carlsen">Magnus Carlsen</a></b> <i>(pictured)</i> defeated India's <a href="/wiki/Viswanathan\_Anand" title="Viswanathan Anand">Viswanathan Anand</a> to become <a href="/wiki/World\_Chess\_Championship\_2013" title="World Chess Championship 2013">world chess champion</a>.</li></ul><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist" style="margin-top: 0.5em;"><ul><li><b><a href="/wiki/Antipope\_Felix\_II" title="Antipope Felix II">Antipope Felix II</a></b> (<abbr title="died">d.</abbr>&#160;365)</li><li><b><a href="/wiki/Francis\_Willughby" title="Francis Willughby">Francis Willughby</a></b> (<abbr title="born">b.</abbr>&#160;1635)</li><li><b><a href="/wiki/Billie\_Nipper" title="Billie Nipper">Billie Nipper</a></b> (<abbr title="born">b.</abbr>&#160;1929)</li><li><b><a href="/wiki/Yu-chien\_Kuan" title="Yu-chien Kuan">Yu-chien Kuan</a></b> (<abbr title="died">d.</abbr>&#160;2018)</li></ul></div><div style="margin-top:0.5em;">More anniversaries: <link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist inline nowraplinks"><ul><li><a href="/wiki/November\_21" title="November 21">November 21</a></li><li><b><a href="/wiki/November\_22" title="November 22">November 22</a></b></li><li><a href="/wiki/November\_23" title="November 23">November 23</a></li></ul></div></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist otd-footer noprint" style="text-align:right;"><ul><li><b><a href="/wiki/Wikipedia:Selected\_anniversaries/November" title="Wikipedia:Selected anniversaries/November">Archive</a></b></li><li><b><a href="https://lists.wikimedia.org/postorius/lists/daily-article-l.lists.wikimedia.org/" class="extiw" title="mail:daily-article-l">By email</a></b></li><li><b><a href="/wiki/List\_of\_days\_of\_the\_year" title="List of days of the year">List of days of the year</a></b></li></ul></div></div></div></div><div id="mp-lower" class="MainPageBG mp-box"><h2 id="mp-tfp-h2" class="mp-h2"><span id="Today.27s\_featured\_picture"></span><span class="mw-headline" id="Today's\_featured\_picture">Today's featured picture</span></h2><div id="mp-tfp"><table role="presentation" style="margin:0 3px 3px; width:100%; box-sizing:border-box; text-align:left; background-color:transparent; border-collapse:collapse;"><tbody><tr><td style="padding:0 0.9em 0 0; width:400px;"><span typeof="mw:File"><a href="/wiki/File:JFK\_limousine.png" class="mw-file-description" title="John F. Kennedy and others ride in a black roofless Lincoln Continental convertible down a street lined with spectators, flanked by police officers on motorcycles, and followed by Secret Service officers."><img alt="John F. Kennedy and others ride in a black roofless Lincoln Continental convertible down a street lined with spectators, flanked by police officers on motorcycles, and followed by Secret Service officers." src="//upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/400px-JFK\_limousine.png" decoding="async" width="400" height="300" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/600px-JFK\_limousine.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/800px-JFK\_limousine.png 2x" data-file-width="2048" data-file-height="1536" /></a></span></td><td style="padding:0 6px 0 0"><p><b><a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a></b> (May&#160;29, 1917&#160;– November&#160;22, 1963) was an American politician who served as the 35th <a href="/wiki/President\_of\_the\_United\_States" title="President of the United States">president of the United States</a> from 1961 until <a href="/wiki/Assassination\_of\_John\_F.\_Kennedy" title="Assassination of John F. Kennedy">his assassination in 1963</a>. He was the youngest person to assume the presidency by election and the youngest president at the end of his tenure. Kennedy served at the height of the <a href="/wiki/Cold\_War" title="Cold War">Cold War</a>, and the majority of his foreign policy concerned relations with the Soviet Union and Cuba. A <a href="/wiki/Democratic\_Party\_(United\_States)" title="Democratic Party (United States)">Democrat</a> from <a href="/wiki/Massachusetts" title="Massachusetts">Massachusetts</a>, Kennedy served in both houses of the <a href="/wiki/United\_States\_Congress" title="United States Congress">United States Congress</a> prior to his presidency. This photograph of Kennedy in his <a href="/wiki/Presidential\_state\_car\_(United\_States)" title="Presidential state car (United States)">presidential state car</a> was taken by Walt Cisco of <i><a href="/wiki/The\_Dallas\_Morning\_News" title="The Dallas Morning News">The Dallas Morning News</a></i> minutes before his assassination in <a href="/wiki/Dallas" title="Dallas">Dallas, Texas</a>, on November&#160;22, 1963.</p><p style="text-align:left;"><small>Photograph credit: Walt Cisco</small></p><div class="potd-recent" style="text-align:right;">Recently featured: <link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist inline"><ul><li><a href="/wiki/Template:POTD/2023-11-21" title="Template:POTD/2023-11-21">Northern cardinal</a></li><li><a href="/wiki/Template:POTD/2023-11-20" title="Template:POTD/2023-11-20">Bactria–Margiana Archaeological Complex</a></li><li><a href="/wiki/Template:POTD/2023-11-19" title="Template:POTD/2023-11-19">Grey triggerfish</a></li></ul></div></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist potd-footer noprint" style="text-align:right;"><ul><li><b><a href="/wiki/Wikipedia:Picture\_of\_the\_day/Archive" title="Wikipedia:Picture of the day/Archive">Archive</a></b></li><li><b><a href="/wiki/Wikipedia:Featured\_pictures" title="Wikipedia:Featured pictures">More featured pictures</a></b></li></ul></div></td></tr></tbody></table></div></div><div id="mp-bottom" class="mp-box"><h2 id="mp-other" class="mp-h2"><span class="mw-headline" id="Other\_areas\_of\_Wikipedia">Other areas of Wikipedia</span></h2><div id="mp-other-content"><ul><li><b><a href="/wiki/Wikipedia:Community\_portal" title="Wikipedia:Community portal">Community portal</a></b> – The central hub for editors, with resources, links, tasks, and announcements.</li><li><b><a href="/wiki/Wikipedia:Village\_pump" title="Wikipedia:Village pump">Village pump</a></b> – Forum for discussions about Wikipedia itself, including policies and technical issues.</li><li><b><a href="/wiki/Wikipedia:News" title="Wikipedia:News">Site news</a></b> – Sources of news about Wikipedia and the broader Wikimedia movement.</li><li><b><a href="/wiki/Wikipedia:Teahouse" title="Wikipedia:Teahouse">Teahouse</a></b> – Ask basic questions about using or editing Wikipedia.</li><li><b><a href="/wiki/Wikipedia:Help\_desk" title="Wikipedia:Help desk">Help desk</a></b> – Ask questions about using or editing Wikipedia.</li><li><b><a href="/wiki/Wikipedia:Reference\_desk" title="Wikipedia:Reference desk">Reference desk</a></b> – Ask research questions about encyclopedic topics.</li><li><b><a href="/wiki/Wikipedia:Contents/Portals" title="Wikipedia:Contents/Portals">Content portals</a></b> – A unique way to navigate the encyclopedia.</li></ul></div><h2 id="mp-sister" class="mp-h2"><span id="Wikipedia.27s\_sister\_projects"></span><span class="mw-headline" id="Wikipedia's\_sister\_projects">Wikipedia's sister projects</span></h2><div id="mp-sister-content"><style data-mw-deduplicate="TemplateStyles:r1007624485">.mw-parser-output #sister-projects-list{display:flex;flex-wrap:wrap}.mw-parser-output #sister-projects-list li{display:inline-block}.mw-parser-output #sister-projects-list li span{font-weight:bold}.mw-parser-output #sister-projects-list li>div{display:inline-block;vertical-align:middle;padding:6px 4px}.mw-parser-output #sister-projects-list li>div:first-child{text-align:center}@media(min-width:360px){.mw-parser-output #sister-projects-list li{width:33%;min-width:20em;white-space:nowrap;flex:1 0 25%}.mw-parser-output #sister-projects-list li>div:first-child{min-width:50px}}</style><p>Wikipedia is written by volunteer editors and hosted by the <a href="/wiki/Wikimedia\_Foundation" title="Wikimedia Foundation">Wikimedia Foundation</a>, a non-profit organization that also hosts a range of other volunteer <a href="https://wikimediafoundation.org/our-work/wikimedia-projects/" class="extiw" title="foundationsite:our-work/wikimedia-projects/">projects</a>:</p><style data-mw-deduplicate="TemplateStyles:r1126788409">.mw-parser-output .plainlist ol,.mw-parser-output .plainlist ul{line-height:inherit;list-style:none;margin:0;padding:0}.mw-parser-output .plainlist ol li,.mw-parser-output .plainlist ul li{margin-bottom:0}</style><div class="plainlist"><ul id="sister-projects-list"><li> <div><span typeof="mw:File"><a href="https://commons.wikimedia.org/wiki/" title="Commons"><img alt="Commons logo" src="//upload.wikimedia.org/wikipedia/en/thumb/4/4a/Commons-logo.svg/31px-Commons-logo.svg.png" decoding="async" width="31" height="42" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/4/4a/Commons-logo.svg/47px-Commons-logo.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/4/4a/Commons-logo.svg/62px-Commons-logo.svg.png 2x" data-file-width="1024" data-file-height="1376" /></a></span></div> <div><span><a href="https://commons.wikimedia.org/wiki/" class="extiw" title="c:">Commons</a></span><br />Free media repository</div></li><li> <div><span typeof="mw:File"><a href="https://www.mediawiki.org/wiki/" title="MediaWiki"><img alt="MediaWiki logo" src="//upload.wikimedia.org/wikipedia/commons/thumb/a/a6/MediaWiki-2020-icon.svg/35px-MediaWiki-2020-icon.svg.png" decoding="async" width="35" height="35" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/a/a6/MediaWiki-2020-icon.svg/53px-MediaWiki-2020-icon.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/a/a6/MediaWiki-2020-icon.svg/70px-MediaWiki-2020-icon.svg.png 2x" data-file-width="100" data-file-height="100" /></a></span></div> <div><span><a href="https://www.mediawiki.org/wiki/" class="extiw" title="mw:">MediaWiki</a></span><br />Wiki software development</div></li><li> <div><span typeof="mw:File"><a href="https://meta.wikimedia.org/wiki/" title="Meta-Wiki"><img alt="Meta-Wiki logo" 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srcset="//upload.wikimedia.org/wikipedia/commons/thumb/f/fa/Wikibooks-logo.svg/53px-Wikibooks-logo.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/f/fa/Wikibooks-logo.svg/70px-Wikibooks-logo.svg.png 2x" data-file-width="300" data-file-height="300" /></a></span></div> <div><span><a href="https://en.wikibooks.org/wiki/" class="extiw" title="b:">Wikibooks</a></span><br />Free textbooks and manuals</div></li><li> <div><span typeof="mw:File"><a href="https://www.wikidata.org/wiki/" title="Wikidata"><img alt="Wikidata logo" src="//upload.wikimedia.org/wikipedia/commons/thumb/f/ff/Wikidata-logo.svg/47px-Wikidata-logo.svg.png" decoding="async" width="47" height="26" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/f/ff/Wikidata-logo.svg/71px-Wikidata-logo.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/f/ff/Wikidata-logo.svg/94px-Wikidata-logo.svg.png 2x" data-file-width="1050" data-file-height="590" /></a></span></div> <div><span><a 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src="//upload.wikimedia.org/wikipedia/commons/thumb/d/dd/Wikivoyage-Logo-v3-icon.svg/35px-Wikivoyage-Logo-v3-icon.svg.png" decoding="async" width="35" height="35" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/d/dd/Wikivoyage-Logo-v3-icon.svg/53px-Wikivoyage-Logo-v3-icon.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/d/dd/Wikivoyage-Logo-v3-icon.svg/70px-Wikivoyage-Logo-v3-icon.svg.png 2x" data-file-width="193" data-file-height="193" /></a></span></div> <div><span><a href="https://en.wikivoyage.org/wiki/" class="extiw" title="voy:">Wikivoyage</a></span><br />Free travel guide</div></li><li> <div><span typeof="mw:File"><a href="https://en.wiktionary.org/wiki/" title="Wiktionary"><img alt="Wiktionary logo" src="//upload.wikimedia.org/wikipedia/en/thumb/0/06/Wiktionary-logo-v2.svg/35px-Wiktionary-logo-v2.svg.png" decoding="async" width="35" height="35" class="mw-file-element" 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.wikipedia-languages-count-container{width:90%;display:flex;justify-content:center;padding-top:1em;margin:0 auto}.mw-parser-output .wikipedia-languages-prettybars{width:100%;height:1px;margin:0.5em 0;background-color:#c8ccd1;flex-shrink:1;align-self:center}.mw-parser-output .wikipedia-languages-count{padding:0 1em;white-space:nowrap}</style><div class="wikipedia-languages nourlexpansion"><p>This Wikipedia is written in <a href="/wiki/English\_language" title="English language">English</a>. Many <a href="https://meta.wikimedia.org/wiki/List\_of\_Wikipedias" class="extiw" title="meta:List of Wikipedias">other Wikipedias are available</a>; some of the largest are listed below.</p><ul class="plainlinks"><li> <div class="wikipedia-languages-count-container"> <div class="wikipedia-languages-prettybars"></div> <div role="heading" aria-level="3" class="wikipedia-languages-count">1,000,000+ articles</div> <div class="wikipedia-languages-prettybars"></div> </div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><div class="hlist wikipedia-languages-langs inline"><ul><li><a class="external text" href="https://ar.wikipedia.org/wiki/"><span class="autonym" title="Arabic (ar:)" lang="ar">العربية</span></a></li><li><a class="external text" href="https://de.wikipedia.org/wiki/"><span class="autonym" title="German (de:)" lang="de">Deutsch</span></a></li><li><a class="external text" href="https://es.wikipedia.org/wiki/"><span class="autonym" title="Spanish (es:)" lang="es">Español</span></a></li><li><a class="external text" href="https://fr.wikipedia.org/wiki/"><span class="autonym" title="French (fr:)" lang="fr">Français</span></a></li><li><a class="external text" href="https://it.wikipedia.org/wiki/"><span class="autonym" title="Italian (it:)" lang="it">Italiano</span></a></li><li><a class="external text" href="https://nl.wikipedia.org/wiki/"><span class="autonym" title="Dutch (nl:)" lang="nl">Nederlands</span></a></li><li><a class="external text" href="https://ja.wikipedia.org/wiki/"><span class="autonym" title="Japanese (ja:)" lang="ja">日本語</span></a></li><li><a class="external text" href="https://pl.wikipedia.org/wiki/"><span class="autonym" title="Polish (pl:)" lang="pl">Polski</span></a></li><li><a class="external text" href="https://pt.wikipedia.org/wiki/"><span class="autonym" title="Portuguese (pt:)" lang="pt">Português</span></a></li><li><a class="external text" href="https://ru.wikipedia.org/wiki/"><span class="autonym" 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ўзбекча</span></a></li></ul></div></li></ul></div></div></div><!-- NewPP limit reportParsed by mw1401Cached time: 20231122013514Cache expiry: 3600Reduced expiry: trueComplications: [no‐toc]CPU time usage: 0.257 secondsReal time usage: 0.347 secondsPreprocessor visited node count: 5049/1000000Post‐expand include size: 127428/2097152 bytesTemplate argument size: 11110/2097152 bytesHighest expansion depth: 18/100Expensive parser function count: 13/500Unstrip recursion depth: 0/20Unstrip post‐expand size: 38285/5000000 bytesLua time usage: 0.049/10.000 secondsLua memory usage: 1807409/52428800 bytesNumber of Wikibase entities loaded: 0/400--><!--Transclusion expansion time report (%,ms,calls,template)100.00% 250.855 1 -total 34.28% 85.997 1 Wikipedia:Main\_Page/Tomorrow 25.51% 63.983 1 Wikipedia:Today's\_featured\_article/November\_22,\_2023 24.12% 60.503 8 Template:Main\_page\_image 17.42% 43.698 8 Template:Str\_number/trim 15.01% 37.655 1 Template:Did\_you\_know/Queue/3 13.54% 33.962 2 Template:Main\_page\_image/TFA 13.52% 33.925 2 Template:Wikipedia\_languages 13.18% 33.056 26 Template:Flatlist 12.36% 31.006 2 Template:TFArecentlist--><!-- Saved in parser cache with key enwiki:pcache:idhash:15580374-0!canonical and timestamp 20231122013514 and revision id 1114291180. Rendering was triggered because: page-view --></div><!--esi <esi:include src="/esitest-fa8a495983347898/content" /> --><noscript><img src="https://login.wikimedia.org/wiki/Special:CentralAutoLogin/start?type=1x1" alt="" width="1" height="1" style="border: none; position: absolute;"></noscript><div class="printfooter" data-nosnippet="">Retrieved from "<a dir="ltr" href="https://en.wikipedia.org/w/index.php?title=Main\_Page&amp;oldid=1114291180">https://en.wikipedia.org/w/index.php?title=Main\_Page&amp;oldid=1114291180</a>"</div></div><div id="catlinks" class="catlinks catlinks-allhidden" data-mw="interface"></div><div id="p-lang-btn" class="vector-dropdown mw-portlet mw-portlet-lang" ><input type="checkbox" id="p-lang-btn-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-p-lang-btn" class="vector-dropdown-checkbox mw-interlanguage-selector" aria-label="Go to an article in another language. Available in 47 languages" ><label id="p-lang-btn-label" for="p-lang-btn-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--action-progressive mw-portlet-lang-heading-47" aria-hidden="true" ><span class="vector-icon mw-ui-icon-language-progressive mw-ui-icon-wikimedia-language-progressive"></span><span class="vector-dropdown-label-text">47 languages</span></label><div class="vector-dropdown-content"><div class="vector-menu-content"><ul class="vector-menu-content-list"><li class="interlanguage-link interwiki-ar mw-list-item"><a href="https://ar.wikipedia.org/wiki/" title="Arabic" lang="ar" hreflang="ar" class="interlanguage-link-target"><span>العربية</span></a></li><li class="interlanguage-link interwiki-bn mw-list-item"><a href="https://bn.wikipedia.org/wiki/" title="Bangla" lang="bn" hreflang="bn" class="interlanguage-link-target"><span>বাংলা</span></a></li><li class="interlanguage-link interwiki-bg mw-list-item"><a href="https://bg.wikipedia.org/wiki/" title="Bulgarian" lang="bg" hreflang="bg" class="interlanguage-link-target"><span>Български</span></a></li><li class="interlanguage-link interwiki-bs mw-list-item"><a href="https://bs.wikipedia.org/wiki/" title="Bosnian" lang="bs" hreflang="bs" class="interlanguage-link-target"><span>Bosanski</span></a></li><li class="interlanguage-link interwiki-ca mw-list-item"><a href="https://ca.wikipedia.org/wiki/" title="Catalan" lang="ca" hreflang="ca" class="interlanguage-link-target"><span>Català</span></a></li><li class="interlanguage-link interwiki-cs mw-list-item"><a href="https://cs.wikipedia.org/wiki/" title="Czech" lang="cs" hreflang="cs" class="interlanguage-link-target"><span>Čeština</span></a></li><li class="interlanguage-link interwiki-da mw-list-item"><a href="https://da.wikipedia.org/wiki/" title="Danish" lang="da" hreflang="da" class="interlanguage-link-target"><span>Dansk</span></a></li><li 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class="interlanguage-link-target"><span>Esperanto</span></a></li><li class="interlanguage-link interwiki-eu mw-list-item"><a href="https://eu.wikipedia.org/wiki/" title="Basque" lang="eu" hreflang="eu" class="interlanguage-link-target"><span>Euskara</span></a></li><li class="interlanguage-link interwiki-fa mw-list-item"><a href="https://fa.wikipedia.org/wiki/" title="Persian" lang="fa" hreflang="fa" class="interlanguage-link-target"><span>فارسی</span></a></li><li class="interlanguage-link interwiki-fr mw-list-item"><a href="https://fr.wikipedia.org/wiki/" title="French" lang="fr" hreflang="fr" class="interlanguage-link-target"><span>Français</span></a></li><li class="interlanguage-link interwiki-gl mw-list-item"><a href="https://gl.wikipedia.org/wiki/" title="Galician" lang="gl" hreflang="gl" class="interlanguage-link-target"><span>Galego</span></a></li><li class="interlanguage-link interwiki-ko mw-list-item"><a href="https://ko.wikipedia.org/wiki/" title="Korean" lang="ko" hreflang="ko" class="interlanguage-link-target"><span>한국어</span></a></li><li class="interlanguage-link interwiki-hr mw-list-item"><a href="https://hr.wikipedia.org/wiki/" title="Croatian" lang="hr" hreflang="hr" class="interlanguage-link-target"><span>Hrvatski</span></a></li><li class="interlanguage-link interwiki-id mw-list-item"><a href="https://id.wikipedia.org/wiki/" title="Indonesian" lang="id" hreflang="id" class="interlanguage-link-target"><span>Bahasa Indonesia</span></a></li><li class="interlanguage-link interwiki-it mw-list-item"><a href="https://it.wikipedia.org/wiki/" title="Italian" lang="it" hreflang="it" class="interlanguage-link-target"><span>Italiano</span></a></li><li class="interlanguage-link interwiki-he mw-list-item"><a href="https://he.wikipedia.org/wiki/" title="Hebrew" lang="he" hreflang="he" class="interlanguage-link-target"><span>עברית</span></a></li><li class="interlanguage-link interwiki-ka mw-list-item"><a href="https://ka.wikipedia.org/wiki/" 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class="interlanguage-link-target"><span>Simple English</span></a></li><li class="interlanguage-link interwiki-sk mw-list-item"><a href="https://sk.wikipedia.org/wiki/" title="Slovak" lang="sk" hreflang="sk" class="interlanguage-link-target"><span>Slovenčina</span></a></li><li class="interlanguage-link interwiki-sl mw-list-item"><a href="https://sl.wikipedia.org/wiki/" title="Slovenian" lang="sl" hreflang="sl" class="interlanguage-link-target"><span>Slovenščina</span></a></li><li class="interlanguage-link interwiki-sr mw-list-item"><a href="https://sr.wikipedia.org/wiki/" title="Serbian" lang="sr" hreflang="sr" class="interlanguage-link-target"><span>Српски / srpski</span></a></li><li class="interlanguage-link interwiki-sh mw-list-item"><a href="https://sh.wikipedia.org/wiki/" title="Serbo-Croatian" lang="sh" hreflang="sh" class="interlanguage-link-target"><span>Srpskohrvatski / српскохрватски</span></a></li><li class="interlanguage-link interwiki-fi mw-list-item"><a href="https://fi.wikipedia.org/wiki/" title="Finnish" lang="fi" hreflang="fi" class="interlanguage-link-target"><span>Suomi</span></a></li><li class="interlanguage-link interwiki-sv mw-list-item"><a href="https://sv.wikipedia.org/wiki/" title="Swedish" lang="sv" hreflang="sv" class="interlanguage-link-target"><span>Svenska</span></a></li><li class="interlanguage-link interwiki-th mw-list-item"><a href="https://th.wikipedia.org/wiki/" title="Thai" lang="th" hreflang="th" class="interlanguage-link-target"><span>ไทย</span></a></li><li class="interlanguage-link interwiki-tr mw-list-item"><a href="https://tr.wikipedia.org/wiki/" title="Turkish" lang="tr" hreflang="tr" class="interlanguage-link-target"><span>Türkçe</span></a></li><li class="interlanguage-link interwiki-uk mw-list-item"><a href="https://uk.wikipedia.org/wiki/" title="Ukrainian" lang="uk" hreflang="uk" class="interlanguage-link-target"><span>Українська</span></a></li><li class="interlanguage-link interwiki-vi mw-list-item"><a href="https://vi.wikipedia.org/wiki/" title="Vietnamese" lang="vi" hreflang="vi" class="interlanguage-link-target"><span>Tiếng Việt</span></a></li><li class="interlanguage-link interwiki-zh mw-list-item"><a href="https://zh.wikipedia.org/wiki/" title="Chinese" lang="zh" hreflang="zh" class="interlanguage-link-target"><span>中文</span></a></li></ul></div></div></div></div></main></div><div class="mw-footer-container"><footer id="footer" class="mw-footer" role="contentinfo" ><ul id="footer-info"><li id="footer-info-lastmod"> This page was last edited on 5 October 2022, at 19:27<span class="anonymous-show">&#160;(UTC)</span>.</li><li id="footer-info-copyright">Text is available under the <a rel="license" href="//en.wikipedia.org/wiki/Wikipedia:Text\_of\_the\_Creative\_Commons\_Attribution-ShareAlike\_4.0\_International\_License">Creative Commons Attribution-ShareAlike License 4.0</a><a rel="license" 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r, e, t, u, r, n, t, o, =, M, a, i, n, +, P, a, g, e, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, U, s, e, r, L, o, g, i, n, &, r, e, t, u, r, n, t, o, =, M, a, i, n, +, P, a, g, e, ,, , /, w, i, k, i, /, H, e, l, p, :, I, n, t, r, o, d, u, c, t, i, o, n, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, C, o, n, t, r, i, b, u, t, i, o, n, s, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, T, a, l, k, ,, , /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , /, w, i, k, i, /, T, a, l, k, :, M, a, i, n, \_, P, a, g, e, ,, , /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, a, i, n, \_, P, a, g, e, &, a, c, t, i, o, n, =, e, d, i, t, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, a, i, n, \_, P, a, g, e, &, a, c, t, i, o, n, =, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, 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t, e, T, h, i, s, P, a, g, e, &, p, a, g, e, =, M, a, i, n, \_, P, a, g, e, &, i, d, =, 1, 1, 1, 4, 2, 9, 1, 1, 8, 0, &, w, p, F, o, r, m, I, d, e, n, t, i, f, i, e, r, =, t, i, t, l, e, f, o, r, m, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, U, r, l, S, h, o, r, t, e, n, e, r, &, u, r, l, =, h, t, t, p, s, %, 3, A, %, 2, F, %, 2, F, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, %, 2, F, w, i, k, i, %, 2, F, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, d, a, t, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, E, n, t, i, t, y, P, a, g, e, /, Q, 5, 2, 9, 6, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, D, o, w, n, l, o, a, d, A, s, P, d, f, &, p, a, g, e, =, M, a, i, n, \_, P, a, g, e, &, a, c, t, i, o, n, =, s, h, o, w, -, d, o, w, n, l, o, a, d, -, s, c, r, e, e, n, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, a, i, n, \_, P, a, g, e, &, p, r, i, n, t, a, b, l, e, =, y, e, s, ,, , h, t, t, p, s, :, /, /, c, o, m, m, o, n, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, H, o, m, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., m, e, d, i, a, w, i, k, i, ., o, r, g, /, w, i, k, i, /, M, e, d, i, a, W, i, k, i, ,, , h, t, t, p, s, :, /, /, m, e, t, a, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, o, u, t, r, e, a, c, h, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, s, p, e, c, i, e, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, b, o, o, k, s, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, d, a, t, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, d, a, t, a, :, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, f, u, n, c, t, i, o, n, s, ., o, r, g, /, w, i, k, i, /, W, i, k, i, f, u, n, c, t, i, o, n, s, :, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, w, i, k, i, m, a, n, i, a, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, m, a, n, i, a, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, n, e, w, s, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, q, u, o, t, e, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, v, e, r, s, i, t, y, ., o, r, g, /, w, i, k, i, /, W, i, k, i, v, e, r, s, i, t, y, :, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, v, o, y, a, g, e, ., o, r, g, /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, t, i, o, n, a, r, y, ., o, r, g, /, w, i, k, i, /, W, i, k, t, i, o, n, a, r, y, :, M, a, i, n, \_, P, a, g, e, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, ,, , /, w, i, k, i, /, F, r, e, e, \_, c, o, n, t, e, n, t, ,, , /, w, i, k, i, /, E, n, c, y, c, l, o, p, e, d, i, a, ,, , /, w, i, k, i, /, H, e, l, p, :, I, n, t, r, o, d, u, c, t, i, o, n, \_, t, o, \_, W, i, k, i, p, e, d, i, a, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, S, t, a, t, i, s, t, i, c, s, ,, , /, w, i, k, i, /, E, n, g, l, i, s, h, \_, l, a, n, g, u, a, g, e, ,, , /, w, i, k, i, /, F, i, l, e, :, J, F, K, \_, W, H, P, O, ., t, i, f, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, D, a, l, l, a, s, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, S, c, h, o, o, l, \_, B, o, o, k, \_, D, e, p, o, s, i, t, o, r, y, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, P, a, r, k, l, a, n, d, \_, M, e, m, o, r, i, a, l, \_, H, o, s, p, i, t, a, l, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, J, a, c, k, \_, R, u, b, y, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, T, i, m, e, l, i, n, e, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, h, i, s, t, o, r, y, \_, (, 1, 9, 5, 0, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 6, 9, ), #, 1, 9, 6, 0, s, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, w, h, o, \_, d, i, e, d, \_, i, n, \_, o, f, f, i, c, e, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, S, a, r, c, o, p, h, a, g, u, s, \_, o, f, \_, E, s, h, m, u, n, a, z, a, r, \_, I, I, ,, , /, w, i, k, i, /, Q, u, i, n, e, %, E, 2, %, 8, 0, %, 9, 3, P, u, t, n, a, m, \_, i, n, d, i, s, p, e, n, s, a, b, i, l, i, t, y, \_, a, r, g, u, m, e, n, t, ,, , /, w, i, k, i, /, T, o, \_, B, e, \_, L, o, v, e, d, \_, (, A, d, e, l, e, \_, s, o, n, g, ), ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, o, d, a, y, %, 2, 7, s, \_, f, e, a, t, u, r, e, d, \_, a, r, t, i, c, l, e, /, N, o, v, e, m, b, e, r, \_, 2, 0, 2, 3, ,, , h, t, t, p, s, :, /, /, l, i, s, t, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, p, o, s, t, o, r, i, u, s, /, l, i, s, t, s, /, d, a, i, l, y, -, a, r, t, i, c, l, e, -, l, ., l, i, s, t, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, F, e, a, t, u, r, e, d, \_, a, r, t, i, c, l, e, s, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, A, b, o, u, t, \_, T, o, d, a, y, %, 2, 7, s, \_, f, e, a, t, u, r, e, d, \_, a, r, t, i, c, l, e, ,, , /, w, i, k, i, /, F, i, l, e, :, I, m, a, g, e, \_, o, f, \_, D, e, s, h, o, n, g, \_, A, r, t, \_, M, u, s, e, u, m, \_, f, r, o, m, \_, T, h, e, \_, A, r, c, h, i, t, e, c, t, u, r, a, l, \_, R, e, v, i, e, w, \_, M, a, g, a, z, i, n, e, ., p, n, g, ,, , /, w, i, k, i, /, D, e, s, h, o, n, g, \_, A, r, t, \_, M, u, s, e, u, m, ,, , /, w, i, k, i, /, C, a, r, o, m, \_, b, i, l, l, i, a, r, d, s, ,, , /, w, i, k, i, /, G, %, C, 3, %, B, C, z, i, n, \_, M, %, C, 3, %, B, C, j, d, e, \_, K, a, r, a, k, a, %, C, 5, %, 9, F, l, %, C, 4, %, B, 1, ,, , /, w, i, k, i, /, N, o, r, t, h, \_, N, i, a, s, \_, R, e, g, e, n, c, y, ,, , /, w, i, k, i, /, U, r, b, a, n, \_, r, e, n, e, w, a, l, ,, , /, w, i, k, i, /, F, a, r, -, r, e, d, \_, l, i, g, h, t, ,, , /, w, i, k, i, /, N, o, v, e, l, o, a, ,, , /, w, i, k, i, /, G, e, r, m, i, n, a, t, i, o, n, ,, , /, w, i, k, i, /, L, e, s, s, o, n, s, \_, i, n, \_, C, h, e, m, i, s, t, r, y, \_, (, n, o, v, e, l, ), ,, , /, w, i, k, i, /, M, a, r, t, h, a, \_, P, o, m, a, ,, , /, w, i, k, i, /, T, e, x, t, i, l, e, \_, a, r, t, s, \_, o, f, \_, t, h, e, \_, I, n, d, i, g, e, n, o, u, s, \_, p, e, o, p, l, e, s, \_, o, f, \_, t, h, e, \_, A, m, e, r, i, c, a, s, ,, , /, w, i, k, i, /, E, l, \_, A, l, t, o, ,, , /, w, i, k, i, /, C, h, a, m, b, e, r, \_, o, f, \_, S, e, n, a, t, o, r, s, \_, (, B, o, l, i, v, i, a, ), ,, , /, w, i, k, i, /, B, e, n, j, a, m, i, n, \_, B, r, i, t, t, e, n, ,, , /, w, i, k, i, /, C, a, n, t, i, c, l, e, \_, I, :, \_, M, y, \_, b, e, l, o, v, e, d, \_, i, s, \_, m, i, n, e, \_, a, n, d, \_, I, \_, a, m, \_, h, i, s, ,, , /, w, i, k, i, /, P, e, t, e, r, \_, P, e, a, r, s, ,, , /, w, i, k, i, /, F, r, a, n, c, i, s, \_, Q, u, a, r, l, e, s, ,, , /, w, i, k, i, /, P, i, c, t, e, t, %, 2, 7, s, \_, e, x, p, e, r, i, m, e, n, t, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, R, e, c, e, n, t, \_, a, d, d, i, t, i, o, n, s, ,, , /, w, i, k, i, /, H, e, l, p, :, Y, o, u, r, \_, f, i, r, s, t, \_, a, r, t, i, c, l, e, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, \_, t, a, l, k, :, D, i, d, \_, y, o, u, \_, k, n, o, w, ,, , /, w, i, k, i, /, F, i, l, e, :, J, a, v, i, e, r, \_, M, i, l, e, i, \_, V, I, V, A, 2, 2, \_, (, c, r, o, p, p, e, d, ), ., j, p, g, ,, , /, w, i, k, i, /, J, a, v, i, e, r, \_, M, i, l, e, i, ,, , /, w, i, k, i, /, 2, 0, 2, 3, \_, A, r, g, e, n, t, i, n, e, \_, g, e, n, e, r, a, l, \_, e, l, e, c, t, i, o, n, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, A, r, g, e, n, t, i, n, a, ,, , /, w, i, k, i, /, 2, 0, 2, 3, \_, C, r, i, c, k, e, t, \_, W, o, r, l, d, \_, C, u, p, ,, , /, w, i, k, i, /, A, u, s, t, r, a, l, i, a, \_, n, a, t, i, o, n, a, l, \_, c, r, i, c, k, e, t, \_, t, e, a, m, ,, , /, w, i, k, i, /, I, n, d, i, a, \_, n, a, t, i, o, n, a, l, \_, c, r, i, c, k, e, t, \_, t, e, a, m, ,, , /, w, i, k, i, /, 2, 0, 2, 3, \_, C, r, i, c, k, e, t, \_, W, o, r, l, d, \_, C, u, p, \_, f, i, n, a, l, ,, , /, w, i, k, i, /, P, e, d, r, o, \_, S, %, C, 3, %, A, 1, n, c, h, e, z, ,, , /, w, i, k, i, /, 2, 0, 2, 3, \_, S, p, a, n, i, s, h, \_, g, o, v, e, r, n, m, e, n, t, \_, f, o, r, m, a, t, i, o, n, ,, , /, w, i, k, i, /, P, r, i, m, e, \_, M, i, n, i, s, t, e, r, \_, o, f, \_, S, p, a, i, n, ,, , /, w, i, k, i, /, C, a, t, a, l, a, n, \_, i, n, d, e, p, e, n, d, e, n, c, e, \_, m, o, v, e, m, e, n, t, ,, , /, w, i, k, i, /, J, o, s, e, p, h, \_, B, o, a, k, a, i, ,, , /, w, i, k, i, /, 2, 0, 2, 3, \_, L, i, b, e, r, i, a, n, \_, g, e, n, e, r, a, l, \_, e, l, e, c, t, i, o, n, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, L, i, b, e, r, i, a, ,, , /, w, i, k, i, /, G, e, o, r, g, e, \_, W, e, a, h, ,, , /, w, i, k, i, /, P, o, r, t, a, l, :, C, u, r, r, e, n, t, \_, e, v, e, n, t, s, ,, , /, w, i, k, i, /, 2, 0, 2, 3, \_, I, s, r, a, e, l, %, E, 2, %, 8, 0, %, 9, 3, H, a, m, a, s, \_, w, a, r, ,, , /, w, i, k, i, /, M, y, a, n, m, a, r, \_, c, i, v, i, l, \_, w, a, r, \_, (, 2, 0, 2, 1, %, E, 2, %, 8, 0, %, 9, 3, p, r, e, s, e, n, t, ), ,, , /, w, i, k, i, /, R, u, s, s, i, a, n, \_, i, n, v, a, s, i, o, n, \_, o, f, \_, U, k, r, a, i, n, e, ,, , /, w, i, k, i, /, T, i, m, e, l, i, n, e, \_, o, f, \_, t, h, e, \_, R, u, s, s, i, a, n, \_, i, n, v, a, s, i, o, n, \_, o, f, \_, U, k, r, a, i, n, e, \_, (, 1, \_, S, e, p, t, e, m, b, e, r, \_, 2, 0, 2, 3, \_, %, E, 2, %, 8, 0, %, 9, 3, \_, p, r, e, s, e, n, t, ), ,, , /, w, i, k, i, /, W, a, r, \_, i, n, \_, S, u, d, a, n, \_, (, 2, 0, 2, 3, ), ,, , /, w, i, k, i, /, D, e, a, t, h, s, \_, i, n, \_, 2, 0, 2, 3, ,, , /, w, i, k, i, /, R, o, s, a, l, y, n, n, \_, C, a, r, t, e, r, ,, , /, w, i, k, i, /, C, l, a, u, d, e, \_, K, a, h, n, ,, , /, w, i, k, i, /, W, o, r, t, a, \_, M, c, C, a, s, k, i, l, l, -, S, t, e, v, e, n, s, ,, , /, w, i, k, i, /, S, u, b, r, a, t, a, \_, R, o, y, ,, , /, w, i, k, i, /, T, e, n, g, i, z, \_, K, i, t, o, v, a, n, i, ,, , /, w, i, k, i, /, N, e, v, i, l, l, e, \_, G, a, r, r, i, c, k, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, I, n, \_, t, h, e, \_, n, e, w, s, /, C, a, n, d, i, d, a, t, e, s, ,, , /, w, i, k, i, /, N, o, v, e, m, b, e, r, \_, 2, 2, ,, , /, w, i, k, i, /, F, i, l, e, :, W, o, r, l, d, \_, C, h, e, s, s, \_, C, h, a, m, p, i, o, n, s, h, i, p, \_, 2, 0, 2, 1, ,, , \_, g, a, m, e, \_, 0, 7, ,, , \_, M, a, g, n, u, s, \_, C, a, r, l, s, e, n, \_, (, S, Q, -, c, r, o, p, p, e, d, ), ., j, p, g, ,, , /, w, i, k, i, /, 1, 5, 7, 4, ,, , /, w, i, k, i, /, J, u, a, n, \_, F, e, r, n, %, C, 3, %, A, 1, n, d, e, z, \_, (, e, x, p, l, o, r, e, r, ), ,, , /, w, i, k, i, /, J, u, a, n, \_, F, e, r, n, %, C, 3, %, A, 1, n, d, e, z, \_, I, s, l, a, n, d, s, ,, , /, w, i, k, i, /, 1, 7, 9, 7, ,, , /, w, i, k, i, /, G, e, i, s, e, l, \_, S, c, h, o, o, l, \_, o, f, \_, M, e, d, i, c, i, n, e, ,, , /, w, i, k, i, /, N, a, t, h, a, n, \_, S, m, i, t, h, \_, (, p, h, y, s, i, c, i, a, n, ,, , \_, b, o, r, n, \_, 1, 7, 6, 2, ), ,, , /, w, i, k, i, /, 1, 9, 6, 8, ,, , /, w, i, k, i, /, T, h, e, \_, B, e, a, t, l, e, s, ,, , /, w, i, k, i, /, T, h, e, \_, B, e, a, t, l, e, s, \_, (, a, l, b, u, m, ), ,, , /, w, i, k, i, /, 1, 9, 8, 7, ,, , /, w, i, k, i, /, M, a, x, \_, H, e, a, d, r, o, o, m, \_, s, i, g, n, a, l, \_, h, i, j, a, c, k, i, n, g, ,, , /, w, i, k, i, /, M, a, x, \_, H, e, a, d, r, o, o, m, ,, , /, w, i, k, i, /, 2, 0, 1, 3, ,, , /, w, i, k, i, /, M, a, g, n, u, s, \_, C, a, r, l, s, e, n, ,, , /, w, i, k, i, /, V, i, s, w, a, n, a, t, h, a, n, \_, A, n, a, n, d, ,, , /, w, i, k, i, /, W, o, r, l, d, \_, C, h, e, s, s, \_, C, h, a, m, p, i, o, n, s, h, i, p, \_, 2, 0, 1, 3, ,, , /, w, i, k, i, /, A, n, t, i, p, o, p, e, \_, F, e, l, i, x, \_, I, I, ,, , /, w, i, k, i, /, F, r, a, n, c, i, s, \_, W, i, l, l, u, g, h, b, y, ,, , /, w, i, k, i, /, B, i, l, l, i, e, \_, N, i, p, p, e, r, ,, , /, w, i, k, i, /, Y, u, -, c, h, i, e, n, \_, K, u, a, n, ,, , /, w, i, k, i, /, N, o, v, e, m, b, e, r, \_, 2, 1, ,, , /, w, i, k, i, /, N, o, v, e, m, b, e, r, \_, 2, 2, ,, , /, w, i, k, i, /, N, o, v, e, m, b, e, r, \_, 2, 3, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, S, e, l, e, c, t, e, d, \_, a, n, n, i, v, e, r, s, a, r, i, e, s, /, N, o, v, e, m, b, e, r, ,, , h, t, t, p, s, :, /, /, l, i, s, t, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, p, o, s, t, o, r, i, u, s, /, l, i, s, t, s, /, d, a, i, l, y, -, a, r, t, i, c, l, e, -, l, ., l, i, s, t, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, d, a, y, s, \_, o, f, \_, t, h, e, \_, y, e, a, r, ,, , /, w, i, k, i, /, F, i, l, e, :, J, F, K, \_, l, i, m, o, u, s, i, n, e, ., p, n, g, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, ,, , /, w, i, k, i, /, D, e, m, o, c, r, a, t, i, c, \_, P, a, r, t, y, \_, (, U, n, i, t, e, d, \_, S, t, a, t, e, s, ), ,, , /, w, i, k, i, /, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, o, n, g, r, e, s, s, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, i, a, l, \_, s, t, a, t, e, \_, c, a, r, \_, (, U, n, i, t, e, d, \_, S, t, a, t, e, s, ), ,, , /, w, i, k, i, /, T, h, e, \_, D, a, l, l, a, s, \_, M, o, r, n, i, n, g, \_, N, e, w, s, ,, , /, w, i, k, i, /, D, a, l, l, a, s, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, P, O, T, D, /, 2, 0, 2, 3, -, 1, 1, -, 2, 1, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, P, O, T, D, /, 2, 0, 2, 3, -, 1, 1, -, 2, 0, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, P, O, T, D, /, 2, 0, 2, 3, -, 1, 1, -, 1, 9, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, P, i, c, t, u, r, e, \_, o, f, \_, t, h, e, \_, d, a, y, /, A, r, c, h, i, v, e, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, F, e, a, t, u, r, e, d, \_, p, i, c, t, u, r, e, s, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, m, m, u, n, i, t, y, \_, p, o, r, t, a, l, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, V, i, l, l, a, g, e, \_, p, u, m, p, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, N, e, w, s, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, a, h, o, u, s, e, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, H, e, l, p, \_, d, e, s, k, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, R, e, f, e, r, e, n, c, e, \_, d, e, s, k, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, e, n, t, s, /, P, o, r, t, a, l, s, ,, , /, w, i, k, i, /, W, i, k, i, m, e, d, i, a, \_, F, o, u, n, d, a, t, i, o, n, ,, , h, t, t, p, s, :, /, /, w, i, k, i, m, e, d, i, a, f, o, u, n, d, a, t, i, o, n, ., o, r, g, /, o, u, r, -, w, o, r, k, /, w, i, k, i, m, e, d, i, a, -, p, r, o, j, e, c, t, s, /, ,, , h, t, t, p, s, :, /, /, c, o, m, m, o, n, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, c, o, m, m, o, n, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., m, e, d, i, a, w, i, k, i, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., m, e, d, i, a, w, i, k, i, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, m, e, t, a, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, m, e, t, a, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, b, o, o, k, s, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, b, o, o, k, s, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, d, a, t, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, d, a, t, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, n, e, w, s, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, n, e, w, s, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, q, u, o, t, e, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, q, u, o, t, e, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, p, e, c, i, e, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, p, e, c, i, e, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, v, e, r, s, i, t, y, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, v, e, r, s, i, t, y, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, v, o, y, a, g, e, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, v, o, y, a, g, e, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, t, i, o, n, a, r, y, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, t, i, o, n, a, r, y, ., o, r, g, /, w, i, k, i, /, ,, , /, w, i, k, i, /, E, n, g, l, i, s, h, \_, l, a, n, g, u, a, g, e, ,, , h, t, t, p, s, :, /, /, m, e, t, a, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, W, i, k, i, p, e, d, i, a, s, ,, , h, t, t, p, s, :, /, /, a, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, d, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, i, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, n, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, j, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, p, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, p, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, r, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, v, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, u, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, v, i, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, z, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, i, d, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, m, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, z, h, -, m, i, n, -, n, a, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, b, g, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, c, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, c, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, d, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, h, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, h, y, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, k, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, h, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, n, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, r, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, i, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, t, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, a, s, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, b, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, b, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, c, k, b, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, i, m, p, l, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, y, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, g, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, g, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, h, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, k, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, l, v, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, l, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, m, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, m, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, n, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, p, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, q, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, t, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, t, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, u, z, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, a, i, n, \_, P, a, g, e, &, o, l, d, i, d, =, 1, 1, 1, 4, 2, 9, 1, 1, 8, 0, ,, , h, t, t, p, s, :, /, /, a, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, b, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, b, g, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, b, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, c, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, c, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, d, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, d, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, e, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, g, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, k, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, h, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, i, d, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, i, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, h, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, k, a, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, l, v, ., w, i, k, 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, h, t, t, p, s, :, /, /, r, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, r, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, i, m, p, l, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, f, i, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, s, v, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, t, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, t, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, u, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, v, i, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , h, t, t, p, s, :, /, /, z, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, x, t, \_, o, f, \_, t, h, e, \_, C, r, e, a, t, i, v, e, \_, C, o, m, m, o, n, s, \_, A, t, t, r, i, b, u, t, i, o, n, -, S, h, a, r, e, A, l, i, k, e, \_, 4, ., 0, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, L, i, c, e, n, s, e, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, x, t, \_, o, f, \_, t, h, e, \_, C, r, e, a, t, i, v, e, \_, C, o, m, m, o, n, s, \_, A, t, t, r, i, b, u, t, i, o, n, -, S, h, a, r, e, A, l, i, k, e, \_, 4, ., 0, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, L, i, c, e, n, s, e, ,, , /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, T, e, r, m, s, \_, o, f, \_, U, s, e, ,, , /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, P, r, i, v, a, c, y, \_, p, o, l, i, c, y, ,, , /, /, w, w, w, ., w, i, k, i, m, e, d, i, a, f, o, u, n, d, a, t, i, o, n, ., o, r, g, /, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, L, a, n, g, u, a, g, e, /, P, o, l, i, c, y, :, P, r, i, v, a, c, y, \_, p, o, l, i, c, y, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, A, b, o, u, t, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, G, e, n, e, r, a, l, \_, d, i, s, c, l, a, i, m, e, r, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, a, c, t, \_, u, s, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, L, a, n, g, u, a, g, e, /, P, o, l, i, c, y, :, U, n, i, v, e, r, s, a, l, \_, C, o, d, e, \_, o, f, \_, C, o, n, d, u, c, t, ,, , h, t, t, p, s, :, /, /, d, e, v, e, l, o, p, e, r, ., w, i, k, i, m, e, d, i, a, ., o, r, g, ,, , h, t, t, p, s, :, /, /, s, t, a, t, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, #, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, L, a, n, g, u, a, g, e, /, P, o, l, i, c, y, :, C, o, o, k, i, e, \_, s, t, a, t, e, m, e, n, t, ,, , /, /, e, n, ., m, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, a, i, n, \_, P, a, g, e, &, m, o, b, i, l, e, a, c, t, i, o, n, =, t, o, g, g, l, e, \_, v, i, e, w, \_, m, o, b, i, l, e, ,, , h, t, t, p, s, :, /, /, w, i, k, i, m, e, d, i, a, f, o, u, n, d, a, t, i, o, n, ., o, r, g, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., m, e, d, i, a, w, i, k, i, ., o, r, g, /, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, i, c, o, n, s, /, w, i, k, i, p, e, d, i, a, ., p, n, g, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, m, o, b, i, l, e, /, c, o, p, y, r, i, g, h, t, /, w, i, k, i, p, e, d, i, a, -, w, o, r, d, m, a, r, k, -, e, n, ., s, v, g, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, m, o, b, i, l, e, /, c, o, p, y, r, i, g, h, t, /, w, i, k, i, p, e, d, i, a, -, t, a, g, l, i, n, e, -, e, n, ., s, v, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 9, /, 9, 9, /, J, F, K, \_, W, H, P, O, ., t, i, f, /, l, o, s, s, y, -, p, a, g, e, 1, -, 1, 2, 4, p, x, -, J, F, K, \_, W, H, P, O, ., t, i, f, ., j, p, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, d, /, d, 2, /, I, m, a, g, e, \_, o, f, \_, D, e, s, h, o, n, g, \_, A, r, t, \_, M, u, s, e, u, m, \_, f, r, o, m, \_, T, h, e, \_, A, r, c, h, i, t, e, c, t, u, r, a, l, \_, R, e, v, i, e, w, \_, M, a, g, a, z, i, n, e, ., p, n, g, /, 1, 6, 2, p, x, -, I, m, a, g, e, \_, o, f, \_, D, e, s, h, o, n, g, \_, A, r, t, \_, M, u, s, e, u, m, \_, f, r, o, m, \_, T, h, e, \_, A, r, c, h, i, t, e, c, t, u, r, a, l, \_, R, e, v, i, e, w, \_, M, a, g, a, z, i, n, e, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, d, /, d, a, /, J, a, v, i, e, r, \_, M, i, l, e, i, \_, V, I, V, A, 2, 2, \_, %, 2, 8, c, r, o, p, p, e, d, %, 2, 9, ., j, p, g, /, 1, 2, 5, p, x, -, J, a, v, i, e, r, \_, M, i, l, e, i, \_, V, I, V, A, 2, 2, \_, %, 2, 8, c, r, o, p, p, e, d, %, 2, 9, ., j, p, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, a, /, a, 3, /, W, o, r, l, d, \_, C, h, e, s, s, \_, C, h, a, m, p, i, o, n, s, h, i, p, \_, 2, 0, 2, 1, %, 2, C, \_, g, a, m, e, \_, 0, 7, %, 2, C, \_, M, a, g, n, u, s, \_, C, a, r, l, s, e, n, \_, %, 2, 8, S, Q, -, c, r, o, p, p, e, d, %, 2, 9, ., j, p, g, /, 1, 4, 0, p, x, -, W, o, r, l, d, \_, C, h, e, s, s, \_, C, h, a, m, p, i, o, n, s, h, i, p, \_, 2, 0, 2, 1, %, 2, C, \_, g, a, m, e, \_, 0, 7, %, 2, C, \_, M, a, g, n, u, s, \_, C, a, r, l, s, e, n, \_, %, 2, 8, S, Q, -, c, r, o, p, p, e, d, %, 2, 9, ., j, p, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 5, /, 5, c, /, J, F, K, \_, l, i, m, o, u, s, i, n, e, ., p, n, g, /, 4, 0, 0, p, x, -, J, F, K, \_, l, i, m, o, u, s, i, n, e, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, e, n, /, t, h, u, m, b, /, 4, /, 4, a, /, C, o, m, m, o, n, s, -, l, o, g, o, ., s, v, g, /, 3, 1, p, x, -, C, o, m, m, o, n, s, -, l, o, g, o, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, a, /, a, 6, /, M, e, d, i, a, W, i, k, i, -, 2, 0, 2, 0, -, i, c, o, n, ., s, v, g, /, 3, 5, p, x, -, M, e, d, i, a, W, i, k, i, -, 2, 0, 2, 0, -, i, c, o, n, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 7, /, 7, 5, /, W, i, k, i, m, e, d, i, a, \_, C, o, m, m, u, n, i, t, y, \_, L, o, g, o, ., s, v, g, /, 3, 5, p, x, -, W, i, k, i, m, e, d, i, a, \_, C, o, m, m, u, n, i, t, y, \_, L, o, g, o, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, 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u, o, t, e, -, l, o, g, o, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 4, /, 4, c, /, W, i, k, i, s, o, u, r, c, e, -, l, o, g, o, ., s, v, g, /, 3, 5, p, x, -, W, i, k, i, s, o, u, r, c, e, -, l, o, g, o, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, d, /, d, f, /, W, i, k, i, s, p, e, c, i, e, s, -, l, o, g, o, ., s, v, g, /, 3, 5, p, x, -, W, i, k, i, s, p, e, c, i, e, s, -, l, o, g, o, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 0, /, 0, b, /, W, i, k, i, v, e, r, s, i, t, y, \_, l, o, g, o, \_, 2, 0, 1, 7, ., s, v, g, /, 4, 1, p, x, -, W, i, k, i, v, e, r, s, i, t, y, \_, l, o, g, o, \_, 2, 0, 1, 7, ., s, v, g, 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t, t, o, n, ., p, n, g, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, f, o, o, t, e, r, /, p, o, w, e, r, e, d, b, y, \_, m, e, d, i, a, w, i, k, i, \_, 8, 8, x, 3, 1, ., p, n, g, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, a, c, t, \_, u, s, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, a, i, n, \_, P, a, g, e, &, o, l, d, i, d, =, 1, 1, 1, 4, 2, 9, 1, 1, 8, 0, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, x, t, \_, o, f, \_, t, h, e, \_, C, r, e, a, t, i, v, e, \_, C, o, m, m, o, n, s, \_, A, t, t, r, i, b, u, t, i, o, n, -, S, h, a, r, e, A, l, i, k, e, \_, 4, ., 0, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, L, i, c, e, n, s, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, x, t, \_, o, f, \_, t, h, e, \_, C, r, e, a, t, i, v, e, \_, C, o, m, m, o, n, s, \_, A, t, t, r, i, b, u, t, i, o, n, -, S, h, a, r, e, A, l, i, k, e, \_, 4, ., 0, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, L, i, c, e, n, s, e, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, a, c, t, \_, u, s

# URL: https://en.wikipedia.org/wiki/Assassination\_of\_John\_F.\_Kennedy

Title: Assassination of John F. Kennedy - Wikipedia

Content: <!DOCTYPE html><html class="client-nojs vector-feature-language-in-header-enabled vector-feature-language-in-main-page-header-disabled vector-feature-sticky-header-disabled vector-feature-page-tools-pinned-disabled vector-feature-toc-pinned-clientpref-1 vector-feature-main-menu-pinned-disabled vector-feature-limited-width-clientpref-1 vector-feature-limited-width-content-enabled vector-feature-zebra-design-disabled vector-feature-custom-font-size-clientpref-0 vector-feature-client-preferences-disabled vector-feature-typography-survey-disabled vector-toc-available" lang="en" dir="ltr"><head><meta charset="UTF-8"><title>Assassination of John F. Kennedy - Wikipedia</title><script>(function(){var className="client-js vector-feature-language-in-header-enabled vector-feature-language-in-main-page-header-disabled vector-feature-sticky-header-disabled vector-feature-page-tools-pinned-disabled vector-feature-toc-pinned-clientpref-1 vector-feature-main-menu-pinned-disabled vector-feature-limited-width-clientpref-1 vector-feature-limited-width-content-enabled vector-feature-zebra-design-disabled vector-feature-custom-font-size-clientpref-0 vector-feature-client-preferences-disabled vector-feature-typography-survey-disabled vector-toc-available";var cookie=document.cookie.match(/(?:^|; )enwikimwclientpreferences=([^;]+)/);if(cookie){cookie[1].split('%2C').forEach(function(pref){className=className.replace(new RegExp('(^| )'+pref.replace(/-clientpref-\w+$|[^\w-]+/g,'')+'-clientpref-\\w+( |$)'),'$1'+pref+'$2');});}document.documentElement.className=className;}());RLCONF={"wgBreakFrames":false,"wgSeparatorTransformTable":["",""],"wgDigitTransformTable":["",""],"wgDefaultDateFormat":"dmy","wgMonthNames":["","January","February","March","April","May","June","July","August","September","October","November","December"],"wgRequestId":"4fc0dfcf-e72a-4db1-ac99-ee7674389c24","wgCanonicalNamespace":"","wgCanonicalSpecialPageName":false,"wgNamespaceNumber":0,"wgPageName":"Assassination\_of\_John\_F.\_Kennedy","wgTitle":"Assassination of John F. 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Kennedy","1963 in American politics","1963 in Texas","1963 murders in the United States","1960s in Dallas","Assassinations","Deaths by firearm in Texas","Deaths by person in Texas","Filmed assassinations","Filmed deaths in the United States","Murder in Dallas","November 1963 events in the United States","Political violence","Political violence in the United States"],"wgPageViewLanguage":"en","wgPageContentLanguage":"en","wgPageContentModel":"wikitext","wgRelevantPageName":"Assassination\_of\_John\_F.\_Kennedy","wgRelevantArticleId":286369,"wgIsProbablyEditable":false,"wgRelevantPageIsProbablyEditable":false,"wgRestrictionEdit":["autoconfirmed"],"wgRestrictionMove":["sysop"],"wgNoticeProject":"wikipedia","wgFlaggedRevsParams":{"tags":{"status":{"levels":1}}},"wgMediaViewerOnClick":true,"wgMediaViewerEnabledByDefault":true,"wgPopupsFlags":6,"wgVisualEditor":{"pageLanguageCode":"en","pageLanguageDir":"ltr","pageVariantFallbacks":"en"},"wgMFDisplayWikibaseDescriptions":{"search":true,"watchlist":true,"tagline":false,"nearby":true},"wgWMESchemaEditAttemptStepOversample":false,"wgWMEPageLength":200000,"wgULSCurrentAutonym":"English","wgCentralAuthMobileDomain":false,"wgEditSubmitButtonLabelPublish":true,"wgULSPosition":"interlanguage","wgULSisCompactLinksEnabled":true,"wgULSisLanguageSelectorEmpty":false,"wgWikibaseItemId":"Q193484","wgCheckUserClientHintsHeadersJsApi":["architecture","bitness","brands","fullVersionList","mobile","model","platform","platformVersion"],"GEHomepageSuggestedEditsEnableTopics":true,"wgGETopicsMatchModeEnabled":false,"wgGEStructuredTaskRejectionReasonTextInputEnabled":false,"wgGELevelingUpEnabledForUser":false};RLSTATE={"skins.vector.user.styles":"ready","ext.globalCssJs.user.styles":"ready","site.styles":"ready","user.styles":"ready","skins.vector.user":"ready","ext.globalCssJs.user":"ready","user":"ready","user.options":"loading","ext.cite.styles":"ready","ext.tmh.player.styles":"ready","codex-search-styles":"ready","skins.vector.styles":"ready","skins.vector.icons":"ready","jquery.makeCollapsible.styles":"ready","ext.visualEditor.desktopArticleTarget.noscript":"ready","ext.uls.interlanguage":"ready","wikibase.client.init":"ready","ext.wikimediaBadges":"ready"};RLPAGEMODULES=["ext.cite.ux-enhancements","mediawiki.page.media","ext.tmh.player","site","mediawiki.page.ready","jquery.makeCollapsible","mediawiki.toc","skins.vector.js","ext.centralNotice.geoIP","ext.centralNotice.startUp","ext.gadget.ReferenceTooltips","ext.gadget.switcher","ext.urlShortener.toolbar","ext.centralauth.centralautologin","mmv.head","mmv.bootstrap.autostart","ext.popups","ext.visualEditor.desktopArticleTarget.init","ext.visualEditor.targetLoader","ext.echo.centralauth","ext.eventLogging","ext.wikimediaEvents","ext.navigationTiming","ext.uls.compactlinks","ext.uls.interface","ext.cx.eventlogging.campaigns","ext.cx.uls.quick.actions","wikibase.client.vector-2022","ext.checkUser.clientHints","ext.quicksurveys.init","ext.growthExperiments.SuggestedEditSession"];</script><script>(RLQ=window.RLQ||[]).push(function(){mw.loader.impl(function(){return["user.options@12s5i",function($,jQuery,require,module){mw.user.tokens.set({"patrolToken":"+\\","watchToken":"+\\","csrfToken":"+\\"});}];});});</script><link rel="stylesheet" href="/w/load.php?lang=en&amp;modules=codex-search-styles%7Cext.cite.styles%7Cext.tmh.player.styles%7Cext.uls.interlanguage%7Cext.visualEditor.desktopArticleTarget.noscript%7Cext.wikimediaBadges%7Cjquery.makeCollapsible.styles%7Cskins.vector.icons%2Cstyles%7Cwikibase.client.init&amp;only=styles&amp;skin=vector-2022"><script async="" src="/w/load.php?lang=en&amp;modules=startup&amp;only=scripts&amp;raw=1&amp;skin=vector-2022"></script><meta name="ResourceLoaderDynamicStyles" content=""><link rel="stylesheet" href="/w/load.php?lang=en&amp;modules=site.styles&amp;only=styles&amp;skin=vector-2022"><meta name="generator" content="MediaWiki 1.42.0-wmf.5"><meta name="referrer" content="origin"><meta name="referrer" content="origin-when-cross-origin"><meta name="robots" content="max-image-preview:standard"><meta name="format-detection" content="telephone=no"><meta property="og:image" content="https://upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/1200px-JFK\_limousine.png"><meta property="og:image:width" content="1200"><meta property="og:image:height" content="900"><meta property="og:image" content="https://upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/800px-JFK\_limousine.png"><meta property="og:image:width" content="800"><meta property="og:image:height" content="600"><meta property="og:image" content="https://upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/640px-JFK\_limousine.png"><meta property="og:image:width" content="640"><meta property="og:image:height" content="480"><meta name="viewport" content="width=1000"><meta property="og:title" content="Assassination of John F. Kennedy - Wikipedia"><meta property="og:type" content="website"><link rel="preconnect" href="//upload.wikimedia.org"><link rel="alternate" media="only screen and (max-width: 720px)" href="//en.m.wikipedia.org/wiki/Assassination\_of\_John\_F.\_Kennedy"><link rel="apple-touch-icon" href="/static/apple-touch/wikipedia.png"><link rel="icon" href="/static/favicon/wikipedia.ico"><link rel="search" type="application/opensearchdescription+xml" href="/w/opensearch\_desc.php" title="Wikipedia (en)"><link rel="EditURI" type="application/rsd+xml" href="//en.wikipedia.org/w/api.php?action=rsd"><link rel="canonical" href="https://en.wikipedia.org/wiki/Assassination\_of\_John\_F.\_Kennedy"><link rel="license" href="https://creativecommons.org/licenses/by-sa/4.0/deed.en"><link rel="alternate" type="application/atom+xml" title="Wikipedia Atom feed" href="/w/index.php?title=Special:RecentChanges&amp;feed=atom"><link rel="dns-prefetch" href="//meta.wikimedia.org" /><link rel="dns-prefetch" href="//login.wikimedia.org"></head><body class="skin-vector skin-vector-search-vue mediawiki ltr sitedir-ltr mw-hide-empty-elt ns-0 ns-subject page-Assassination\_of\_John\_F\_Kennedy rootpage-Assassination\_of\_John\_F\_Kennedy skin-vector-2022 action-view"><a class="mw-jump-link" href="#bodyContent">Jump to content</a><div class="vector-header-container"><header class="vector-header mw-header"><div class="vector-header-start"><nav class="vector-main-menu-landmark" aria-label="Site" role="navigation"><div id="vector-main-menu-dropdown" class="vector-dropdown vector-main-menu-dropdown vector-button-flush-left vector-button-flush-right" ><input type="checkbox" id="vector-main-menu-dropdown-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-main-menu-dropdown" class="vector-dropdown-checkbox " aria-label="Main menu" ><label id="vector-main-menu-dropdown-label" for="vector-main-menu-dropdown-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only " aria-hidden="true" ><span class="vector-icon mw-ui-icon-menu mw-ui-icon-wikimedia-menu"></span><span class="vector-dropdown-label-text">Main menu</span></label><div class="vector-dropdown-content"><div id="vector-main-menu-unpinned-container" class="vector-unpinned-container"><div id="vector-main-menu" class="vector-main-menu vector-pinnable-element"><divclass="vector-pinnable-header vector-main-menu-pinnable-header vector-pinnable-header-unpinned"data-feature-name="main-menu-pinned"data-pinnable-element-id="vector-main-menu"data-pinned-container-id="vector-main-menu-pinned-container"data-unpinned-container-id="vector-main-menu-unpinned-container"><div class="vector-pinnable-header-label">Main menu</div><button class="vector-pinnable-header-toggle-button vector-pinnable-header-pin-button" data-event-name="pinnable-header.vector-main-menu.pin">move to sidebar</button><button class="vector-pinnable-header-toggle-button vector-pinnable-header-unpin-button" data-event-name="pinnable-header.vector-main-menu.unpin">hide</button></div><div id="p-navigation" class="vector-menu mw-portlet mw-portlet-navigation" ><div class="vector-menu-heading">Navigation</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="n-mainpage-description" class="mw-list-item"><a href="/wiki/Main\_Page" title="Visit the main page [z]" accesskey="z"><span>Main page</span></a></li><li id="n-contents" class="mw-list-item"><a href="/wiki/Wikipedia:Contents" title="Guides to browsing Wikipedia"><span>Contents</span></a></li><li id="n-currentevents" class="mw-list-item"><a href="/wiki/Portal:Current\_events" title="Articles related to current events"><span>Current events</span></a></li><li id="n-randompage" class="mw-list-item"><a href="/wiki/Special:Random" title="Visit a randomly selected article [x]" accesskey="x"><span>Random article</span></a></li><li id="n-aboutsite" class="mw-list-item"><a href="/wiki/Wikipedia:About" title="Learn about Wikipedia and how it works"><span>About Wikipedia</span></a></li><li id="n-contactpage" class="mw-list-item"><a href="//en.wikipedia.org/wiki/Wikipedia:Contact\_us" title="How to contact Wikipedia"><span>Contact us</span></a></li><li id="n-sitesupport" class="mw-list-item"><a href="https://donate.wikimedia.org/wiki/Special:FundraiserRedirector?utm\_source=donate&amp;utm\_medium=sidebar&amp;utm\_campaign=C13\_en.wikipedia.org&amp;uselang=en" title="Support us by donating to the Wikimedia Foundation"><span>Donate</span></a></li></ul></div></div><div id="p-interaction" class="vector-menu mw-portlet mw-portlet-interaction" ><div class="vector-menu-heading">Contribute</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="n-help" class="mw-list-item"><a href="/wiki/Help:Contents" title="Guidance on how to use and edit Wikipedia"><span>Help</span></a></li><li id="n-introduction" class="mw-list-item"><a href="/wiki/Help:Introduction" title="Learn how to edit Wikipedia"><span>Learn to edit</span></a></li><li id="n-portal" class="mw-list-item"><a href="/wiki/Wikipedia:Community\_portal" title="The hub for editors"><span>Community portal</span></a></li><li id="n-recentchanges" class="mw-list-item"><a href="/wiki/Special:RecentChanges" title="A list of recent changes to Wikipedia [r]" accesskey="r"><span>Recent changes</span></a></li><li id="n-upload" class="mw-list-item"><a href="/wiki/Wikipedia:File\_upload\_wizard" title="Add images or other media for use on Wikipedia"><span>Upload file</span></a></li></ul></div></div><div class="vector-main-menu-action vector-main-menu-action-lang-alert"><div class="vector-main-menu-action-item"><div class="vector-main-menu-action-heading vector-menu-heading">Languages</div><div class="vector-main-menu-action-content vector-menu-content"><div class="mw-message-box cdx-message cdx-message--block mw-message-box-notice cdx-message--notice vector-language-sidebar-alert"><span class="cdx-message\_\_icon"></span><div class="cdx-message\_\_content">Language links are at the top of the page across from the title.</div></div></div></div></div></div></div></div></div></nav><a href="/wiki/Main\_Page" class="mw-logo"><img class="mw-logo-icon" src="/static/images/icons/wikipedia.png" alt="" aria-hidden="true" height="50" width="50"><span class="mw-logo-container"><img class="mw-logo-wordmark" alt="Wikipedia" src="/static/images/mobile/copyright/wikipedia-wordmark-en.svg" style="width: 7.5em; height: 1.125em;"><img class="mw-logo-tagline" alt="The Free Encyclopedia" src="/static/images/mobile/copyright/wikipedia-tagline-en.svg" width="117" height="13" style="width: 7.3125em; height: 0.8125em;"></span></a></div><div class="vector-header-end"><div id="p-search" role="search" class="vector-search-box-vue vector-search-box-collapses vector-search-box-show-thumbnail vector-search-box-auto-expand-width vector-search-box"><a href="/wiki/Special:Search" class="cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only search-toggle" id="" title="Search Wikipedia [f]" accesskey="f"><span class="vector-icon mw-ui-icon-search mw-ui-icon-wikimedia-search"></span><span>Search</span></a><div class="vector-typeahead-search-container"><div class="cdx-typeahead-search cdx-typeahead-search--show-thumbnail cdx-typeahead-search--auto-expand-width"><form action="/w/index.php" id="searchform" class="cdx-search-input cdx-search-input--has-end-button"><div id="simpleSearch" class="cdx-search-input\_\_input-wrapper" data-search-loc="header-moved"><div class="cdx-text-input cdx-text-input--has-start-icon"><inputclass="cdx-text-input\_\_input" type="search" name="search" placeholder="Search Wikipedia" aria-label="Search Wikipedia" autocapitalize="sentences" title="Search Wikipedia [f]" accesskey="f" id="searchInput"><span class="cdx-text-input\_\_icon cdx-text-input\_\_start-icon"></span></div><input type="hidden" name="title" value="Special:Search"></div><button class="cdx-button cdx-search-input\_\_end-button">Search</button></form></div></div></div><nav class="vector-user-links vector-user-links-wide" aria-label="Personal tools" role="navigation" ><div class="vector-user-links-main"><div id="p-vector-user-menu-preferences" class="vector-menu mw-portlet emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div><div id="p-vector-user-menu-userpage" class="vector-menu mw-portlet emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div><div id="p-vector-user-menu-notifications" class="vector-menu mw-portlet emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div><div id="p-vector-user-menu-overflow" class="vector-menu mw-portlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="pt-createaccount-2" class="user-links-collapsible-item mw-list-item user-links-collapsible-item"><a data-mw="interface" href="/w/index.php?title=Special:CreateAccount&amp;returnto=Assassination+of+John+F.+Kennedy" title="You are encouraged to create an account and log in; however, it is not mandatory" class=""><span>Create account</span></a></li><li id="pt-login-2" class="user-links-collapsible-item mw-list-item user-links-collapsible-item"><a data-mw="interface" href="/w/index.php?title=Special:UserLogin&amp;returnto=Assassination+of+John+F.+Kennedy" title="You&#039;re encouraged to log in; however, it&#039;s not mandatory. [o]" accesskey="o" class=""><span>Log in</span></a></li></ul></div></div></div><div id="vector-user-links-dropdown" class="vector-dropdown vector-user-menu vector-button-flush-right vector-user-menu-logged-out" title="Log in and more options" ><input type="checkbox" id="vector-user-links-dropdown-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-user-links-dropdown" class="vector-dropdown-checkbox " aria-label="Personal tools" ><label id="vector-user-links-dropdown-label" for="vector-user-links-dropdown-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only " aria-hidden="true" ><span class="vector-icon mw-ui-icon-ellipsis mw-ui-icon-wikimedia-ellipsis"></span><span class="vector-dropdown-label-text">Personal tools</span></label><div class="vector-dropdown-content"><div id="p-personal" class="vector-menu mw-portlet mw-portlet-personal user-links-collapsible-item" title="User menu" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="pt-createaccount" class="user-links-collapsible-item mw-list-item"><a href="/w/index.php?title=Special:CreateAccount&amp;returnto=Assassination+of+John+F.+Kennedy" title="You are encouraged to create an account and log in; however, it is not mandatory"><span class="vector-icon mw-ui-icon-userAdd mw-ui-icon-wikimedia-userAdd"></span> <span>Create account</span></a></li><li id="pt-login" class="user-links-collapsible-item mw-list-item"><a href="/w/index.php?title=Special:UserLogin&amp;returnto=Assassination+of+John+F.+Kennedy" title="You&#039;re encouraged to log in; however, it&#039;s not mandatory. [o]" accesskey="o"><span class="vector-icon mw-ui-icon-logIn mw-ui-icon-wikimedia-logIn"></span> <span>Log in</span></a></li></ul></div></div><div id="p-user-menu-anon-editor" class="vector-menu mw-portlet mw-portlet-user-menu-anon-editor" ><div class="vector-menu-heading">Pages for logged out editors <a href="/wiki/Help:Introduction" aria-label="Learn more about editing"><span>learn more</span></a></div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="pt-anoncontribs" class="mw-list-item"><a href="/wiki/Special:MyContributions" title="A list of edits made from this IP address [y]" accesskey="y"><span>Contributions</span></a></li><li id="pt-anontalk" class="mw-list-item"><a href="/wiki/Special:MyTalk" title="Discussion about edits from this IP address [n]" accesskey="n"><span>Talk</span></a></li></ul></div></div></div></div></nav></div></header></div><div class="mw-page-container"><div class="mw-page-container-inner"><div class="vector-sitenotice-container"><div id="siteNotice"><!-- CentralNotice --></div></div><div class="vector-main-menu-container"><div id="mw-navigation"><nav id="mw-panel" class="vector-main-menu-landmark" aria-label="Site" role="navigation"><div id="vector-main-menu-pinned-container" class="vector-pinned-container"></div></nav></div></div><nav id="mw-panel-toc" role="navigation" aria-label="Contents" data-event-name="ui.sidebar-toc" class="mw-table-of-contents-container vector-toc-landmark vector-sticky-pinned-container"><div id="vector-toc-pinned-container" class="vector-pinned-container"><div id="vector-toc" class="vector-toc vector-pinnable-element"><divclass="vector-pinnable-header vector-toc-pinnable-header vector-pinnable-header-pinned"data-feature-name="toc-pinned"data-pinnable-element-id="vector-toc"><h2 class="vector-pinnable-header-label">Contents</h2><button class="vector-pinnable-header-toggle-button vector-pinnable-header-pin-button" data-event-name="pinnable-header.vector-toc.pin">move to sidebar</button><button class="vector-pinnable-header-toggle-button vector-pinnable-header-unpin-button" data-event-name="pinnable-header.vector-toc.unpin">hide</button></div><ul class="vector-toc-contents" id="mw-panel-toc-list"><li id="toc-mw-content-text"class="vector-toc-list-item vector-toc-level-1"><a href="#" class="vector-toc-link"><div class="vector-toc-text">(Top)</div></a></li><li id="toc-Background"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Background"><div class="vector-toc-text"><span class="vector-toc-numb">1</span>Background</div></a><button aria-controls="toc-Background-sublist" class="cdx-button cdx-button--weight-quiet cdx-button--icon-only vector-toc-toggle"><span class="vector-icon vector-icon--x-small mw-ui-icon-wikimedia-expand"></span><span>Toggle Background subsection</span></button><ul id="toc-Background-sublist" class="vector-toc-list"><li id="toc-Kennedy"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Kennedy"><div class="vector-toc-text"><span class="vector-toc-numb">1.1</span>Kennedy</div></a><ul id="toc-Kennedy-sublist" class="vector-toc-list"></ul></li><li id="toc-Oswald"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Oswald"><div class="vector-toc-text"><span class="vector-toc-numb">1.2</span>Oswald</div></a><ul id="toc-Oswald-sublist" class="vector-toc-list"></ul></li></ul></li><li id="toc-November\_22"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#November\_22"><div class="vector-toc-text"><span class="vector-toc-numb">2</span>November 22</div></a><button aria-controls="toc-November\_22-sublist" class="cdx-button cdx-button--weight-quiet cdx-button--icon-only vector-toc-toggle"><span class="vector-icon vector-icon--x-small mw-ui-icon-wikimedia-expand"></span><span>Toggle November 22 subsection</span></button><ul id="toc-November\_22-sublist" class="vector-toc-list"><li id="toc-Kennedy&#039;s\_arrival\_in\_Dallas\_and\_route\_to\_Dealey\_Plaza"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Kennedy&#039;s\_arrival\_in\_Dallas\_and\_route\_to\_Dealey\_Plaza"><div class="vector-toc-text"><span class="vector-toc-numb">2.1</span>Kennedy's arrival in Dallas and route to Dealey Plaza</div></a><ul id="toc-Kennedy&#039;s\_arrival\_in\_Dallas\_and\_route\_to\_Dealey\_Plaza-sublist" class="vector-toc-list"></ul></li><li id="toc-Shooting"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Shooting"><div class="vector-toc-text"><span class="vector-toc-numb">2.2</span>Shooting</div></a><ul id="toc-Shooting-sublist" class="vector-toc-list"></ul></li><li id="toc-Aftermath\_in\_Dealey\_Plaza"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Aftermath\_in\_Dealey\_Plaza"><div class="vector-toc-text"><span class="vector-toc-numb">2.3</span>Aftermath in Dealey Plaza</div></a><ul id="toc-Aftermath\_in\_Dealey\_Plaza-sublist" class="vector-toc-list"></ul></li><li id="toc-Oswald&#039;s\_flight,\_killing\_of\_J.\_D.\_Tippit,\_and\_arrest"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Oswald&#039;s\_flight,\_killing\_of\_J.\_D.\_Tippit,\_and\_arrest"><div class="vector-toc-text"><span class="vector-toc-numb">2.4</span>Oswald's flight, killing of J. D. Tippit, and arrest</div></a><ul id="toc-Oswald&#039;s\_flight,\_killing\_of\_J.\_D.\_Tippit,\_and\_arrest-sublist" class="vector-toc-list"></ul></li><li id="toc-Kennedy\_declared\_dead;\_Johnson\_sworn\_in"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Kennedy\_declared\_dead;\_Johnson\_sworn\_in"><div class="vector-toc-text"><span class="vector-toc-numb">2.5</span>Kennedy declared dead; Johnson sworn in</div></a><ul id="toc-Kennedy\_declared\_dead;\_Johnson\_sworn\_in-sublist" class="vector-toc-list"></ul></li></ul></li><li id="toc-Immediate\_aftermath"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Immediate\_aftermath"><div class="vector-toc-text"><span class="vector-toc-numb">3</span>Immediate aftermath</div></a><button aria-controls="toc-Immediate\_aftermath-sublist" class="cdx-button cdx-button--weight-quiet cdx-button--icon-only vector-toc-toggle"><span class="vector-icon vector-icon--x-small mw-ui-icon-wikimedia-expand"></span><span>Toggle Immediate aftermath subsection</span></button><ul id="toc-Immediate\_aftermath-sublist" class="vector-toc-list"><li id="toc-Autopsy"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Autopsy"><div class="vector-toc-text"><span class="vector-toc-numb">3.1</span>Autopsy</div></a><ul id="toc-Autopsy-sublist" class="vector-toc-list"></ul></li><li id="toc-Funeral"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Funeral"><div class="vector-toc-text"><span class="vector-toc-numb">3.2</span>Funeral</div></a><ul id="toc-Funeral-sublist" class="vector-toc-list"></ul></li><li id="toc-Killing\_of\_Oswald"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Killing\_of\_Oswald"><div class="vector-toc-text"><span class="vector-toc-numb">3.3</span>Killing of Oswald</div></a><ul id="toc-Killing\_of\_Oswald-sublist" class="vector-toc-list"></ul></li></ul></li><li id="toc-Films\_and\_photographs\_of\_the\_assassination"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Films\_and\_photographs\_of\_the\_assassination"><div class="vector-toc-text"><span class="vector-toc-numb">4</span>Films and photographs of the assassination</div></a><ul id="toc-Films\_and\_photographs\_of\_the\_assassination-sublist" class="vector-toc-list"></ul></li><li id="toc-Official\_investigations"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Official\_investigations"><div class="vector-toc-text"><span class="vector-toc-numb">5</span>Official investigations</div></a><button aria-controls="toc-Official\_investigations-sublist" class="cdx-button cdx-button--weight-quiet cdx-button--icon-only vector-toc-toggle"><span class="vector-icon vector-icon--x-small mw-ui-icon-wikimedia-expand"></span><span>Toggle Official investigations subsection</span></button><ul id="toc-Official\_investigations-sublist" class="vector-toc-list"><li id="toc-Dallas\_Police"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Dallas\_Police"><div class="vector-toc-text"><span class="vector-toc-numb">5.1</span>Dallas Police</div></a><ul id="toc-Dallas\_Police-sublist" class="vector-toc-list"></ul></li><li id="toc-FBI\_investigation"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#FBI\_investigation"><div class="vector-toc-text"><span class="vector-toc-numb">5.2</span>FBI investigation</div></a><ul id="toc-FBI\_investigation-sublist" class="vector-toc-list"></ul></li><li id="toc-Warren\_Commission"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Warren\_Commission"><div class="vector-toc-text"><span class="vector-toc-numb">5.3</span>Warren Commission</div></a><ul id="toc-Warren\_Commission-sublist" class="vector-toc-list"></ul></li><li id="toc-Trial\_of\_Clay\_Shaw"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Trial\_of\_Clay\_Shaw"><div class="vector-toc-text"><span class="vector-toc-numb">5.4</span>Trial of Clay Shaw</div></a><ul id="toc-Trial\_of\_Clay\_Shaw-sublist" class="vector-toc-list"></ul></li><li id="toc-Ramsey\_Clark\_Panel"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Ramsey\_Clark\_Panel"><div class="vector-toc-text"><span class="vector-toc-numb">5.5</span>Ramsey Clark Panel</div></a><ul id="toc-Ramsey\_Clark\_Panel-sublist" class="vector-toc-list"></ul></li><li id="toc-Rockefeller\_Commission"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Rockefeller\_Commission"><div class="vector-toc-text"><span class="vector-toc-numb">5.6</span>Rockefeller Commission</div></a><ul id="toc-Rockefeller\_Commission-sublist" class="vector-toc-list"></ul></li><li id="toc-Church\_Committee"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Church\_Committee"><div class="vector-toc-text"><span class="vector-toc-numb">5.7</span>Church Committee</div></a><ul id="toc-Church\_Committee-sublist" class="vector-toc-list"></ul></li><li id="toc-United\_States\_House\_Select\_Committee\_on\_Assassinations"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#United\_States\_House\_Select\_Committee\_on\_Assassinations"><div class="vector-toc-text"><span class="vector-toc-numb">5.8</span>United States House Select Committee on Assassinations</div></a><ul id="toc-United\_States\_House\_Select\_Committee\_on\_Assassinations-sublist" class="vector-toc-list"></ul></li><li id="toc-JFK\_Act\_and\_Assassination\_Records\_Review\_Board"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#JFK\_Act\_and\_Assassination\_Records\_Review\_Board"><div class="vector-toc-text"><span class="vector-toc-numb">5.9</span>JFK Act and Assassination Records Review Board</div></a><ul id="toc-JFK\_Act\_and\_Assassination\_Records\_Review\_Board-sublist" class="vector-toc-list"></ul></li></ul></li><li id="toc-Conspiracy\_theories"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Conspiracy\_theories"><div class="vector-toc-text"><span class="vector-toc-numb">6</span>Conspiracy theories</div></a><ul id="toc-Conspiracy\_theories-sublist" class="vector-toc-list"></ul></li><li id="toc-Legacy"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Legacy"><div class="vector-toc-text"><span class="vector-toc-numb">7</span>Legacy</div></a><button aria-controls="toc-Legacy-sublist" class="cdx-button cdx-button--weight-quiet cdx-button--icon-only vector-toc-toggle"><span class="vector-icon vector-icon--x-small mw-ui-icon-wikimedia-expand"></span><span>Toggle Legacy subsection</span></button><ul id="toc-Legacy-sublist" class="vector-toc-list"><li id="toc-Political\_impact\_and\_memorialization"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Political\_impact\_and\_memorialization"><div class="vector-toc-text"><span class="vector-toc-numb">7.1</span>Political impact and memorialization</div></a><ul id="toc-Political\_impact\_and\_memorialization-sublist" class="vector-toc-list"></ul></li><li id="toc-Cultural\_impact\_and\_depictions"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Cultural\_impact\_and\_depictions"><div class="vector-toc-text"><span class="vector-toc-numb">7.2</span>Cultural impact and depictions</div></a><ul id="toc-Cultural\_impact\_and\_depictions-sublist" class="vector-toc-list"></ul></li><li id="toc-Artifacts,\_museums,\_and\_locations\_today"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Artifacts,\_museums,\_and\_locations\_today"><div class="vector-toc-text"><span class="vector-toc-numb">7.3</span>Artifacts, museums, and locations today</div></a><ul id="toc-Artifacts,\_museums,\_and\_locations\_today-sublist" class="vector-toc-list"></ul></li></ul></li><li id="toc-Notes"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Notes"><div class="vector-toc-text"><span class="vector-toc-numb">8</span>Notes</div></a><ul id="toc-Notes-sublist" class="vector-toc-list"></ul></li><li id="toc-Citations"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#Citations"><div class="vector-toc-text"><span class="vector-toc-numb">9</span>Citations</div></a><button aria-controls="toc-Citations-sublist" class="cdx-button cdx-button--weight-quiet cdx-button--icon-only vector-toc-toggle"><span class="vector-icon vector-icon--x-small mw-ui-icon-wikimedia-expand"></span><span>Toggle Citations subsection</span></button><ul id="toc-Citations-sublist" class="vector-toc-list"><li id="toc-Works\_cited"class="vector-toc-list-item vector-toc-level-2"><a class="vector-toc-link" href="#Works\_cited"><div class="vector-toc-text"><span class="vector-toc-numb">9.1</span>Works cited</div></a><ul id="toc-Works\_cited-sublist" class="vector-toc-list"><li id="toc-Books"class="vector-toc-list-item vector-toc-level-3"><a class="vector-toc-link" href="#Books"><div class="vector-toc-text"><span class="vector-toc-numb">9.1.1</span>Books</div></a><ul id="toc-Books-sublist" class="vector-toc-list"></ul></li><li id="toc-Government\_and\_institutional\_documents\_and\_reports"class="vector-toc-list-item vector-toc-level-3"><a class="vector-toc-link" href="#Government\_and\_institutional\_documents\_and\_reports"><div class="vector-toc-text"><span class="vector-toc-numb">9.1.2</span>Government and institutional documents and reports</div></a><ul id="toc-Government\_and\_institutional\_documents\_and\_reports-sublist" class="vector-toc-list"></ul></li><li id="toc-Warren\_Commission\_documents,\_exhibits,\_and\_testimonies"class="vector-toc-list-item vector-toc-level-3"><a class="vector-toc-link" href="#Warren\_Commission\_documents,\_exhibits,\_and\_testimonies"><div class="vector-toc-text"><span class="vector-toc-numb">9.1.3</span>Warren Commission documents, exhibits, and testimonies</div></a><ul id="toc-Warren\_Commission\_documents,\_exhibits,\_and\_testimonies-sublist" class="vector-toc-list"></ul></li><li id="toc-Journal\_articles"class="vector-toc-list-item vector-toc-level-3"><a class="vector-toc-link" href="#Journal\_articles"><div class="vector-toc-text"><span class="vector-toc-numb">9.1.4</span>Journal articles</div></a><ul id="toc-Journal\_articles-sublist" class="vector-toc-list"></ul></li><li id="toc-Magazines"class="vector-toc-list-item vector-toc-level-3"><a class="vector-toc-link" href="#Magazines"><div class="vector-toc-text"><span class="vector-toc-numb">9.1.5</span>Magazines</div></a><ul id="toc-Magazines-sublist" class="vector-toc-list"></ul></li><li id="toc-News\_publications\_and\_websites"class="vector-toc-list-item vector-toc-level-3"><a class="vector-toc-link" href="#News\_publications\_and\_websites"><div class="vector-toc-text"><span class="vector-toc-numb">9.1.6</span>News publications and websites</div></a><ul id="toc-News\_publications\_and\_websites-sublist" class="vector-toc-list"></ul></li></ul></li></ul></li><li id="toc-External\_links"class="vector-toc-list-item vector-toc-level-1"><a class="vector-toc-link" href="#External\_links"><div class="vector-toc-text"><span class="vector-toc-numb">10</span>External links</div></a><ul id="toc-External\_links-sublist" class="vector-toc-list"></ul></li></ul></div></div></nav><div class="mw-content-container"><main id="content" class="mw-body" role="main"><header class="mw-body-header vector-page-titlebar"><nav role="navigation" aria-label="Contents" class="vector-toc-landmark"><div id="vector-page-titlebar-toc" class="vector-dropdown vector-page-titlebar-toc vector-button-flush-left" ><input type="checkbox" id="vector-page-titlebar-toc-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-page-titlebar-toc" class="vector-dropdown-checkbox " aria-label="Toggle the table of contents" ><label id="vector-page-titlebar-toc-label" for="vector-page-titlebar-toc-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--icon-only " aria-hidden="true" ><span class="vector-icon mw-ui-icon-listBullet mw-ui-icon-wikimedia-listBullet"></span><span class="vector-dropdown-label-text">Toggle the table of contents</span></label><div class="vector-dropdown-content"><div id="vector-page-titlebar-toc-unpinned-container" class="vector-unpinned-container"></div></div></div></nav><h1 id="firstHeading" class="firstHeading mw-first-heading"><span class="mw-page-title-main">Assassination of John F. Kennedy</span></h1><div id="p-lang-btn" class="vector-dropdown mw-portlet mw-portlet-lang" ><input type="checkbox" id="p-lang-btn-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-p-lang-btn" class="vector-dropdown-checkbox mw-interlanguage-selector" aria-label="Go to an article in another language. Available in 53 languages" ><label id="p-lang-btn-label" for="p-lang-btn-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet cdx-button--action-progressive mw-portlet-lang-heading-53" aria-hidden="true" ><span class="vector-icon mw-ui-icon-language-progressive mw-ui-icon-wikimedia-language-progressive"></span><span class="vector-dropdown-label-text">53 languages</span></label><div class="vector-dropdown-content"><div class="vector-menu-content"><ul class="vector-menu-content-list"><li class="interlanguage-link interwiki-als mw-list-item"><a href="https://als.wikipedia.org/wiki/Mord\_an\_US-Pr%C3%A4sident\_Kennedy" title="Mord an US-Präsident Kennedy – Alemannic" lang="gsw" hreflang="gsw" class="interlanguage-link-target"><span>Alemannisch</span></a></li><li class="interlanguage-link interwiki-ar mw-list-item"><a href="https://ar.wikipedia.org/wiki/%D8%A7%D8%BA%D8%AA%D9%8A%D8%A7%D9%84\_%D8%AC%D9%88%D9%86\_%D9%83%D9%8A%D9%86%D9%8A%D8%AF%D9%8A" title="اغتيال جون كينيدي – Arabic" lang="ar" hreflang="ar" class="interlanguage-link-target"><span>العربية</span></a></li><li class="interlanguage-link interwiki-az mw-list-item"><a href="https://az.wikipedia.org/wiki/Con\_Kennedinin\_q%C9%99tli" title="Con Kennedinin qətli – Azerbaijani" lang="az" hreflang="az" class="interlanguage-link-target"><span>Azərbaycanca</span></a></li><li class="interlanguage-link interwiki-bg mw-list-item"><a href="https://bg.wikipedia.org/wiki/%D0%A3%D0%B1%D0%B8%D0%B9%D1%81%D1%82%D0%B2%D0%BE\_%D0%BD%D0%B0\_%D0%94%D0%B6%D0%BE%D0%BD\_%D0%9A%D0%B5%D0%BD%D0%B5%D0%B4%D0%B8" title="Убийство на Джон Кенеди – Bulgarian" lang="bg" hreflang="bg" class="interlanguage-link-target"><span>Български</span></a></li><li class="interlanguage-link interwiki-bs badge-Q17437796 badge-featuredarticle mw-list-item" title="featured article badge"><a href="https://bs.wikipedia.org/wiki/Atentat\_na\_Johna\_F.\_Kennedyja" title="Atentat na Johna F. Kennedyja – Bosnian" lang="bs" hreflang="bs" class="interlanguage-link-target"><span>Bosanski</span></a></li><li class="interlanguage-link interwiki-ca mw-list-item"><a href="https://ca.wikipedia.org/wiki/Atemptat\_contra\_John\_F.\_Kennedy" title="Atemptat contra John F. Kennedy – Catalan" lang="ca" hreflang="ca" class="interlanguage-link-target"><span>Català</span></a></li><li class="interlanguage-link interwiki-cs badge-Q17437796 badge-featuredarticle mw-list-item" title="featured article badge"><a href="https://cs.wikipedia.org/wiki/Atent%C3%A1t\_na\_Johna\_Fitzgeralda\_Kennedyho" title="Atentát na Johna Fitzgeralda Kennedyho – Czech" lang="cs" hreflang="cs" class="interlanguage-link-target"><span>Čeština</span></a></li><li class="interlanguage-link interwiki-da mw-list-item"><a href="https://da.wikipedia.org/wiki/Attentatet\_p%C3%A5\_John\_F.\_Kennedy" title="Attentatet på John F. Kennedy – Danish" lang="da" hreflang="da" class="interlanguage-link-target"><span>Dansk</span></a></li><li class="interlanguage-link interwiki-de badge-Q17437798 badge-goodarticle mw-list-item" title="good article badge"><a href="https://de.wikipedia.org/wiki/Attentat\_auf\_John\_F.\_Kennedy" title="Attentat auf John F. Kennedy – German" lang="de" hreflang="de" class="interlanguage-link-target"><span>Deutsch</span></a></li><li class="interlanguage-link interwiki-et mw-list-item"><a href="https://et.wikipedia.org/wiki/John\_F.\_Kennedy\_atentaat" title="John F. Kennedy atentaat – Estonian" lang="et" hreflang="et" class="interlanguage-link-target"><span>Eesti</span></a></li><li class="interlanguage-link interwiki-el mw-list-item"><a href="https://el.wikipedia.org/wiki/%CE%94%CE%BF%CE%BB%CE%BF%CF%86%CE%BF%CE%BD%CE%AF%CE%B1\_%CF%84%CE%BF%CF%85\_%CE%A4%CE%B6%CE%BF%CE%BD\_%CE%A6%CE%B9%CF%84%CE%B6%CE%AD%CF%81%CE%B1%CE%BB%CE%BD%CF%84\_%CE%9A%CE%AD%CE%BD%CE%BD%CE%B5%CE%BD%CF%84%CF%85" title="Δολοφονία του Τζον Φιτζέραλντ Κέννεντυ – Greek" lang="el" hreflang="el" class="interlanguage-link-target"><span>Ελληνικά</span></a></li><li class="interlanguage-link interwiki-es mw-list-item"><a href="https://es.wikipedia.org/wiki/Asesinato\_de\_John\_F.\_Kennedy" title="Asesinato de John F. Kennedy – Spanish" lang="es" hreflang="es" class="interlanguage-link-target"><span>Español</span></a></li><li class="interlanguage-link interwiki-eo badge-Q17437796 badge-featuredarticle mw-list-item" title="featured article badge"><a href="https://eo.wikipedia.org/wiki/Atenco\_kontra%C5%AD\_John\_Fitzgerald\_Kennedy" title="Atenco kontraŭ John Fitzgerald Kennedy – Esperanto" lang="eo" hreflang="eo" class="interlanguage-link-target"><span>Esperanto</span></a></li><li class="interlanguage-link interwiki-eu mw-list-item"><a href="https://eu.wikipedia.org/wiki/John\_F.\_Kennedyren\_hilketa" title="John F. Kennedyren hilketa – Basque" lang="eu" hreflang="eu" class="interlanguage-link-target"><span>Euskara</span></a></li><li class="interlanguage-link interwiki-fa mw-list-item"><a href="https://fa.wikipedia.org/wiki/%D8%AA%D8%B1%D9%88%D8%B1\_%D8%AC%D8%A7%D9%86\_%D8%A7%D9%81.\_%DA%A9%D9%86%D8%AF%DB%8C" title="ترور جان اف. کندی – Persian" lang="fa" hreflang="fa" class="interlanguage-link-target"><span>فارسی</span></a></li><li class="interlanguage-link interwiki-fr mw-list-item"><a href="https://fr.wikipedia.org/wiki/Assassinat\_de\_John\_F.\_Kennedy" title="Assassinat de John F. Kennedy – French" lang="fr" hreflang="fr" class="interlanguage-link-target"><span>Français</span></a></li><li class="interlanguage-link interwiki-gl mw-list-item"><a href="https://gl.wikipedia.org/wiki/Asasinato\_de\_John\_F.\_Kennedy" title="Asasinato de John F. Kennedy – Galician" lang="gl" hreflang="gl" class="interlanguage-link-target"><span>Galego</span></a></li><li class="interlanguage-link interwiki-ko mw-list-item"><a href="https://ko.wikipedia.org/wiki/%EC%A1%B4\_F.\_%EC%BC%80%EB%84%A4%EB%94%94\_%EC%95%94%EC%82%B4\_%EC%82%AC%EA%B1%B4" title="존 F. 케네디 암살 사건 – Korean" lang="ko" hreflang="ko" class="interlanguage-link-target"><span>한국어</span></a></li><li class="interlanguage-link interwiki-hy mw-list-item"><a href="https://hy.wikipedia.org/wiki/%D5%8B%D5%B8%D5%B6\_%D5%94%D5%A5%D5%B6%D5%A5%D5%A4%D5%B8%D6%82\_%D5%BD%D5%BA%D5%A1%D5%B6%D5%B8%D6%82%D5%A9%D5%B5%D5%B8%D6%82%D5%B6" title="Ջոն Քենեդու սպանություն – Armenian" lang="hy" hreflang="hy" class="interlanguage-link-target"><span>Հայերեն</span></a></li><li class="interlanguage-link interwiki-hr mw-list-item"><a href="https://hr.wikipedia.org/wiki/Atentat\_na\_Johna\_F.\_Kennedyja" title="Atentat na Johna F. Kennedyja – Croatian" lang="hr" hreflang="hr" class="interlanguage-link-target"><span>Hrvatski</span></a></li><li class="interlanguage-link interwiki-id mw-list-item"><a href="https://id.wikipedia.org/wiki/Pembunuhan\_John\_F.\_Kennedy" title="Pembunuhan John F. Kennedy – Indonesian" lang="id" hreflang="id" class="interlanguage-link-target"><span>Bahasa Indonesia</span></a></li><li class="interlanguage-link interwiki-it mw-list-item"><a href="https://it.wikipedia.org/wiki/Assassinio\_di\_John\_Fitzgerald\_Kennedy" title="Assassinio di John Fitzgerald Kennedy – Italian" lang="it" hreflang="it" class="interlanguage-link-target"><span>Italiano</span></a></li><li class="interlanguage-link interwiki-he mw-list-item"><a href="https://he.wikipedia.org/wiki/%D7%A8%D7%A6%D7%97\_%D7%A7%D7%A0%D7%93%D7%99" title="רצח קנדי – Hebrew" lang="he" hreflang="he" class="interlanguage-link-target"><span>עברית</span></a></li><li class="interlanguage-link interwiki-ka mw-list-item"><a href="https://ka.wikipedia.org/wiki/%E1%83%AF%E1%83%9D%E1%83%9C\_%E1%83%99%E1%83%94%E1%83%9C%E1%83%94%E1%83%93%E1%83%98%E1%83%A1\_%E1%83%9B%E1%83%99%E1%83%95%E1%83%9A%E1%83%94%E1%83%9A%E1%83%9D%E1%83%91%E1%83%90" title="ჯონ კენედის მკვლელობა – Georgian" lang="ka" hreflang="ka" class="interlanguage-link-target"><span>ქართული</span></a></li><li class="interlanguage-link interwiki-kk mw-list-item"><a href="https://kk.wikipedia.org/wiki/%D0%94%D0%B6%D0%BE%D0%BD\_%D0%9A%D0%B5%D0%BD%D0%BD%D0%B5%D0%B4%D0%B8%D0%B4%D1%96%D2%A3\_%D3%A9%D0%BB%D1%96%D0%BC%D1%96" title="Джон Кеннедидің өлімі – Kazakh" lang="kk" hreflang="kk" class="interlanguage-link-target"><span>Қазақша</span></a></li><li class="interlanguage-link interwiki-lv mw-list-item"><a href="https://lv.wikipedia.org/wiki/Atent%C4%81ts\_pret\_D%C5%BEonu\_Kenediju" title="Atentāts pret Džonu Kenediju – Latvian" lang="lv" hreflang="lv" class="interlanguage-link-target"><span>Latviešu</span></a></li><li class="interlanguage-link interwiki-hu mw-list-item"><a href="https://hu.wikipedia.org/wiki/John\_Fitzgerald\_Kennedy\_meggyilkol%C3%A1sa" title="John Fitzgerald Kennedy meggyilkolása – Hungarian" lang="hu" hreflang="hu" class="interlanguage-link-target"><span>Magyar</span></a></li><li class="interlanguage-link interwiki-mk mw-list-item"><a href="https://mk.wikipedia.org/wiki/%D0%A3%D0%B1%D0%B8%D1%81%D1%82%D0%B2%D0%BE\_%D0%BD%D0%B0\_%D0%8F%D0%BE%D0%BD\_%D0%9A%D0%B5%D0%BD%D0%B5%D0%B4%D0%B8" title="Убиство на Џон Кенеди – Macedonian" lang="mk" hreflang="mk" class="interlanguage-link-target"><span>Македонски</span></a></li><li class="interlanguage-link interwiki-ms mw-list-item"><a href="https://ms.wikipedia.org/wiki/Pembunuhan\_John\_F.\_Kennedy" title="Pembunuhan John F. Kennedy – Malay" lang="ms" hreflang="ms" class="interlanguage-link-target"><span>Bahasa Melayu</span></a></li><li class="interlanguage-link interwiki-nl mw-list-item"><a href="https://nl.wikipedia.org/wiki/Moord\_op\_president\_Kennedy" title="Moord op president Kennedy – Dutch" lang="nl" hreflang="nl" class="interlanguage-link-target"><span>Nederlands</span></a></li><li class="interlanguage-link interwiki-ja mw-list-item"><a href="https://ja.wikipedia.org/wiki/%E3%82%B1%E3%83%8D%E3%83%87%E3%82%A3%E5%A4%A7%E7%B5%B1%E9%A0%98%E6%9A%97%E6%AE%BA%E4%BA%8B%E4%BB%B6" title="ケネディ大統領暗殺事件 – Japanese" lang="ja" hreflang="ja" class="interlanguage-link-target"><span>日本語</span></a></li><li class="interlanguage-link interwiki-no mw-list-item"><a href="https://no.wikipedia.org/wiki/Attentatet\_mot\_John\_F.\_Kennedy" title="Attentatet mot John F. Kennedy – Norwegian Bokmål" lang="nb" hreflang="nb" class="interlanguage-link-target"><span>Norsk bokmål</span></a></li><li class="interlanguage-link interwiki-uz mw-list-item"><a href="https://uz.wikipedia.org/wiki/John\_F.\_Kennedyning\_o%CA%BBldirilishi" title="John F. Kennedyning oʻldirilishi – Uzbek" lang="uz" hreflang="uz" class="interlanguage-link-target"><span>Oʻzbekcha / ўзбекча</span></a></li><li class="interlanguage-link interwiki-pl mw-list-item"><a href="https://pl.wikipedia.org/wiki/Zamach\_na\_Johna\_F.\_Kennedy%E2%80%99ego" title="Zamach na Johna F. Kennedy’ego – Polish" lang="pl" hreflang="pl" class="interlanguage-link-target"><span>Polski</span></a></li><li class="interlanguage-link interwiki-pt mw-list-item"><a href="https://pt.wikipedia.org/wiki/Assassinato\_de\_John\_F.\_Kennedy" title="Assassinato de John F. Kennedy – Portuguese" lang="pt" hreflang="pt" class="interlanguage-link-target"><span>Português</span></a></li><li class="interlanguage-link interwiki-ro mw-list-item"><a href="https://ro.wikipedia.org/wiki/Asasinarea\_lui\_John\_F.\_Kennedy" title="Asasinarea lui John F. Kennedy – Romanian" lang="ro" hreflang="ro" class="interlanguage-link-target"><span>Română</span></a></li><li class="interlanguage-link interwiki-ru mw-list-item"><a href="https://ru.wikipedia.org/wiki/%D0%A3%D0%B1%D0%B8%D0%B9%D1%81%D1%82%D0%B2%D0%BE\_%D0%94%D0%B6%D0%BE%D0%BD%D0%B0\_%D0%9A%D0%B5%D0%BD%D0%BD%D0%B5%D0%B4%D0%B8" title="Убийство Джона Кеннеди – Russian" lang="ru" hreflang="ru" class="interlanguage-link-target"><span>Русский</span></a></li><li class="interlanguage-link interwiki-sq mw-list-item"><a href="https://sq.wikipedia.org/wiki/Vrasja\_e\_Xhon\_F.\_Kenedi" title="Vrasja e Xhon F. Kenedi – Albanian" lang="sq" hreflang="sq" class="interlanguage-link-target"><span>Shqip</span></a></li><li class="interlanguage-link interwiki-si mw-list-item"><a href="https://si.wikipedia.org/wiki/%E0%B6%A2%E0%B7%9D%E0%B6%B1%E0%B7%8A\_%E0%B6%91%E0%B7%86%E0%B7%8A.\_%E0%B6%9A%E0%B7%99%E0%B6%B1%E0%B6%A9%E0%B7%92\_%E0%B6%9D%E0%B7%8F%E0%B6%AD%E0%B6%B1%E0%B6%BA" title="ජෝන් එෆ්. කෙනඩි ඝාතනය – Sinhala" lang="si" hreflang="si" class="interlanguage-link-target"><span>සිංහල</span></a></li><li class="interlanguage-link interwiki-simple mw-list-item"><a href="https://simple.wikipedia.org/wiki/Assassination\_of\_John\_F.\_Kennedy" title="Assassination of John F. Kennedy – Simple English" lang="en-simple" hreflang="en-simple" class="interlanguage-link-target"><span>Simple English</span></a></li><li class="interlanguage-link interwiki-sk badge-Q17437798 badge-goodarticle mw-list-item" title="good article badge"><a href="https://sk.wikipedia.org/wiki/Atent%C3%A1t\_na\_Johna\_Fitzgeralda\_Kennedyho" title="Atentát na Johna Fitzgeralda Kennedyho – Slovak" lang="sk" hreflang="sk" class="interlanguage-link-target"><span>Slovenčina</span></a></li><li class="interlanguage-link interwiki-sl mw-list-item"><a href="https://sl.wikipedia.org/wiki/Atentat\_na\_Johna\_Kennedyja" title="Atentat na Johna Kennedyja – Slovenian" lang="sl" hreflang="sl" class="interlanguage-link-target"><span>Slovenščina</span></a></li><li class="interlanguage-link interwiki-sr mw-list-item"><a href="https://sr.wikipedia.org/wiki/%D0%90%D1%82%D0%B5%D0%BD%D1%82%D0%B0%D1%82\_%D0%BD%D0%B0\_%D0%8F%D0%BE%D0%BD%D0%B0\_%D0%9A%D0%B5%D0%BD%D0%B5%D0%B4%D0%B8%D1%98%D0%B0" title="Атентат на Џона Кенедија – Serbian" lang="sr" hreflang="sr" class="interlanguage-link-target"><span>Српски / srpski</span></a></li><li class="interlanguage-link interwiki-sh badge-Q17437796 badge-featuredarticle mw-list-item" title="featured article badge"><a href="https://sh.wikipedia.org/wiki/Atentat\_na\_Johna\_F.\_Kennedyja" title="Atentat na Johna F. Kennedyja – Serbo-Croatian" lang="sh" hreflang="sh" class="interlanguage-link-target"><span>Srpskohrvatski / српскохрватски</span></a></li><li class="interlanguage-link interwiki-fi mw-list-item"><a href="https://fi.wikipedia.org/wiki/John\_F.\_Kennedyn\_salamurha" title="John F. Kennedyn salamurha – Finnish" lang="fi" hreflang="fi" class="interlanguage-link-target"><span>Suomi</span></a></li><li class="interlanguage-link interwiki-sv mw-list-item"><a href="https://sv.wikipedia.org/wiki/Mordet\_p%C3%A5\_John\_F.\_Kennedy" title="Mordet på John F. Kennedy – Swedish" lang="sv" hreflang="sv" class="interlanguage-link-target"><span>Svenska</span></a></li><li class="interlanguage-link interwiki-tl mw-list-item"><a href="https://tl.wikipedia.org/wiki/Pagpatay\_kay\_John\_F.\_Kennedy" title="Pagpatay kay John F. Kennedy – Tagalog" lang="tl" hreflang="tl" class="interlanguage-link-target"><span>Tagalog</span></a></li><li class="interlanguage-link interwiki-th mw-list-item"><a href="https://th.wikipedia.org/wiki/%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%A5%E0%B8%AD%E0%B8%9A%E0%B8%AA%E0%B8%B1%E0%B8%87%E0%B8%AB%E0%B8%B2%E0%B8%A3%E0%B8%88%E0%B8%AD%E0%B8%AB%E0%B9%8C%E0%B8%99\_%E0%B9%80%E0%B8%AD%E0%B8%9F.\_%E0%B9%80%E0%B8%84%E0%B8%99%E0%B9%80%E0%B8%99%E0%B8%94%E0%B8%B5" title="การลอบสังหารจอห์น เอฟ. เคนเนดี – Thai" lang="th" hreflang="th" class="interlanguage-link-target"><span>ไทย</span></a></li><li class="interlanguage-link interwiki-tr mw-list-item"><a href="https://tr.wikipedia.org/wiki/John\_F.\_Kennedy\_Suikast%C4%B1" title="John F. Kennedy Suikastı – Turkish" lang="tr" hreflang="tr" class="interlanguage-link-target"><span>Türkçe</span></a></li><li class="interlanguage-link interwiki-uk mw-list-item"><a href="https://uk.wikipedia.org/wiki/%D0%A3%D0%B1%D0%B8%D0%B2%D1%81%D1%82%D0%B2%D0%BE\_%D0%94%D0%B6%D0%BE%D0%BD%D0%B0\_%D0%9A%D0%B5%D0%BD%D0%BD%D0%B5%D0%B4%D1%96" title="Убивство Джона Кеннеді – Ukrainian" lang="uk" hreflang="uk" class="interlanguage-link-target"><span>Українська</span></a></li><li class="interlanguage-link interwiki-vi badge-Q17437796 badge-featuredarticle mw-list-item" title="featured article badge"><a href="https://vi.wikipedia.org/wiki/V%E1%BB%A5\_%C3%A1m\_s%C3%A1t\_John\_F.\_Kennedy" title="Vụ ám sát John F. Kennedy – Vietnamese" lang="vi" hreflang="vi" class="interlanguage-link-target"><span>Tiếng Việt</span></a></li><li class="interlanguage-link interwiki-zh-yue mw-list-item"><a href="https://zh-yue.wikipedia.org/wiki/%E7%94%98%E8%BF%BA%E8%BF%AA%E9%81%87%E5%88%BA%E6%A1%88" title="甘迺迪遇刺案 – Cantonese" lang="yue" hreflang="yue" class="interlanguage-link-target"><span>粵語</span></a></li><li class="interlanguage-link interwiki-zh mw-list-item"><a href="https://zh.wikipedia.org/wiki/%E7%BA%A6%E7%BF%B0%C2%B7F%C2%B7%E8%82%AF%E5%B0%BC%E8%BF%AA%E9%81%87%E5%88%BA%E6%A1%88" title="约翰·F·肯尼迪遇刺案 – Chinese" lang="zh" hreflang="zh" class="interlanguage-link-target"><span>中文</span></a></li></ul><div class="after-portlet after-portlet-lang"><span class="wb-langlinks-edit wb-langlinks-link"><a href="https://www.wikidata.org/wiki/Special:EntityPage/Q193484#sitelinks-wikipedia" title="Edit interlanguage links" class="wbc-editpage">Edit links</a></span></div></div></div></div></header><div class="vector-page-toolbar"><div class="vector-page-toolbar-container"><div id="left-navigation"><nav aria-label="Namespaces"><div id="p-associated-pages" class="vector-menu vector-menu-tabs mw-portlet mw-portlet-associated-pages" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="ca-nstab-main" class="selected vector-tab-noicon mw-list-item"><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy" title="View the content page [c]" accesskey="c"><span>Article</span></a></li><li id="ca-talk" class="vector-tab-noicon mw-list-item"><a href="/wiki/Talk:Assassination\_of\_John\_F.\_Kennedy" rel="discussion" title="Discuss improvements to the content page [t]" accesskey="t"><span>Talk</span></a></li></ul></div></div><div id="p-variants" class="vector-dropdown emptyPortlet" ><input type="checkbox" id="p-variants-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-p-variants" class="vector-dropdown-checkbox " aria-label="Change language variant" ><label id="p-variants-label" for="p-variants-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet" aria-hidden="true" ><span class="vector-dropdown-label-text">English</span></label><div class="vector-dropdown-content"><div id="p-variants" class="vector-menu mw-portlet mw-portlet-variants emptyPortlet" ><div class="vector-menu-content"><ul class="vector-menu-content-list"></ul></div></div></div></div></nav></div><div id="right-navigation" class="vector-collapsible"><nav aria-label="Views"><div id="p-views" class="vector-menu vector-menu-tabs mw-portlet mw-portlet-views" ><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="ca-view" class="selected vector-tab-noicon mw-list-item"><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy"><span>Read</span></a></li><li id="ca-viewsource" class="vector-tab-noicon mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;action=edit" title="This page is protected.&#10;You can view its source [e]" accesskey="e"><span>View source</span></a></li><li id="ca-history" class="vector-tab-noicon mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;action=history" title="Past revisions of this page [h]" accesskey="h"><span>View history</span></a></li></ul></div></div></nav><nav class="vector-page-tools-landmark" aria-label="Page tools"><div id="vector-page-tools-dropdown" class="vector-dropdown vector-page-tools-dropdown" ><input type="checkbox" id="vector-page-tools-dropdown-checkbox" role="button" aria-haspopup="true" data-event-name="ui.dropdown-vector-page-tools-dropdown" class="vector-dropdown-checkbox " aria-label="Tools" ><label id="vector-page-tools-dropdown-label" for="vector-page-tools-dropdown-checkbox" class="vector-dropdown-label cdx-button cdx-button--fake-button cdx-button--fake-button--enabled cdx-button--weight-quiet" aria-hidden="true" ><span class="vector-dropdown-label-text">Tools</span></label><div class="vector-dropdown-content"><div id="vector-page-tools-unpinned-container" class="vector-unpinned-container"><div id="vector-page-tools" class="vector-page-tools vector-pinnable-element"><divclass="vector-pinnable-header vector-page-tools-pinnable-header vector-pinnable-header-unpinned"data-feature-name="page-tools-pinned"data-pinnable-element-id="vector-page-tools"data-pinned-container-id="vector-page-tools-pinned-container"data-unpinned-container-id="vector-page-tools-unpinned-container"><div class="vector-pinnable-header-label">Tools</div><button class="vector-pinnable-header-toggle-button vector-pinnable-header-pin-button" data-event-name="pinnable-header.vector-page-tools.pin">move to sidebar</button><button class="vector-pinnable-header-toggle-button vector-pinnable-header-unpin-button" data-event-name="pinnable-header.vector-page-tools.unpin">hide</button></div><div id="p-cactions" class="vector-menu mw-portlet mw-portlet-cactions emptyPortlet vector-has-collapsible-items" title="More options" ><div class="vector-menu-heading">Actions</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="ca-more-view" class="selected vector-more-collapsible-item mw-list-item"><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy"><span>Read</span></a></li><li id="ca-more-viewsource" class="vector-more-collapsible-item mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;action=edit"><span>View source</span></a></li><li id="ca-more-history" class="vector-more-collapsible-item mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;action=history"><span>View history</span></a></li></ul></div></div><div id="p-tb" class="vector-menu mw-portlet mw-portlet-tb" ><div class="vector-menu-heading">General</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="t-whatlinkshere" class="mw-list-item"><a href="/wiki/Special:WhatLinksHere/Assassination\_of\_John\_F.\_Kennedy" title="List of all English Wikipedia pages containing links to this page [j]" accesskey="j"><span>What links here</span></a></li><li id="t-recentchangeslinked" class="mw-list-item"><a href="/wiki/Special:RecentChangesLinked/Assassination\_of\_John\_F.\_Kennedy" rel="nofollow" title="Recent changes in pages linked from this page [k]" accesskey="k"><span>Related changes</span></a></li><li id="t-upload" class="mw-list-item"><a href="/wiki/Wikipedia:File\_Upload\_Wizard" title="Upload files [u]" accesskey="u"><span>Upload file</span></a></li><li id="t-specialpages" class="mw-list-item"><a href="/wiki/Special:SpecialPages" title="A list of all special pages [q]" accesskey="q"><span>Special pages</span></a></li><li id="t-permalink" class="mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;oldid=1186282872" title="Permanent link to this revision of this page"><span>Permanent link</span></a></li><li id="t-info" class="mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;action=info" title="More information about this page"><span>Page information</span></a></li><li id="t-cite" class="mw-list-item"><a href="/w/index.php?title=Special:CiteThisPage&amp;page=Assassination\_of\_John\_F.\_Kennedy&amp;id=1186282872&amp;wpFormIdentifier=titleform" title="Information on how to cite this page"><span>Cite this page</span></a></li><li id="t-urlshortener" class="mw-list-item"><a href="/w/index.php?title=Special:UrlShortener&amp;url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FAssassination\_of\_John\_F.\_Kennedy"><span>Get shortened URL</span></a></li><li id="t-wikibase" class="mw-list-item"><a href="https://www.wikidata.org/wiki/Special:EntityPage/Q193484" title="Structured data on this page hosted by Wikidata [g]" accesskey="g"><span>Wikidata item</span></a></li></ul></div></div><div id="p-coll-print\_export" class="vector-menu mw-portlet mw-portlet-coll-print\_export" ><div class="vector-menu-heading">Print/export</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li id="coll-download-as-rl" class="mw-list-item"><a href="/w/index.php?title=Special:DownloadAsPdf&amp;page=Assassination\_of\_John\_F.\_Kennedy&amp;action=show-download-screen" title="Download this page as a PDF file"><span>Download as PDF</span></a></li><li id="t-print" class="mw-list-item"><a href="/w/index.php?title=Assassination\_of\_John\_F.\_Kennedy&amp;printable=yes" title="Printable version of this page [p]" accesskey="p"><span>Printable version</span></a></li></ul></div></div><div id="p-wikibase-otherprojects" class="vector-menu mw-portlet mw-portlet-wikibase-otherprojects" ><div class="vector-menu-heading">In other projects</div><div class="vector-menu-content"><ul class="vector-menu-content-list"><li class="wb-otherproject-link wb-otherproject-commons mw-list-item"><a href="https://commons.wikimedia.org/wiki/Assassination\_of\_John\_F.\_Kennedy" hreflang="en"><span>Wikimedia Commons</span></a></li></ul></div></div></div></div></div></div></nav></div></div></div><div class="vector-column-end"><nav class="vector-page-tools-landmark vector-sticky-pinned-container" aria-label="Page tools"><div id="vector-page-tools-pinned-container" class="vector-pinned-container"></div></nav></div><div id="bodyContent" class="vector-body" aria-labelledby="firstHeading" data-mw-ve-target-container><div class="vector-body-before-content"><div class="mw-indicators"><div id="mw-indicator-featured-star" class="mw-indicator"><div class="mw-parser-output"><span typeof="mw:File"><a href="/wiki/Wikipedia:Featured\_articles" title="This is a featured article. Click here for more information."><img alt="Featured article" src="//upload.wikimedia.org/wikipedia/en/thumb/e/e7/Cscr-featured.svg/20px-Cscr-featured.svg.png" decoding="async" width="20" height="19" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/e/e7/Cscr-featured.svg/30px-Cscr-featured.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/e/e7/Cscr-featured.svg/40px-Cscr-featured.svg.png 2x" data-file-width="466" data-file-height="443" /></a></span></div></div><div id="mw-indicator-pp-default" class="mw-indicator"><div class="mw-parser-output"><span typeof="mw:File"><a href="/wiki/Wikipedia:Protection\_policy#semi" title="This article is semi-protected."><img alt="Page semi-protected" src="//upload.wikimedia.org/wikipedia/en/thumb/1/1b/Semi-protection-shackle.svg/20px-Semi-protection-shackle.svg.png" decoding="async" width="20" height="20" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/1/1b/Semi-protection-shackle.svg/30px-Semi-protection-shackle.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/1/1b/Semi-protection-shackle.svg/40px-Semi-protection-shackle.svg.png 2x" data-file-width="512" data-file-height="512" /></a></span></div></div></div><div id="siteSub" class="noprint">From Wikipedia, the free encyclopedia</div></div><div id="contentSub"><div id="mw-content-subtitle"></div></div><div id="mw-content-text" class="mw-body-content"><div class="mw-content-ltr mw-parser-output" lang="en" dir="ltr"><div class="shortdescription nomobile noexcerpt noprint searchaux" style="display:none">1963 murder of the 35th U.S. President</div><style data-mw-deduplicate="TemplateStyles:r1033289096">.mw-parser-output .hatnote{font-style:italic}.mw-parser-output div.hatnote{padding-left:1.6em;margin-bottom:0.5em}.mw-parser-output .hatnote i{font-style:normal}.mw-parser-output .hatnote+link+.hatnote{margin-top:-0.5em}</style><div role="note" class="hatnote navigation-not-searchable">"Kennedy assassination" redirects here. For the assassination of John's brother Robert, see <a href="/wiki/Assassination\_of\_Robert\_F.\_Kennedy" title="Assassination of Robert F. Kennedy">Assassination of Robert F. Kennedy</a>.</div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">"November 22, 1963" redirects here. For the date, see <a href="/wiki/November\_1963#November\_22,\_1963\_(Friday)" title="November 1963">November 22, 1963 (Friday)</a>.</div><p class="mw-empty-elt"></p><p class="mw-empty-elt"></p><style data-mw-deduplicate="TemplateStyles:r1066479718">.mw-parser-output .infobox-subbox{padding:0;border:none;margin:-3px;width:auto;min-width:100%;font-size:100%;clear:none;float:none;background-color:transparent}.mw-parser-output .infobox-3cols-child{margin:auto}.mw-parser-output .infobox .navbar{font-size:100%}body.skin-minerva .mw-parser-output .infobox-header,body.skin-minerva .mw-parser-output .infobox-subheader,body.skin-minerva .mw-parser-output .infobox-above,body.skin-minerva .mw-parser-output .infobox-title,body.skin-minerva .mw-parser-output .infobox-image,body.skin-minerva .mw-parser-output .infobox-full-data,body.skin-minerva .mw-parser-output .infobox-below{text-align:center}</style><table class="infobox vevent"><tbody><tr><th colspan="2" class="infobox-above summary" style="font-size:125%;">Assassination of John F. Kennedy</th></tr><tr><td colspan="2" class="infobox-image"><span class="mw-default-size" typeof="mw:File/Frameless"><a href="/wiki/File:JFK\_limousine.png" class="mw-file-description"><img alt="President John F. Kennedy, his wife Jacqueline, Texas governor John Connally, and Connally&#39;s wife Nellie in the presidential limousine minutes before the assassination in Dallas" src="//upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/220px-JFK\_limousine.png" decoding="async" width="220" height="165" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/330px-JFK\_limousine.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/5/5c/JFK\_limousine.png/440px-JFK\_limousine.png 2x" data-file-width="2048" data-file-height="1536" /></a></span><div class="infobox-caption">President Kennedy, his wife <a href="/wiki/Jacqueline\_Kennedy\_Onassis" title="Jacqueline Kennedy Onassis">Jacqueline</a>, Texas governor John Connally, and Connally's wife <a href="/wiki/Nellie\_Connally" title="Nellie Connally">Nellie</a> in the <a href="/wiki/Presidential\_state\_car\_(United\_States)#Kennedy\_X-100\_(1961–1977)" title="Presidential state car (United States)">presidential limousine</a> minutes before the assassination in Dallas</div></td></tr><tr><th scope="row" class="infobox-label">Location</th><td class="infobox-data location"><a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a> in <a href="/wiki/Dallas" title="Dallas">Dallas</a>, Texas, U.S.</td></tr><tr><th scope="row" class="infobox-label">Date</th><td class="infobox-data">November&#160;22, 1963<span class="noprint">&#59;&#32;60 years ago</span><span style="display:none">&#160;(<span class="bday dtstart published updated">1963-11-22</span>)</span> <br />12:30 p.m. (<a href="/wiki/Central\_Standard\_Time" class="mw-redirect" title="Central Standard Time">CST</a>)</td></tr><tr><th scope="row" class="infobox-label">Target</th><td class="infobox-data"><a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a></td></tr><tr><th scope="row" class="infobox-label">Weapons</th><td class="infobox-data"><style data-mw-deduplicate="TemplateStyles:r1126788409">.mw-parser-output .plainlist ol,.mw-parser-output .plainlist ul{line-height:inherit;list-style:none;margin:0;padding:0}.mw-parser-output .plainlist ol li,.mw-parser-output .plainlist ul li{margin-bottom:0}</style><div class="plainlist"><ul><li><a href="/wiki/John\_F.\_Kennedy\_assassination\_rifle" title="John F. Kennedy assassination rifle">6.5×52mm Italian Carcano M91/38 rifle</a> (Kennedy)</li><li><a href="/wiki/John\_F.\_Kennedy\_assassination\_rifle#Revolver" title="John F. Kennedy assassination rifle">.38cal Smith &amp; Wesson revolver</a> (Tippit)</li></ul></div></td></tr><tr><th scope="row" class="infobox-label">Deaths</th><td class="infobox-data"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1126788409"><div class="plainlist"><ul><li>John F. Kennedy</li><li><a href="/wiki/J.\_D.\_Tippit" title="J. D. Tippit">J. D. Tippit</a></li></ul></div></td></tr><tr><th scope="row" class="infobox-label">Injured</th><td class="infobox-data"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1126788409"><div class="plainlist"><ul><li><a href="/wiki/John\_Connally" title="John Connally">John Connally</a></li><li><a href="/wiki/James\_Tague" title="James Tague">James Tague</a></li></ul></div></td></tr><tr><th scope="row" class="infobox-label">Perpetrator</th><td class="infobox-data"><a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a></td></tr><tr><th scope="row" class="infobox-label">Charges</th><td class="infobox-data"><a href="/wiki/Murder\_(United\_States\_law)" class="mw-redirect" title="Murder (United States law)">Murder</a> with <a href="/wiki/Malice\_(law)" title="Malice (law)">malice</a> (2 counts, <a href="/wiki/Murder\_of\_Lee\_Harvey\_Oswald" class="mw-redirect" title="Murder of Lee Harvey Oswald">murdered</a> before trial)</td></tr></tbody></table><p>On November 22, 1963, <a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a>, the 35th <a href="/wiki/President\_of\_the\_United\_States" title="President of the United States">president of the United States</a>, was <a href="/wiki/Assassinated" class="mw-redirect" title="Assassinated">assassinated</a> while riding in a presidential <a href="/wiki/Motorcade" title="Motorcade">motorcade</a> through <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a> in <a href="/wiki/Dallas" title="Dallas">Dallas</a>, Texas. Kennedy was in the vehicle with his wife, <a href="/wiki/Jacqueline\_Kennedy\_Onassis" title="Jacqueline Kennedy Onassis">Jacqueline</a>, Texas Governor <a href="/wiki/John\_Connally" title="John Connally">John Connally</a>, and Connally's wife, <a href="/wiki/Nellie\_Connally" title="Nellie Connally">Nellie</a>, when he was fatally shot from the nearby <a href="/wiki/Texas\_School\_Book\_Depository" title="Texas School Book Depository">Texas School Book Depository</a> by former U.S. Marine <a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a>. The motorcade rushed to <a href="/wiki/Parkland\_Memorial\_Hospital" title="Parkland Memorial Hospital">Parkland Memorial Hospital</a>, where Kennedy was pronounced dead about 30 minutes after the shooting; Connally was also wounded in the attack but recovered. Vice President <a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson</a> <a href="/wiki/First\_inauguration\_of\_Lyndon\_B.\_Johnson" title="First inauguration of Lyndon B. Johnson">assumed the presidency</a> upon Kennedy's death.</p><p>After the assassination, Oswald returned home to retrieve a pistol; he shot lone Dallas policeman <a href="/wiki/J.\_D.\_Tippit" title="J. D. Tippit">J. D. Tippit</a> shortly afterwards. Around 70 minutes after Kennedy and Connally were shot, Oswald was apprehended by the <a href="/wiki/Dallas\_Police\_Department" title="Dallas Police Department">Dallas Police Department</a> and charged under Texas state law with the murders of Kennedy and Tippit. At 11:21&#160;a.m. on November 24, 1963, as live television cameras covered Oswald's being moved through the basement of <a href="/wiki/Dallas\_Municipal\_Building" title="Dallas Municipal Building">Dallas Police Headquarters</a>, he was fatally shot by Dallas nightclub operator <a href="/wiki/Jack\_Ruby" title="Jack Ruby">Jack Ruby</a>. Like Kennedy, Oswald was taken to Parkland Memorial Hospital, where he soon died. Ruby was convicted of Oswald's murder, though the decision was overturned on appeal, and Ruby died in prison in 1967 while awaiting a new trial.</p><p>After a 10-month investigation, the <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a> concluded that Oswald assassinated Kennedy, and that there was no evidence that either Oswald or Ruby was part of a conspiracy. Four years later, New Orleans DA <a href="/wiki/Jim\_Garrison" title="Jim Garrison">Jim Garrison</a> brought the only <a href="/wiki/Trial\_of\_Clay\_Shaw" title="Trial of Clay Shaw">trial for Kennedy's murder</a>, against businessman <a href="/wiki/Clay\_Shaw" title="Clay Shaw">Clay Shaw</a>; Shaw was acquitted. Subsequent federal investigations—such as the <a href="/wiki/United\_States\_President%27s\_Commission\_on\_CIA\_Activities\_within\_the\_United\_States" title="United States President&#39;s Commission on CIA Activities within the United States">Rockefeller Commission</a> and <a href="/wiki/Church\_Committee" title="Church Committee">Church Committee</a>—agreed with the Warren Commission's general findings. In its 1979 report, the <a href="/wiki/United\_States\_House\_Select\_Committee\_on\_Assassinations" title="United States House Select Committee on Assassinations">United States House Select Committee on Assassinations</a> (HSCA) concluded that Kennedy was likely "<a href="/wiki/John\_F.\_Kennedy\_assassination\_conspiracy\_theories" title="John F. Kennedy assassination conspiracy theories">assassinated as a result of a conspiracy</a>". The HSCA did not identify possible conspirators, but concluded that there was "a high probability that two gunmen fired at [the] President". The HSCA's conclusions were largely based on a <a href="/wiki/John\_F.\_Kennedy\_assassination\_Dictabelt\_recording" title="John F. Kennedy assassination Dictabelt recording">police Dictabelt recording</a> later debunked by the <a href="/wiki/U.S.\_Justice\_Department" class="mw-redirect" title="U.S. Justice Department">U.S. Justice Department</a>.</p><p>Kennedy's assassination is still the subject of widespread debate and has spawned many conspiracy theories and alternative scenarios; polls have found that a majority of Americans believe there was a conspiracy. The assassination left a profound impact and was the first of four major assassinations during the <a href="/wiki/1960s\_in\_the\_United\_States" class="mw-redirect" title="1960s in the United States">1960s in the United States</a>, coming two years before the <a href="/wiki/Assassination\_of\_Malcolm\_X" title="Assassination of Malcolm X">assassination of Malcolm X</a> in 1965, and five years before the assassinations of <a href="/wiki/Assassination\_of\_Martin\_Luther\_King\_Jr." title="Assassination of Martin Luther King Jr.">Martin Luther King Jr.</a> and Kennedy's brother <a href="/wiki/Assassination\_of\_Robert\_F.\_Kennedy" title="Assassination of Robert F. Kennedy">Robert</a> in 1968. Kennedy was the fourth U.S. president to be assassinated and is the most recent to have <a href="/wiki/List\_of\_presidents\_of\_the\_United\_States\_who\_died\_in\_office" title="List of presidents of the United States who died in office">died in office</a>.</p><meta property="mw:PageProp/toc" /><h2><span class="mw-headline" id="Background">Background</span></h2><h3><span class="mw-headline" id="Kennedy">Kennedy</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a></div><style data-mw-deduplicate="TemplateStyles:r1096954695/mw-parser-output/.tmulti">.mw-parser-output .tmulti .multiimageinner{display:flex;flex-direction:column}.mw-parser-output .tmulti .trow{display:flex;flex-direction:row;clear:left;flex-wrap:wrap;width:100%;box-sizing:border-box}.mw-parser-output .tmulti .tsingle{margin:1px;float:left}.mw-parser-output .tmulti .theader{clear:both;font-weight:bold;text-align:center;align-self:center;background-color:transparent;width:100%}.mw-parser-output .tmulti .thumbcaption{background-color:transparent}.mw-parser-output .tmulti .text-align-left{text-align:left}.mw-parser-output .tmulti .text-align-right{text-align:right}.mw-parser-output .tmulti .text-align-center{text-align:center}@media all and (max-width:720px){.mw-parser-output .tmulti .thumbinner{width:100%!important;box-sizing:border-box;max-width:none!important;align-items:center}.mw-parser-output .tmulti .trow{justify-content:center}.mw-parser-output .tmulti .tsingle{float:none!important;max-width:100%!important;box-sizing:border-box;text-align:center}.mw-parser-output .tmulti .tsingle .thumbcaption{text-align:left}.mw-parser-output .tmulti .trow>.thumbcaption{text-align:center}}</style><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:292px;max-width:292px"><div class="trow"><div class="tsingle" style="width:135px;max-width:135px"><div class="thumbimage" style="height:193px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg" class="mw-file-description"><img alt="President Kennedy is pictured speaking behind a podium. Rice University&#39;s stadium is visible behind him." src="//upload.wikimedia.org/wikipedia/commons/thumb/5/56/John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg/133px-John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg" decoding="async" width="133" height="193" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/5/56/John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg/200px-John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/5/56/John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg/266px-John\_F.\_Kennedy\_speaks\_at\_Rice\_University.jpg 2x" data-file-width="2034" data-file-height="2954" /></a></span></div><div class="thumbcaption"><a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">Kennedy</a> delivering his "<a href="/wiki/We\_choose\_to\_go\_to\_the\_Moon" title="We choose to go to the Moon">We choose to go to the Moon</a>" speech at <a href="/wiki/Rice\_University" title="Rice University">Rice University</a>, 1962</div></div><div class="tsingle" style="width:153px;max-width:153px"><div class="thumbimage" style="height:193px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_(cropped).png" class="mw-file-description"><img alt="Fidel Castro is pictured speaking into several microphones" src="//upload.wikimedia.org/wikipedia/commons/thumb/6/66/Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_%28cropped%29.png/151px-Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_%28cropped%29.png" decoding="async" width="151" height="194" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/6/66/Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_%28cropped%29.png/227px-Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_%28cropped%29.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/6/66/Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_%28cropped%29.png/302px-Fidel\_Castro\_-\_MATS\_Terminal\_Washington\_1959\_%28cropped%29.png 2x" data-file-width="1772" data-file-height="2278" /></a></span></div><div class="thumbcaption">Cuban leader <a href="/wiki/Fidel\_Castro" title="Fidel Castro">Fidel Castro</a> during his 1959 visit to Washington, D.C.</div></div></div></div></div><p>In 1960, <a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a>—then a <a href="/wiki/U.S.\_senator" class="mw-redirect" title="U.S. senator">U.S. senator</a> from <a href="/wiki/Massachusetts" title="Massachusetts">Massachusetts</a>—was elected the 35th <a href="/wiki/President\_of\_the\_United\_States" title="President of the United States">president of the United States</a> alongside Vice President <a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson</a>.<sup id="cite\_ref-1" class="reference"><a href="#cite\_note-1">&#91;1&#93;</a></sup><sup id="cite\_ref-2" class="reference"><a href="#cite\_note-2">&#91;2&#93;</a></sup><sup id="cite\_ref-bugliosixi\_3-0" class="reference"><a href="#cite\_note-bugliosixi-3">&#91;3&#93;</a></sup><sup id="cite\_ref-4" class="reference"><a href="#cite\_note-4">&#91;4&#93;</a></sup> Kennedy's tenure saw the height of the <a href="/wiki/Cold\_War" title="Cold War">Cold War</a>, and much of his foreign policy was dedicated to countering the <a href="/wiki/Soviet\_Union" title="Soviet Union">Soviet Union</a> and <a href="/wiki/Communism" title="Communism">communism</a>.<sup id="cite\_ref-5" class="reference"><a href="#cite\_note-5">&#91;5&#93;</a></sup><sup id="cite\_ref-6" class="reference"><a href="#cite\_note-6">&#91;6&#93;</a></sup> As president, he authorized operations to overthrow <a href="/wiki/Fidel\_Castro" title="Fidel Castro">Fidel Castro</a>'s communist government in Cuba;<sup id="cite\_ref-7" class="reference"><a href="#cite\_note-7">&#91;7&#93;</a></sup> these culminated in the failed <a href="/wiki/Bay\_of\_Pigs\_Invasion" title="Bay of Pigs Invasion">Bay of Pigs Invasion</a> in 1961, during which he declined to directly involve American troops.<sup id="cite\_ref-8" class="reference"><a href="#cite\_note-8">&#91;8&#93;</a></sup> The following year, Kennedy de-escalated the <a href="/wiki/Cuban\_Missile\_Crisis" title="Cuban Missile Crisis">Cuban Missile Crisis</a>, regarded as the closest that humanity has come to <a href="/wiki/Nuclear\_holocaust" title="Nuclear holocaust">nuclear holocaust</a>.<sup id="cite\_ref-9" class="reference"><a href="#cite\_note-9">&#91;9&#93;</a></sup></p><p>In 1963, Kennedy decided to travel to Texas to smooth over frictions in the <a href="/wiki/Texas\_Democratic\_Party" title="Texas Democratic Party">state's Democratic Party</a> between liberal U.S. Senator <a href="/wiki/Ralph\_Yarborough" title="Ralph Yarborough">Ralph Yarborough</a> and conservative Governor <a href="/wiki/John\_Connally" title="John Connally">John Connally</a>.<sup id="cite\_ref-10" class="reference"><a href="#cite\_note-10">&#91;10&#93;</a></sup><sup id="cite\_ref-11" class="reference"><a href="#cite\_note-11">&#91;11&#93;</a></sup> The visit was first agreed upon by Kennedy, Johnson, and Connally during a meeting in <a href="/wiki/El\_Paso,\_Texas" title="El Paso, Texas">El Paso</a> in June.<sup id="cite\_ref-WarrenCommission-Page28\_12-0" class="reference"><a href="#cite\_note-WarrenCommission-Page28-12">&#91;12&#93;</a></sup> The motorcade route was finalized on November 18 and announced soon thereafter.<sup id="cite\_ref-warren40\_13-0" class="reference"><a href="#cite\_note-warren40-13">&#91;13&#93;</a></sup> Kennedy also viewed the Texas trip as an informal launch of his <a href="/wiki/1964\_United\_States\_presidential\_election" title="1964 United States presidential election">1964 reelection campaign</a>.<sup id="cite\_ref-14" class="reference"><a href="#cite\_note-14">&#91;14&#93;</a></sup></p><h3><span class="mw-headline" id="Oswald">Oswald</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:442px;max-width:442px"><div class="trow"><div class="tsingle" style="width:244px;max-width:244px"><div class="thumbimage" style="height:190px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg" class="mw-file-description"><img alt="Oswald is pictured passing out pamphlets on a street in New Orleans. Other men, possibly Cuban, are also passing out pamphlets behind him." src="//upload.wikimedia.org/wikipedia/commons/thumb/a/aa/Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg/242px-Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg" decoding="async" width="242" height="191" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/a/aa/Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg/363px-Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/a/aa/Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg/484px-Pizzo\_Exh\_B-Oswald\_leaflets\_FPFC-WH\_Vol21\_139.jpg 2x" data-file-width="528" data-file-height="416" /></a></span></div><div class="thumbcaption"><a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a> (center) and unidentified others distributing pro-<a href="/wiki/Fidel\_Castro" title="Fidel Castro">Castro</a> leaflets in New Orleans, August 16, 1963. He was arrested shortly afterwards when he scuffled with anti-Castro <a href="/wiki/Cuban\_exiles" class="mw-redirect" title="Cuban exiles">Cuban exiles</a>.</div></div><div class="tsingle" style="width:194px;max-width:194px"><div class="thumbimage" style="height:190px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Lee\_Harvey\_Oswald\_with\_rifle,\_taken\_in\_Oswald%27s\_back\_yard,\_Neely\_Street,\_Dallas\_Texas,\_March\_1963,\_CE133A.jpg" class="mw-file-description"><img alt="Oswald is pictured posing in a backyard. He holds rifle in his left hand and a leftist publication in his right." src="//upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Lee\_Harvey\_Oswald\_with\_rifle%2C\_taken\_in\_Oswald%27s\_back\_yard%2C\_Neely\_Street%2C\_Dallas\_Texas%2C\_March\_1963%2C\_CE133A.jpg/192px-Lee\_Harvey\_Oswald\_with\_rifle%2C\_taken\_in\_Oswald%27s\_back\_yard%2C\_Neely\_Street%2C\_Dallas\_Texas%2C\_March\_1963%2C\_CE133A.jpg" decoding="async" width="192" height="190" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Lee\_Harvey\_Oswald\_with\_rifle%2C\_taken\_in\_Oswald%27s\_back\_yard%2C\_Neely\_Street%2C\_Dallas\_Texas%2C\_March\_1963%2C\_CE133A.jpg/288px-Lee\_Harvey\_Oswald\_with\_rifle%2C\_taken\_in\_Oswald%27s\_back\_yard%2C\_Neely\_Street%2C\_Dallas\_Texas%2C\_March\_1963%2C\_CE133A.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Lee\_Harvey\_Oswald\_with\_rifle%2C\_taken\_in\_Oswald%27s\_back\_yard%2C\_Neely\_Street%2C\_Dallas\_Texas%2C\_March\_1963%2C\_CE133A.jpg/384px-Lee\_Harvey\_Oswald\_with\_rifle%2C\_taken\_in\_Oswald%27s\_back\_yard%2C\_Neely\_Street%2C\_Dallas\_Texas%2C\_March\_1963%2C\_CE133A.jpg 2x" data-file-width="2306" data-file-height="2280" /></a></span></div><div class="thumbcaption">A photograph, given by Oswald to <a href="/wiki/George\_de\_Mohrenschildt" title="George de Mohrenschildt">George de Mohrenschildt</a>, of Oswald posing with <a href="/wiki/John\_F.\_Kennedy\_assassination\_rifle" title="John F. Kennedy assassination rifle">his rifle</a>, holstered pistol, and communist literature<sup id="cite\_ref-17" class="reference"><a href="#cite\_note-17">&#91;note 1&#93;</a></sup></div></div></div></div></div><p><a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a> (born 1939)<sup id="cite\_ref-18" class="reference"><a href="#cite\_note-18">&#91;17&#93;</a></sup> was a former <a href="/wiki/United\_States\_Marine\_Corps" title="United States Marine Corps">U.S. Marine</a> who had served in Japan and the Philippines and had espoused communism since reading <a href="/wiki/Karl\_Marx" title="Karl Marx">Karl Marx</a> at the age of 14.<sup id="cite\_ref-19" class="reference"><a href="#cite\_note-19">&#91;18&#93;</a></sup><sup id="cite\_ref-Philippines\_20-0" class="reference"><a href="#cite\_note-Philippines-20">&#91;19&#93;</a></sup><sup id="cite\_ref-21" class="reference"><a href="#cite\_note-21">&#91;20&#93;</a></sup> After accidentally shooting his elbow with an unauthorized handgun and fighting an officer, Oswald was court-martialed twice and demoted.<sup id="cite\_ref-Philippines\_20-1" class="reference"><a href="#cite\_note-Philippines-20">&#91;19&#93;</a></sup> In September 1959, he received a <a href="/wiki/Military\_discharge" title="Military discharge">dependency discharge</a> after claiming his mother was disabled.<sup id="cite\_ref-22" class="reference"><a href="#cite\_note-22">&#91;21&#93;</a></sup> A 19-year-old Oswald sailed on a freighter from <a href="/wiki/New\_Orleans" title="New Orleans">New Orleans</a> to France and then traveled to Finland, where he was issued a Soviet visa.<sup id="cite\_ref-23" class="reference"><a href="#cite\_note-23">&#91;22&#93;</a></sup></p><p>Oswald <a href="/wiki/Defection" title="Defection">defected</a> to the Soviet Union,<sup id="cite\_ref-24" class="reference"><a href="#cite\_note-24">&#91;23&#93;</a></sup><sup id="cite\_ref-27" class="reference"><a href="#cite\_note-27">&#91;note 2&#93;</a></sup> and in January 1960 he was sent to work at a factory in <a href="/wiki/Minsk" title="Minsk">Minsk</a>, Belarus.<sup id="cite\_ref-28" class="reference"><a href="#cite\_note-28">&#91;26&#93;</a></sup><sup id="cite\_ref-29" class="reference"><a href="#cite\_note-29">&#91;27&#93;</a></sup> In 1961, he met and married <a href="/wiki/Marina\_Oswald\_Porter" title="Marina Oswald Porter">Marina Prusakova</a>,<sup id="cite\_ref-30" class="reference"><a href="#cite\_note-30">&#91;28&#93;</a></sup> with whom he had a child.<sup id="cite\_ref-Warren\_1964,\_p.\_712\_31-0" class="reference"><a href="#cite\_note-Warren\_1964,\_p.\_712-31">&#91;29&#93;</a></sup> In 1962, he returned to the United States with a repatriation loan from the U.S. Embassy.<sup id="cite\_ref-Warren\_1964,\_p.\_712\_31-1" class="reference"><a href="#cite\_note-Warren\_1964,\_p.\_712-31">&#91;29&#93;</a></sup> He settled in the <a href="/wiki/Dallas%E2%80%93Fort\_Worth\_metroplex" title="Dallas–Fort Worth metroplex">Dallas/Fort Worth</a> area,<sup id="cite\_ref-32" class="reference"><a href="#cite\_note-32">&#91;30&#93;</a></sup> where he socialized with Russian émigrés—notably <a href="/wiki/George\_de\_Mohrenschildt" title="George de Mohrenschildt">George de Mohrenschildt</a>.<sup id="cite\_ref-33" class="reference"><a href="#cite\_note-33">&#91;31&#93;</a></sup><sup id="cite\_ref-34" class="reference"><a href="#cite\_note-34">&#91;32&#93;</a></sup> In March 1963, a bullet narrowly missed General <a href="/wiki/Edwin\_Walker" title="Edwin Walker">Edwin Walker</a> at his Dallas residence; witnesses observed two conspicuous men. Relying on Marina's testimony, a note left by Oswald, and ballistic evidence, the <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a> attributed this assassination attempt to Oswald.<sup id="cite\_ref-35" class="reference"><a href="#cite\_note-35">&#91;33&#93;</a></sup></p><p>In April 1963, Oswald returned to his birthplace, New Orleans,<sup id="cite\_ref-36" class="reference"><a href="#cite\_note-36">&#91;34&#93;</a></sup> and established an independent chapter of the pro-Castro <a href="/wiki/Fair\_Play\_for\_Cuba\_Committee" title="Fair Play for Cuba Committee">Fair Play for Cuba Committee</a>, of which he was the sole member.<sup id="cite\_ref-37" class="reference"><a href="#cite\_note-37">&#91;35&#93;</a></sup><sup id="cite\_ref-38" class="reference"><a href="#cite\_note-38">&#91;36&#93;</a></sup> While passing out pro-Castro literature alongside unknown compatriots, Oswald was arrested after scuffling with anti-Castro <a href="/wiki/Cuban\_exiles" class="mw-redirect" title="Cuban exiles">Cuban exiles</a>.<sup id="cite\_ref-39" class="reference"><a href="#cite\_note-39">&#91;37&#93;</a></sup><sup id="cite\_ref-40" class="reference"><a href="#cite\_note-40">&#91;38&#93;</a></sup><sup id="cite\_ref-42" class="reference"><a href="#cite\_note-42">&#91;note 3&#93;</a></sup> In late September 1963, Oswald traveled to <a href="/wiki/Mexico\_City" title="Mexico City">Mexico City</a>, where, according to the Warren Commission, he visited the Soviet and Cuban embassies.<sup id="cite\_ref-43" class="reference"><a href="#cite\_note-43">&#91;40&#93;</a></sup> The Mexico City trip is contentious; an internal <a href="/wiki/United\_States\_House\_Select\_Committee\_on\_Assassinations" title="United States House Select Committee on Assassinations">House Select Committee on Assassinations</a> (HSCA) report claimed that the embassy visitor was an Oswald impostor.<sup id="cite\_ref-44" class="reference"><a href="#cite\_note-44">&#91;41&#93;</a></sup><sup id="cite\_ref-45" class="reference"><a href="#cite\_note-45">&#91;42&#93;</a></sup><sup id="cite\_ref-47" class="reference"><a href="#cite\_note-47">&#91;note 4&#93;</a></sup>On October 3, Oswald returned to Dallas and found work at the <a href="/wiki/Texas\_School\_Book\_Depository" title="Texas School Book Depository">Texas School Book Depository</a> on <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a>.<sup id="cite\_ref-WCR-C1\_48-0" class="reference"><a href="#cite\_note-WCR-C1-48">&#91;44&#93;</a></sup> During the workweek he lived separately from Marina at a <a href="/wiki/Lee\_Harvey\_Oswald\_Rooming\_House" title="Lee Harvey Oswald Rooming House">Dallas rooming house</a>.<sup id="cite\_ref-Saturday2\_49-0" class="reference"><a href="#cite\_note-Saturday2-49">&#91;45&#93;</a></sup> On the morning of the assassination, he carried a long package (which he told coworkers contained curtain rods) into the Depository;<sup id="cite\_ref-50" class="reference"><a href="#cite\_note-50">&#91;46&#93;</a></sup><sup id="cite\_ref-53" class="reference"><a href="#cite\_note-53">&#91;note 5&#93;</a></sup> the Warren Commission concluded that this package contained Oswald's disassembled rifle.<sup id="cite\_ref-54" class="reference"><a href="#cite\_note-54">&#91;49&#93;</a></sup></p><h2><span class="mw-headline" id="November\_22">November 22</span></h2><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">See also: <a href="/wiki/Timeline\_of\_the\_John\_F.\_Kennedy\_assassination" title="Timeline of the John F. Kennedy assassination">Timeline of the John F. Kennedy assassination</a></div><h3><span id="Kennedy.27s\_arrival\_in\_Dallas\_and\_route\_to\_Dealey\_Plaza"></span><span class="mw-headline" id="Kennedy's\_arrival\_in\_Dallas\_and\_route\_to\_Dealey\_Plaza">Kennedy's arrival in Dallas and route to Dealey Plaza</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:492px;max-width:492px"><div class="trow"><div class="tsingle" style="width:235px;max-width:235px"><div class="thumbimage" style="height:231px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG" class="mw-file-description"><img alt="Kennedy and the First Lady, dresseing in a pink outfit and holding a bouquet of flowers, depart from Air Force One and greet welcomers." src="//upload.wikimedia.org/wikipedia/commons/thumb/8/8f/Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG/233px-Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG" decoding="async" width="233" height="232" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/8/8f/Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG/350px-Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/8/8f/Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG/466px-Kennedys\_arrive\_at\_Dallas\_11-22-63.JPG 2x" data-file-width="2672" data-file-height="2656" /></a></span></div><div class="thumbcaption">President Kennedy and First Lady <a href="/wiki/Jacqueline\_Kennedy\_Onassis" title="Jacqueline Kennedy Onassis">Jacqueline Kennedy</a> arriving at <a href="/wiki/Dallas\_Love\_Field" title="Dallas Love Field">Dallas Love Field</a> on November 22, 1963</div></div><div class="tsingle" style="width:253px;max-width:253px"><div class="thumbimage" style="height:231px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Dealey-plaza-annotated.png" class="mw-file-description"><img alt="The route of the motorcade: A right turn from Main Street onto Houston Street, then shortly thereafter a left turn before the Texas School Book Depository onto the snaking Elm Street, passing by the Grassy Knoll and exiting Dealey Plaza udner the Triple Underpass bridge." src="//upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Dealey-plaza-annotated.png/251px-Dealey-plaza-annotated.png" decoding="async" width="251" height="231" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Dealey-plaza-annotated.png/377px-Dealey-plaza-annotated.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Dealey-plaza-annotated.png/502px-Dealey-plaza-annotated.png 2x" data-file-width="592" data-file-height="546" /></a></span></div><div class="thumbcaption">The route of Kennedy's motorcade through <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a>. The shooting occurred on Elm Street.</div></div></div></div></div><p>On November 22, <a href="/wiki/Air\_Force\_One" title="Air Force One">Air Force One</a> arrived at <a href="/wiki/Dallas\_Love\_Field" title="Dallas Love Field">Dallas Love Field</a> at 11:40&#160;a.m.<sup id="cite\_ref-55" class="reference"><a href="#cite\_note-55">&#91;50&#93;</a></sup> President Kennedy and the First Lady boarded a <a href="/wiki/SS-100-X" class="mw-redirect" title="SS-100-X">1961 Lincoln Continental convertible limousine</a> to travel to a luncheon at the <a href="/wiki/Dallas\_Market\_Center" title="Dallas Market Center">Dallas Market Center</a>.<sup id="cite\_ref-odonnell\_56-0" class="reference"><a href="#cite\_note-odonnell-56">&#91;51&#93;</a></sup><sup id="cite\_ref-warren40\_13-1" class="reference"><a href="#cite\_note-warren40-13">&#91;13&#93;</a></sup> Other occupants of this vehicle—the second in the motorcade—were <a href="/wiki/United\_States\_Secret\_Service" title="United States Secret Service">Secret Service</a> Agent <a href="/wiki/William\_Greer" title="William Greer">Bill Greer</a>, who drove; Special Agent <a href="/wiki/Roy\_Kellerman" title="Roy Kellerman">Roy Kellerman</a> in the front passenger seat; and Governor Connally and his wife Nellie, who sat just forward of the Kennedys.<sup id="cite\_ref-57" class="reference"><a href="#cite\_note-57">&#91;52&#93;</a></sup><sup id="cite\_ref-58" class="reference"><a href="#cite\_note-58">&#91;53&#93;</a></sup> Four Dallas police motorcycle officers accompanied the Kennedy limousine.<sup id="cite\_ref-59" class="reference"><a href="#cite\_note-59">&#91;54&#93;</a></sup> Vice President Johnson, his wife <a href="/wiki/Lady\_Bird\_Johnson" title="Lady Bird Johnson">Lady Bird</a>, and Senator Yarborough rode in another convertible.<sup id="cite\_ref-60" class="reference"><a href="#cite\_note-60">&#91;55&#93;</a></sup></p><p>The motorcade's meandering 10-mile route through Dallas was designed to give Kennedy maximum exposure to crowds by passing through a suburban section of Dallas,<sup id="cite\_ref-odonnell\_56-1" class="reference"><a href="#cite\_note-odonnell-56">&#91;51&#93;</a></sup><sup id="cite\_ref-warren40\_13-2" class="reference"><a href="#cite\_note-warren40-13">&#91;13&#93;</a></sup> and <a href="/wiki/Main\_Street\_District,\_Dallas" title="Main Street District, Dallas">Main Street</a> in <a href="/wiki/Downtown\_Dallas" title="Downtown Dallas">Downtown Dallas</a>, before turning right on Houston Street. After another block, the motorcade was to turn left onto Elm Street, pass through Dealey Plaza, and travel a short segment of the <a href="/wiki/Stemmons\_Freeway" class="mw-redirect" title="Stemmons Freeway">Stemmons Freeway</a> to the Trade Mart.<sup id="cite\_ref-warren40\_13-3" class="reference"><a href="#cite\_note-warren40-13">&#91;13&#93;</a></sup> The planned route had been reported in newspapers several days in advance.<sup id="cite\_ref-warren40\_13-4" class="reference"><a href="#cite\_note-warren40-13">&#91;13&#93;</a></sup> Despite concerns about hostile protestors—Kennedy's UN Ambassador <a href="/wiki/Adlai\_Stevenson\_II" title="Adlai Stevenson II">Adlai Stevenson</a> had been spat on in Dallas in 1961—Kennedy was greeted warmly by enthusiastic crowds.<sup id="cite\_ref-61" class="reference"><a href="#cite\_note-61">&#91;56&#93;</a></sup><sup id="cite\_ref-62" class="reference"><a href="#cite\_note-62">&#91;57&#93;</a></sup><sup id="cite\_ref-63" class="reference"><a href="#cite\_note-63">&#91;58&#93;</a></sup></p><div style="clear:both;"></div><h3><span class="mw-headline" id="Shooting">Shooting</span></h3><div class="thumb tnone" style="margin-left:auto;margin-right:auto;overflow:hidden;width:auto;max-width:1408px"><div class="thumbinner"><div class="noresize" style="overflow:auto;direction:rtl"><span typeof="mw:File"><a href="/wiki/File:Dallas\_Elm\_Street.jpg" class="mw-file-description" title="Dealey Plaza in 2006, with Elm Street on the right and the Triple Underpass in the middle. The white concrete pergola, from which Zapruder was filming, is at the right, and the Grassy Knoll is slightly to its left. The red building partially visible at the extreme upper right is the Texas School Book Depository. Kennedy&#39;s motorcade moved from right to left, and Kennedy was struck by the final bullet just left of the lamp-post in front of the pergola."><img alt="A panoramic view of Dealey Plaza, Dallas, Texas, the location where President John F. Kennedy is assassinated on November 22, 1963." src="//upload.wikimedia.org/wikipedia/commons/thumb/9/90/Dallas\_Elm\_Street.jpg/1400px-Dallas\_Elm\_Street.jpg" decoding="async" width="1400" height="253" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/9/90/Dallas\_Elm\_Street.jpg/2100px-Dallas\_Elm\_Street.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/9/90/Dallas\_Elm\_Street.jpg/2800px-Dallas\_Elm\_Street.jpg 2x" data-file-width="6662" data-file-height="1204" /></a></span></div><div class="thumbcaption"><div class="magnify"><a href="/wiki/File:Dallas\_Elm\_Street.jpg" title="File:Dallas Elm Street.jpg"> </a></div><a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a> in 2006, with Elm Street on the right and the Triple Underpass in the middle. The white concrete pergola, from which <a href="/wiki/Zapruder\_film" title="Zapruder film">Zapruder was filming</a>, is at the right, and the <a href="/wiki/Grassy\_Knoll" class="mw-redirect" title="Grassy Knoll">Grassy Knoll</a> is slightly to its left. The red building partially visible at the extreme upper right is the <a href="/wiki/Texas\_School\_Book\_Depository" title="Texas School Book Depository">Texas School Book Depository</a>. Kennedy's motorcade moved from right to left, and Kennedy was struck by the final bullet just left of the lamp-post in front of the pergola.</div></div></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:492px;max-width:492px"><div class="trow"><div class="tsingle" style="width:261px;max-width:261px"><div class="thumbimage" style="height:167px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg" class="mw-file-description"><img alt="John F. Kennedy is seen sitting in a limousine, waving with a crowd on Elm Street, Dealey Plaza." src="//upload.wikimedia.org/wikipedia/commons/thumb/1/19/Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg/259px-Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg" decoding="async" width="259" height="167" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/1/19/Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg/389px-Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/1/19/Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg/518px-Robert\_Croft\_photo\_showing\_JFK%27s\_car\_on\_Elm\_Street.jpg 2x" data-file-width="1217" data-file-height="786" /></a></span></div></div><div class="tsingle" style="width:227px;max-width:227px"><div class="thumbimage" style="height:167px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Moorman\_photo\_of\_JFK\_assassination.jpg" class="mw-file-description"><img alt="John F. Kennedy is fatally shot in the head, with Jacqueline Kennedy sitting beside him. Jacqueline can be seen turning over and looking at him at that moment." src="//upload.wikimedia.org/wikipedia/commons/thumb/a/ae/Moorman\_photo\_of\_JFK\_assassination.jpg/225px-Moorman\_photo\_of\_JFK\_assassination.jpg" decoding="async" width="225" height="168" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/a/ae/Moorman\_photo\_of\_JFK\_assassination.jpg/338px-Moorman\_photo\_of\_JFK\_assassination.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/a/ae/Moorman\_photo\_of\_JFK\_assassination.jpg/450px-Moorman\_photo\_of\_JFK\_assassination.jpg 2x" data-file-width="3610" data-file-height="2690" /></a></span></div></div></div><div class="trow" style="display:flex"><div class="thumbcaption">Robert Croft's photograph of Kennedy in <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a>, before the first shot struck Kennedy (left), and the <a href="/wiki/Mary\_Moorman" title="Mary Moorman">Mary Moorman photograph</a> (right), taken a fraction of a second after the fatal shot</div></div></div></div><p>Kennedy's limousine entered Dealey Plaza at 12:30&#160;p.m. CST.<sup id="cite\_ref-bugliosixi\_3-1" class="reference"><a href="#cite\_note-bugliosixi-3">&#91;3&#93;</a></sup> Nellie Connally turned and commented to Kennedy, who was sitting behind her, "Mr. President, they can't make you believe now that there are not some in Dallas who love and appreciate you, can they?" Kennedy's reply&#160;&#8211;&#32;"No, they sure can't"&#160;&#8211;&#32;were his last words.<sup id="cite\_ref-64" class="reference"><a href="#cite\_note-64">&#91;59&#93;</a></sup></p><p>From Houston Street, the limousine made the planned left turn onto Elm, passing the Texas School Book Depository.<sup id="cite\_ref-65" class="reference"><a href="#cite\_note-65">&#91;60&#93;</a></sup> As it continued down Elm Street, multiple shots were fired: about 80% of the witnesses recalled hearing three shots.<sup id="cite\_ref-Earwitnesses\_66-0" class="reference"><a href="#cite\_note-Earwitnesses-66">&#91;61&#93;</a></sup> The Warren Commission concluded that three shots were fired and noted that most witnesses recalled that the second and third shots were bunched together.<sup id="cite\_ref-67" class="reference"><a href="#cite\_note-67">&#91;62&#93;</a></sup> Shortly after Kennedy began waving, some witnesses heard the first gunshot, but few in the crowd or motorcade reacted, many interpreting the sound as a firecracker or <a href="/wiki/Back-fire" title="Back-fire">backfire</a>.<sup id="cite\_ref-68" class="reference"><a href="#cite\_note-68">&#91;63&#93;</a></sup><sup id="cite\_ref-69" class="reference"><a href="#cite\_note-69">&#91;64&#93;</a></sup><sup id="cite\_ref-71" class="reference"><a href="#cite\_note-71">&#91;note 6&#93;</a></sup></p><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tleft"><div class="thumbinner multiimageinner" style="width:222px;max-width:222px"><div class="trow"><div class="tsingle" style="width:220px;max-width:220px"><div class="thumbimage" style="height:96px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Sbt2.jpg" class="mw-file-description"><img alt="A straight line is shown illustrating the trajectory of the bullet that hit John F. Kennedy and John Connally, according to the single-bullet theory." src="//upload.wikimedia.org/wikipedia/commons/thumb/b/bf/Sbt2.jpg/218px-Sbt2.jpg" decoding="async" width="218" height="97" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/b/bf/Sbt2.jpg/327px-Sbt2.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/b/bf/Sbt2.jpg 2x" data-file-width="361" data-file-height="160" /></a></span></div></div></div><div class="trow"><div class="tsingle" style="width:220px;max-width:220px"><div class="thumbimage" style="height:96px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Sbt\_critics.jpg" class="mw-file-description"><img alt="A curve showing the same bullet&#39;s trajectory in an alternative scenario where Kennedy sat directly behind Connally, according to conspiracy theorists." src="//upload.wikimedia.org/wikipedia/commons/thumb/7/7e/Sbt\_critics.jpg/218px-Sbt\_critics.jpg" decoding="async" width="218" height="97" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/7/7e/Sbt\_critics.jpg/327px-Sbt\_critics.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/7/7e/Sbt\_critics.jpg 2x" data-file-width="361" data-file-height="160" /></a></span></div></div></div><div class="trow" style="display:flex"><div class="thumbcaption">Per the <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a>'s <a href="/wiki/Single-bullet\_theory" title="Single-bullet theory">single-bullet theory</a> (top), one bullet caused Kennedy's nonfatal wound and Connally's wounds. Conspiracy theorists, neglecting that Kennedy was not directly behind Connally, claim that the trajectory required a "magic bullet" (bottom).<sup id="cite\_ref-72" class="reference"><a href="#cite\_note-72">&#91;66&#93;</a></sup></div></div></div></div><p>Within one second of each other, Governor Connally and Mrs. Kennedy turned abruptly from their left to their right.<sup id="cite\_ref-73" class="reference"><a href="#cite\_note-73">&#91;67&#93;</a></sup> Connally—an experienced hunter—immediately recognized the sound as that of a rifle and turned his head and torso rightward, noting nothing unusual behind him.<sup id="cite\_ref-bugliosi39\_70-1" class="reference"><a href="#cite\_note-bugliosi39-70">&#91;65&#93;</a></sup> He testified that he could not see Kennedy, so he started to turn forward again (turning from his right to his left), and that when his head was facing about 20 degrees left of center,<sup id="cite\_ref-johnconnally\_74-0" class="reference"><a href="#cite\_note-johnconnally-74">&#91;68&#93;</a></sup> he was struck in his upper right back by a shot he did not hear,<sup id="cite\_ref-johnconnally\_74-1" class="reference"><a href="#cite\_note-johnconnally-74">&#91;68&#93;</a></sup><sup id="cite\_ref-bug61\_75-0" class="reference"><a href="#cite\_note-bug61-75">&#91;69&#93;</a></sup> then shouted, "My God. They're going to kill us all!"<sup id="cite\_ref-76" class="reference"><a href="#cite\_note-76">&#91;70&#93;</a></sup></p><p>According to the Warren Commission and the HSCA, Kennedy was waving to the crowds on his right when a shot entered his upper back and exited his throat just beneath his <a href="/wiki/Larynx" title="Larynx">larynx</a>.<sup id="cite\_ref-77" class="reference"><a href="#cite\_note-77">&#91;71&#93;</a></sup><sup id="cite\_ref-78" class="reference"><a href="#cite\_note-78">&#91;72&#93;</a></sup> He raised his elbows and clenched his fists in front of his face and neck, then leaned forward and leftward. Mrs. Kennedy, facing him, put her arms around him.<sup id="cite\_ref-johnconnally\_74-2" class="reference"><a href="#cite\_note-johnconnally-74">&#91;68&#93;</a></sup><sup id="cite\_ref-aarclibrary.org\_79-0" class="reference"><a href="#cite\_note-aarclibrary.org-79">&#91;73&#93;</a></sup><sup id="cite\_ref-80" class="reference"><a href="#cite\_note-80">&#91;74&#93;</a></sup> Although a serious wound, it likely would have been survivable.<sup id="cite\_ref-sabato216\_81-0" class="reference"><a href="#cite\_note-sabato216-81">&#91;75&#93;</a></sup></p><p>According to the Warren Commission's <a href="/wiki/Single-bullet\_theory" title="Single-bullet theory">single-bullet theory</a>—derided as the "magic bullet theory" by conspiracy theorists—Governor Connally was injured by the same bullet that exited Kennedy's neck. The bullet created an oval-shaped entry wound near his right shoulder, struck and destroyed several inches of Connally's right fifth rib, and exited his chest just below his right nipple, <a href="/wiki/Pneumothorax" title="Pneumothorax">puncturing and collapsing his lung</a>. That same bullet then entered his arm just above his right wrist and shattered his right <a href="/wiki/Radius\_(bone)" title="Radius (bone)">radius bone</a>. The bullet exited just below the wrist at the inner side of his right palm and finally lodged in his left thigh.<sup id="cite\_ref-posnerbullet\_82-0" class="reference"><a href="#cite\_note-posnerbullet-82">&#91;76&#93;</a></sup><sup id="cite\_ref-83" class="reference"><a href="#cite\_note-83">&#91;77&#93;</a></sup><sup id="cite\_ref-sabato216\_81-1" class="reference"><a href="#cite\_note-sabato216-81">&#91;75&#93;</a></sup></p><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:292px;max-width:292px"><div class="trow"><div class="tsingle" style="width:147px;max-width:147px"><div class="thumbimage" style="height:182px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:HSCA-JFK-neck2-6-43.jpg" class="mw-file-description"><img alt="A sketch shows an arrow illustrating the first bullet that struck John F. Kennedy. The bullet is seen entering into his neck and exiting the throat." src="//upload.wikimedia.org/wikipedia/commons/thumb/0/08/HSCA-JFK-neck2-6-43.jpg/145px-HSCA-JFK-neck2-6-43.jpg" decoding="async" width="145" height="182" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/0/08/HSCA-JFK-neck2-6-43.jpg/218px-HSCA-JFK-neck2-6-43.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/0/08/HSCA-JFK-neck2-6-43.jpg 2x" data-file-width="232" data-file-height="291" /></a></span></div></div><div class="tsingle" style="width:141px;max-width:141px"><div class="thumbimage" style="height:182px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:HSCA-JFK-head-7-125.jpg" class="mw-file-description"><img alt="Another sketch shows an arrow illustrating the second bullet that fatally hit Kennedy in the head. Fragments are shown breaking from his skull." src="//upload.wikimedia.org/wikipedia/commons/thumb/c/cc/HSCA-JFK-head-7-125.jpg/139px-HSCA-JFK-head-7-125.jpg" decoding="async" width="139" height="182" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/c/cc/HSCA-JFK-head-7-125.jpg/209px-HSCA-JFK-head-7-125.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/c/cc/HSCA-JFK-head-7-125.jpg/278px-HSCA-JFK-head-7-125.jpg 2x" data-file-width="525" data-file-height="688" /></a></span></div></div></div><div class="trow" style="display:flex"><div class="thumbcaption">The trajectories of the two bullets that struck Kennedy, per the <a href="/wiki/United\_States\_House\_Select\_Committee\_on\_Assassinations" title="United States House Select Committee on Assassinations">House Select Committee on Assassinations</a></div></div></div></div><p>As the limousine passed the <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">grassy knoll</a>,<sup id="cite\_ref-haygood\_84-0" class="reference"><a href="#cite\_note-haygood-84">&#91;78&#93;</a></sup> Kennedy was struck a second time, by a fatal shot to the head.<sup id="cite\_ref-85" class="reference"><a href="#cite\_note-85">&#91;79&#93;</a></sup> The Warren Commission made no finding as to whether this was the second or third bullet fired, and concluded—as did the HSCA—that the second shot to strike Kennedy entered the rear of his head. It then passed in fragments through his skull, creating a large, "roughly <a href="https://en.wiktionary.org/wiki/ovular" class="extiw" title="wikt:ovular">ovular</a>" &#32;&#91;<i><a href="/wiki/Sic" title="Sic">sic</a></i>&#93; hole on the rear, right side of the head, and spraying blood and fragments. His brain and blood spatter landed as far as the following Secret Service car and the motorcycle officers.<sup id="cite\_ref-86" class="reference"><a href="#cite\_note-86">&#91;80&#93;</a></sup><sup id="cite\_ref-87" class="reference"><a href="#cite\_note-87">&#91;81&#93;</a></sup><sup id="cite\_ref-88" class="reference"><a href="#cite\_note-88">&#91;82&#93;</a></sup><sup id="cite\_ref-90" class="reference"><a href="#cite\_note-90">&#91;note 7&#93;</a></sup></p><p>Secret Service Agent <a href="/wiki/Clint\_Hill\_(Secret\_Service)" title="Clint Hill (Secret Service)">Clint Hill</a> was riding on the <a href="/wiki/Running\_board" title="Running board">running board</a> of the car immediately behind Kennedy's limousine.<sup id="cite\_ref-91" class="reference"><a href="#cite\_note-91">&#91;84&#93;</a></sup> Hill testified to the Warren Commission that he heard one shot, jumped onto the street, and ran forward to board the limousine and protect Kennedy. Hill stated that he heard the fatal headshot as he reached the Lincoln, "approximately five seconds" after the first shot that he heard.<sup id="cite\_ref-cjhill\_92-0" class="reference"><a href="#cite\_note-cjhill-92">&#91;85&#93;</a></sup> After the headshot, Mrs. Kennedy began climbing onto the limousine's trunk, but she later had no recollection of doing so.<sup id="cite\_ref-jacqueline\_93-0" class="reference"><a href="#cite\_note-jacqueline-93">&#91;86&#93;</a></sup> Hill believed she may have been reaching for a piece of Kennedy's skull.<sup id="cite\_ref-cjhill\_92-1" class="reference"><a href="#cite\_note-cjhill-92">&#91;85&#93;</a></sup> He jumped onto the limousine's bumper, and he clung to the car as it exited Dealey Plaza and sped to <a href="/wiki/Parkland\_Memorial\_Hospital" title="Parkland Memorial Hospital">Parkland Memorial Hospital</a>. After Mrs. Kennedy crawled back into her seat, both Governor and Mrs. Connally heard her repeatedly saying: "They have killed my husband. I have his brains in my hand."<sup id="cite\_ref-johnconnally\_74-3" class="reference"><a href="#cite\_note-johnconnally-74">&#91;68&#93;</a></sup><sup id="cite\_ref-nellieconnally\_94-0" class="reference"><a href="#cite\_note-nellieconnally-94">&#91;87&#93;</a></sup><sup id="cite\_ref-95" class="reference"><a href="#cite\_note-95">&#91;88&#93;</a></sup></p><p>Bystander <a href="/wiki/James\_Tague" title="James Tague">James Tague</a> received a minor wound to the cheek—either from bullet or concrete curb fragments—while standing by the triple underpass.<sup id="cite\_ref-96" class="reference"><a href="#cite\_note-96">&#91;89&#93;</a></sup> Nine months later, the <a href="/wiki/Federal\_Bureau\_of\_Investigation" title="Federal Bureau of Investigation">FBI</a> removed the curb, and spectrographic analysis revealed metallic residue consistent with the lead core in Oswald's ammunition.<sup id="cite\_ref-newsweek\_112814\_97-0" class="reference"><a href="#cite\_note-newsweek\_112814-97">&#91;90&#93;</a></sup> Tague testified before the Warren Commission and initially stated that he was wounded by either the second or third shot of the three shots that he remembered hearing. When the commission counsel pressed him to be more specific, Tague testified that he was wounded by the second shot.<sup id="cite\_ref-98" class="reference"><a href="#cite\_note-98">&#91;91&#93;</a></sup></p><h3><span class="mw-headline" id="Aftermath\_in\_Dealey\_Plaza">Aftermath in Dealey Plaza</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Newman\_Family.jpg" class="mw-file-description"><img alt="Witness hunker down on the grassy incline before the grassy knoll after the shooting" src="//upload.wikimedia.org/wikipedia/commons/thumb/3/33/Newman\_Family.jpg/260px-Newman\_Family.jpg" decoding="async" width="260" height="255" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/3/33/Newman\_Family.jpg/390px-Newman\_Family.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/3/33/Newman\_Family.jpg/520px-Newman\_Family.jpg 2x" data-file-width="1154" data-file-height="1130" /></a><figcaption>Bill and Gayle Newman shielding their children after hearing shots and dropping to the grass. The grassy knoll and its picket fence are visible in the background.<sup id="cite\_ref-100" class="reference"><a href="#cite\_note-100">&#91;note 8&#93;</a></sup></figcaption></figure><p>As the motorcade left Dealey Plaza, some witnesses sought cover,<sup id="cite\_ref-trask76\_101-0" class="reference"><a href="#cite\_note-trask76-101">&#91;93&#93;</a></sup> and others joined police officers to run up the grassy knoll in search of a shooter.<sup id="cite\_ref-haygood\_84-1" class="reference"><a href="#cite\_note-haygood-84">&#91;78&#93;</a></sup><sup id="cite\_ref-102" class="reference"><a href="#cite\_note-102">&#91;94&#93;</a></sup> No shooter was found behind the knoll's picket fence.<sup id="cite\_ref-bug852\_103-0" class="reference"><a href="#cite\_note-bug852-103">&#91;95&#93;</a></sup> Among the 178 witnesses who testified to the Warren Commission, 78 were unsure of the shots' origin, 49 believed they came from the Depository, and 21 thought they came from the grassy knoll.<sup id="cite\_ref-104" class="reference"><a href="#cite\_note-104">&#91;96&#93;</a></sup> No witness ever reported seeing anyone—with or without a gun—immediately behind the knoll's picket fence at the time of the shooting.<sup id="cite\_ref-bug852\_103-1" class="reference"><a href="#cite\_note-bug852-103">&#91;95&#93;</a></sup></p><p><a href="/wiki/Lee\_Bowers" title="Lee Bowers">Lee Bowers</a> was in a two-story <a href="/wiki/Switch\_tower" class="mw-redirect" title="Switch tower">railroad switch tower</a> 120 yards (110&#160;m) behind the grassy knoll's picket fence; he was watching the motorcade and had an unobstructed view of the only route by which any shooter could flee the grassy knoll; he saw no one leaving the scene.<sup id="cite\_ref-bug852\_103-2" class="reference"><a href="#cite\_note-bug852-103">&#91;95&#93;</a></sup> Bowers testified to the Warren Commission that "one or two" men were between him and the fence during the assassination: one was a familiar parking lot attendant and the other wore a uniform like a county courthouse custodian. He testified seeing "some commotion" on the grassy knoll at the time of the assassination: "something out of the ordinary, a sort of milling around, but something occurred in this particular spot which was out of the ordinary, which attracted my eye for some reason which I could not identify".<sup id="cite\_ref-105" class="reference"><a href="#cite\_note-105">&#91;97&#93;</a></sup><sup id="cite\_ref-107" class="reference"><a href="#cite\_note-107">&#91;note 9&#93;</a></sup></p><p>At 12:36&#160;p.m., teenager Amos Euins approached Dallas police Sergeant D.V. Harkness to report having seen a "<a href="/wiki/Colored" title="Colored">colored man</a> ... leaning out of the window [with] a rifle" on the sixth floor of the Depository during the assassination; in response, Harkness radioed that he was sealing off the Depository.<sup id="cite\_ref-bug80\_108-0" class="reference"><a href="#cite\_note-bug80-108">&#91;99&#93;</a></sup> Witness <a href="/wiki/Howard\_Brennan" title="Howard Brennan">Howard Brennan</a> then approached a police inspector to report seeing a shooter—a white man in khaki clothing—in the same window.<sup id="cite\_ref-109" class="reference"><a href="#cite\_note-109">&#91;100&#93;</a></sup><sup id="cite\_ref-110" class="reference"><a href="#cite\_note-110">&#91;101&#93;</a></sup> Police broadcast Brennan's description of the man at 12:45 pm.<sup id="cite\_ref-111" class="reference"><a href="#cite\_note-111">&#91;102&#93;</a></sup> Brennan testified that, after the second shot, "This man<span class="nowrap">&#160;</span>... was aiming for his last shot&#160;... and maybe paused for another second as though to assure himself that he had hit his mark."<sup id="cite\_ref-112" class="reference"><a href="#cite\_note-112">&#91;103&#93;</a></sup> Witness James R. Worrell Jr. also reported seeing a gun barrel emerge from a sixth floor Depository window.<sup id="cite\_ref-113" class="reference"><a href="#cite\_note-113">&#91;104&#93;</a></sup> Bonnie Ray Williams, who was on the fifth floor of the Depository, stated that the rifle's report was so loud and near that ceiling plaster fell onto his head.<sup id="cite\_ref-114" class="reference"><a href="#cite\_note-114">&#91;105&#93;</a></sup></p><h3><span id="Oswald.27s\_flight.2C\_killing\_of\_J.\_D.\_Tippit.2C\_and\_arrest"></span><span class="mw-headline" id="Oswald's\_flight,\_killing\_of\_J.\_D.\_Tippit,\_and\_arrest">Oswald's flight, killing of J. D. Tippit, and arrest</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Further information: <a href="/wiki/John\_F.\_Kennedy\_assassination\_rifle" title="John F. Kennedy assassination rifle">John F. Kennedy assassination rifle</a></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:492px;max-width:492px"><div class="trow"><div class="tsingle" style="width:238px;max-width:238px"><div class="thumbimage" style="height:194px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:HowardBrennan.jpg" class="mw-file-description"><img alt="A photograph of the Texas School Book Depository, showing its view from a witness of John F. Kennedy&#39;s assassination. The window from the sixth floor is marked A, and another window from the fifth floor marked B." src="//upload.wikimedia.org/wikipedia/commons/thumb/d/d5/HowardBrennan.jpg/236px-HowardBrennan.jpg" decoding="async" width="236" height="194" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/d/d5/HowardBrennan.jpg/354px-HowardBrennan.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/d/d5/HowardBrennan.jpg/472px-HowardBrennan.jpg 2x" data-file-width="532" data-file-height="438" /></a></span></div></div><div class="tsingle" style="width:250px;max-width:250px"><div class="thumbimage" style="height:194px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:View\_from\_Sniper%27s\_nest\_to\_Elm\_Street,\_CE724.jpg" class="mw-file-description"><img alt="A view through a window to Elm Street, Dealey Plaza, from the shooter&#39;s location in the Depository to kill Kennedy, the so-called &quot;sniper&#39;s nest&quot;." src="//upload.wikimedia.org/wikipedia/commons/thumb/d/d2/View\_from\_Sniper%27s\_nest\_to\_Elm\_Street%2C\_CE724.jpg/248px-View\_from\_Sniper%27s\_nest\_to\_Elm\_Street%2C\_CE724.jpg" decoding="async" width="248" height="195" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/d/d2/View\_from\_Sniper%27s\_nest\_to\_Elm\_Street%2C\_CE724.jpg/372px-View\_from\_Sniper%27s\_nest\_to\_Elm\_Street%2C\_CE724.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/d/d2/View\_from\_Sniper%27s\_nest\_to\_Elm\_Street%2C\_CE724.jpg/496px-View\_from\_Sniper%27s\_nest\_to\_Elm\_Street%2C\_CE724.jpg 2x" data-file-width="569" data-file-height="447" /></a></span></div></div></div><div class="trow" style="display:flex"><div class="thumbcaption">The view of the <a href="/wiki/Texas\_School\_Book\_Depository" title="Texas School Book Depository">Texas School Book Depository</a> from witness <a href="/wiki/Howard\_Brennan" title="Howard Brennan">Howard Brennan</a>: circle "A" indicates where he saw Oswald firing a rifle. At right, the view from the "sniper's nest" in the Texas School Book Depository</div></div></div></div><p>When searching the sixth floor of the Depository, two deputies found an Italian <a href="/wiki/Carcano" title="Carcano">Carcano</a> M91/38 bolt-action rifle.<sup id="cite\_ref-115" class="reference"><a href="#cite\_note-115">&#91;106&#93;</a></sup><sup id="cite\_ref-117" class="reference"><a href="#cite\_note-117">&#91;note 10&#93;</a></sup> Oswald had purchased the used rifle the previous March under the alias "A. Hidell" and had it delivered to his Dallas <a href="/wiki/Post-office\_box" class="mw-redirect" title="Post-office box">P.O. box</a>.<sup id="cite\_ref-118" class="reference"><a href="#cite\_note-118">&#91;108&#93;</a></sup> The FBI found Oswald's partial palm print on the barrel,<sup id="cite\_ref-119" class="reference"><a href="#cite\_note-119">&#91;109&#93;</a></sup><sup id="cite\_ref-bug801\_120-0" class="reference"><a href="#cite\_note-bug801-120">&#91;110&#93;</a></sup><sup id="cite\_ref-123" class="reference"><a href="#cite\_note-123">&#91;note 11&#93;</a></sup> and fibers on the rifle were consistent with those of Oswald's shirt.<sup id="cite\_ref-124" class="reference"><a href="#cite\_note-124">&#91;113&#93;</a></sup> A bullet found on Governor Connally's hospital <a href="/wiki/Gurney" class="mw-redirect" title="Gurney">gurney</a> and two fragments found in the limousine were <a href="/wiki/Ballistic\_fingerprinting" class="mw-redirect" title="Ballistic fingerprinting">ballistically matched</a> to the Carcano.<sup id="cite\_ref-125" class="reference"><a href="#cite\_note-125">&#91;114&#93;</a></sup></p><p>Oswald left the Depository and traveled by bus to his boarding house, where he retrieved a jacket and revolver.<sup id="cite\_ref-126" class="reference"><a href="#cite\_note-126">&#91;115&#93;</a></sup> At 1:12&#160;p.m., police officer <a href="/wiki/J.\_D.\_Tippit" title="J. D. Tippit">J. D. Tippit</a> spotted Oswald walking in the residential neighborhood of <a href="/wiki/Oak\_Cliff" title="Oak Cliff">Oak Cliff</a> and called him to his patrol car. After an exchange of words, Tippit exited his vehicle; Oswald then shot Tippit three times in the chest. As Tippit lay on the ground, Oswald fired a final shot into Tippit's right <a href="/wiki/Temple\_(anatomy)" title="Temple (anatomy)">temple</a>. Oswald then calmly walked away before running as witnesses emerged.<sup id="cite\_ref-127" class="reference"><a href="#cite\_note-127">&#91;116&#93;</a></sup></p><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1066479718"><table class="infobox" style="width: 20em; float: right; clear: right; margin:0 0 1.5em 1.5em"><tbody><tr><th colspan="2" class="infobox-above" style="font-size:115%">Oswald speaking in custody</th></tr><tr><td colspan="2" class="infobox-full-data" style="text-align: left"><span typeof="mw:File"><span><img alt="video icon" src="//upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Nuvola\_apps\_kaboodle.svg/16px-Nuvola\_apps\_kaboodle.svg.png" decoding="async" width="16" height="16" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Nuvola\_apps\_kaboodle.svg/24px-Nuvola\_apps\_kaboodle.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Nuvola\_apps\_kaboodle.svg/32px-Nuvola\_apps\_kaboodle.svg.png 2x" data-file-width="128" data-file-height="128" /></span></span> <a rel="nofollow" class="external text" href="https://www.youtube.com/watch?v=\_ZYAIiErTNg">Oswald professing innocence</a></td></tr><tr><td colspan="2" class="infobox-full-data" style="text-align: left"><span typeof="mw:File"><span><img alt="video icon" src="//upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Nuvola\_apps\_kaboodle.svg/16px-Nuvola\_apps\_kaboodle.svg.png" decoding="async" width="16" height="16" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Nuvola\_apps\_kaboodle.svg/24px-Nuvola\_apps\_kaboodle.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Nuvola\_apps\_kaboodle.svg/32px-Nuvola\_apps\_kaboodle.svg.png 2x" data-file-width="128" data-file-height="128" /></span></span> <a rel="nofollow" class="external text" href="https://www.cbsnews.com/video/oswald-holds-press-conference/">Oswald's "press conference"</a></td></tr></tbody></table><p>As Dallas police officers conducted a roll call of Depository employees, Oswald's supervisor Roy Truly realized that Oswald was absent and notified the police.<sup id="cite\_ref-128" class="reference"><a href="#cite\_note-128">&#91;117&#93;</a></sup> Based on a false identification of Oswald, Dallas police raided a library in Oak Cliff before realizing their mistake.<sup id="cite\_ref-129" class="reference"><a href="#cite\_note-129">&#91;118&#93;</a></sup> At 1:36&#160;p.m., the police were called after a conspicuous Oswald, tired from running, was seen sneaking into the <a href="/wiki/Texas\_Theatre" title="Texas Theatre">Texas Theatre</a> without paying.<sup id="cite\_ref-130" class="reference"><a href="#cite\_note-130">&#91;119&#93;</a></sup> With the film <i><a href="/wiki/War\_Is\_Hell\_(film)" title="War Is Hell (film)">War Is Hell</a></i> still playing, Dallas policemen arrested Oswald after a brief struggle in which Oswald drew his empty gun.<sup id="cite\_ref-131" class="reference"><a href="#cite\_note-131">&#91;120&#93;</a></sup> He denied shooting anyone and claimed he was being made a "<a href="https://en.wiktionary.org/wiki/patsy#Noun" class="extiw" title="wiktionary:patsy">patsy</a>" because he had lived in the Soviet Union.<sup id="cite\_ref-132" class="reference"><a href="#cite\_note-132">&#91;121&#93;</a></sup></p><h3><span id="Kennedy\_declared\_dead.3B\_Johnson\_sworn\_in"></span><span class="mw-headline" id="Kennedy\_declared\_dead;\_Johnson\_sworn\_in">Kennedy declared dead; Johnson sworn in</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office,\_November\_1963.jpg" class="mw-file-description"><img alt="Lyndon B. Johnson raises his hand above an outstretched Bible as his is sworn in as President as Air Force One prepares to depart Love Field in Dallas. Jacqueline Kennedy, still in her blood-spattered clothes (not visible), looks on." src="//upload.wikimedia.org/wikipedia/commons/thumb/c/cc/Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office%2C\_November\_1963.jpg/220px-Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office%2C\_November\_1963.jpg" decoding="async" width="220" height="174" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/c/cc/Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office%2C\_November\_1963.jpg/330px-Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office%2C\_November\_1963.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/c/cc/Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office%2C\_November\_1963.jpg/440px-Lyndon\_B.\_Johnson\_taking\_the\_oath\_of\_office%2C\_November\_1963.jpg 2x" data-file-width="7750" data-file-height="6132" /></a><figcaption><a href="/wiki/Cecil\_Stoughton" class="mw-redirect" title="Cecil Stoughton">Cecil Stoughton</a>'s photograph of <a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson</a> being sworn in as President as <a href="/wiki/Air\_Force\_One" title="Air Force One">Air Force One</a> prepares to depart Love Field in Dallas. <a href="/wiki/Jacqueline\_Kennedy" class="mw-redirect" title="Jacqueline Kennedy">Jacqueline Kennedy</a>, still in her blood-spattered clothes (not visible here), looks on.</figcaption></figure><p>At 12:38&#160;p.m., Kennedy arrived in the emergency room of Parkland Memorial Hospital.<sup id="cite\_ref-133" class="reference"><a href="#cite\_note-133">&#91;122&#93;</a></sup> Although Kennedy was still breathing after the shooting, his personal physician, <a href="/wiki/George\_Burkley" class="mw-redirect" title="George Burkley">George Burkley</a>, immediately saw that survival was impossible.<sup id="cite\_ref-134" class="reference"><a href="#cite\_note-134">&#91;123&#93;</a></sup><sup id="cite\_ref-hub\_135-0" class="reference"><a href="#cite\_note-hub-135">&#91;124&#93;</a></sup><sup id="cite\_ref-136" class="reference"><a href="#cite\_note-136">&#91;125&#93;</a></sup> After Parkland surgeons performed futile <a href="/wiki/Cardiopulmonary\_resuscitation" title="Cardiopulmonary resuscitation">cardiac massage</a>, Kennedy was pronounced dead at 1:00&#160;p.m., 30 minutes after the shooting.<sup id="cite\_ref-hub\_135-1" class="reference"><a href="#cite\_note-hub-135">&#91;124&#93;</a></sup> CBS host <a href="/wiki/Walter\_Cronkite" title="Walter Cronkite">Walter Cronkite</a> broke the news on live television.<sup id="cite\_ref-137" class="reference"><a href="#cite\_note-137">&#91;126&#93;</a></sup><sup id="cite\_ref-138" class="reference"><a href="#cite\_note-138">&#91;127&#93;</a></sup></p><p>The Secret Service was concerned about the possibility of a larger plot and urged Johnson to leave Dallas and return to the White House, but Johnson refused to do so without any proof of Kennedy's death.<sup id="cite\_ref-boyd\_139-0" class="reference"><a href="#cite\_note-boyd-139">&#91;128&#93;</a></sup><sup id="cite\_ref-141" class="reference"><a href="#cite\_note-141">&#91;note 12&#93;</a></sup> Johnson returned to Air Force One around 1:30<span class="nowrap">&#160;</span>p.m., and shortly thereafter, he received telephone calls from advisors <a href="/wiki/McGeorge\_Bundy" title="McGeorge Bundy">McGeorge Bundy</a> and <a href="/wiki/Walter\_Jenkins" title="Walter Jenkins">Walter Jenkins</a> advising him to depart for Washington, D.C. immediately.<sup id="cite\_ref-Esquire;\_September\_16,\_2013\_142-0" class="reference"><a href="#cite\_note-Esquire;\_September\_16,\_2013-142">&#91;130&#93;</a></sup> He replied that he would not leave Dallas without Jacqueline Kennedy and that she would not leave without Kennedy's body.<sup id="cite\_ref-boyd\_139-1" class="reference"><a href="#cite\_note-boyd-139">&#91;128&#93;</a></sup><sup id="cite\_ref-Esquire;\_September\_16,\_2013\_142-1" class="reference"><a href="#cite\_note-Esquire;\_September\_16,\_2013-142">&#91;130&#93;</a></sup> According to <i><a href="/wiki/Esquire\_(magazine)" title="Esquire (magazine)">Esquire</a></i>, Johnson did "not want to be remembered as an abandoner of beautiful widows".<sup id="cite\_ref-Esquire;\_September\_16,\_2013\_142-2" class="reference"><a href="#cite\_note-Esquire;\_September\_16,\_2013-142">&#91;130&#93;</a></sup></p><p>At the time of Kennedy's assassination, the murder of a president was not under federal jurisdiction.<sup id="cite\_ref-kurtz2\_143-0" class="reference"><a href="#cite\_note-kurtz2-143">&#91;131&#93;</a></sup> Accordingly, Dallas County medical examiner <a href="/wiki/Earl\_Rose\_(coroner)" title="Earl Rose (coroner)">Earl Rose</a> insisted that Texas law required him to perform an autopsy.<sup id="cite\_ref-Munson\_144-0" class="reference"><a href="#cite\_note-Munson-144">&#91;132&#93;</a></sup><sup id="cite\_ref-Stafford\_145-0" class="reference"><a href="#cite\_note-Stafford-145">&#91;133&#93;</a></sup> A heated exchange between Kennedy's aides and Dallas officials nearly erupted into a fistfight before the Texans yielded and allowed Kennedy's body to be transported to Air Force One.<sup id="cite\_ref-Munson\_144-1" class="reference"><a href="#cite\_note-Munson-144">&#91;132&#93;</a></sup><sup id="cite\_ref-Stafford\_145-1" class="reference"><a href="#cite\_note-Stafford-145">&#91;133&#93;</a></sup><sup id="cite\_ref-bug110\_146-0" class="reference"><a href="#cite\_note-bug110-146">&#91;134&#93;</a></sup> At 2:38&#160;p.m., with Jacqueline Kennedy at his side, <a href="/wiki/First\_inauguration\_of\_Lyndon\_B.\_Johnson" title="First inauguration of Lyndon B. Johnson">Johnson was administered the oath of office</a> by federal judge <a href="/wiki/Sarah\_Tilghman\_Hughes" class="mw-redirect" title="Sarah Tilghman Hughes">Sarah Tilghman Hughes</a> aboard Air Force One shortly before departing for Washington with Kennedy's coffin.<sup id="cite\_ref-147" class="reference"><a href="#cite\_note-147">&#91;135&#93;</a></sup></p><h2><span class="mw-headline" id="Immediate\_aftermath">Immediate aftermath</span></h2><h3><span class="mw-headline" id="Autopsy">Autopsy</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/John\_F.\_Kennedy\_autopsy" title="John F. Kennedy autopsy">John F. Kennedy autopsy</a></div><style data-mw-deduplicate="TemplateStyles:r1062260506">.mw-parser-output .quotebox{background-color:#F9F9F9;border:1px solid #aaa;box-sizing:border-box;padding:10px;font-size:88%;max-width:100%}.mw-parser-output .quotebox.floatleft{margin:.5em 1.4em .8em 0}.mw-parser-output .quotebox.floatright{margin:.5em 0 .8em 1.4em}.mw-parser-output .quotebox.centered{overflow:hidden;position:relative;margin:.5em auto .8em auto}.mw-parser-output .quotebox.floatleft span,.mw-parser-output .quotebox.floatright span{font-style:inherit}.mw-parser-output .quotebox>blockquote{margin:0;padding:0;border-left:0;font-family:inherit;font-size:inherit}.mw-parser-output .quotebox-title{background-color:#F9F9F9;text-align:center;font-size:110%;font-weight:bold}.mw-parser-output .quotebox-quote>:first-child{margin-top:0}.mw-parser-output .quotebox-quote:last-child>:last-child{margin-bottom:0}.mw-parser-output .quotebox-quote.quoted:before{font-family:"Times New Roman",serif;font-weight:bold;font-size:large;color:gray;content:" “ ";vertical-align:-45%;line-height:0}.mw-parser-output .quotebox-quote.quoted:after{font-family:"Times New Roman",serif;font-weight:bold;font-size:large;color:gray;content:" ” ";line-height:0}.mw-parser-output .quotebox .left-aligned{text-align:left}.mw-parser-output .quotebox .right-aligned{text-align:right}.mw-parser-output .quotebox .center-aligned{text-align:center}.mw-parser-output .quotebox .quote-title,.mw-parser-output .quotebox .quotebox-quote{display:block}.mw-parser-output .quotebox cite{display:block;font-style:normal}@media screen and (max-width:640px){.mw-parser-output .quotebox{width:100%!important;margin:0 0 .8em!important;float:none!important}}</style><div class="quotebox pullquote floatright" style="width:25em; ; font-size: 85%; background-color: MistyRose; padding:1.5em"><blockquote class="quotebox-quote left-aligned" style=""><p>Where bungled autopsies are concerned, President Kennedy's is the exemplar.</p></blockquote><p><cite class="left-aligned" style="">— Dr. <a href="/wiki/Michael\_Baden" title="Michael Baden">Michael Baden</a>, chairman of the forensic pathology panel of the <a href="/wiki/United\_States\_House\_Select\_Committee\_on\_Assassinations" title="United States House Select Committee on Assassinations">House Select Committee on Assassinations</a><sup id="cite\_ref-Bugliosi\_2007\_p.\_382\_148-0" class="reference"><a href="#cite\_note-Bugliosi\_2007\_p.\_382-148">&#91;136&#93;</a></sup></cite></p></div><p>President Kennedy's autopsy was performed at <a href="/wiki/National\_Naval\_Medical\_Center" class="mw-redirect" title="National Naval Medical Center">Bethesda Naval Hospital</a> in <a href="/wiki/Maryland" title="Maryland">Maryland</a> on the night of November 22. Jacqueline Kennedy had selected a naval hospital as the postmortem site as President Kennedy had been a <a href="/wiki/Naval\_officer" class="mw-redirect" title="Naval officer">naval officer</a> during World War II.<sup id="cite\_ref-149" class="reference"><a href="#cite\_note-149">&#91;137&#93;</a></sup><sup id="cite\_ref-150" class="reference"><a href="#cite\_note-150">&#91;138&#93;</a></sup> The autopsy was conducted by two physicians: naval commanders James Humes and J. Thornton Boswell; Humes led the procedure.<sup id="cite\_ref-151" class="reference"><a href="#cite\_note-151">&#91;139&#93;</a></sup> Under pressure from the Kennedy family and White House staffers to expedite the procedure, the physicians conducted a "rushed" and incomplete autopsy.<sup id="cite\_ref-152" class="reference"><a href="#cite\_note-152">&#91;140&#93;</a></sup> Kennedy's personal physician, Rear Admiral George Burkley,<sup id="cite\_ref-153" class="reference"><a href="#cite\_note-153">&#91;141&#93;</a></sup> signed a <a href="/wiki/Death\_certificate" title="Death certificate">death certificate</a> on November 23 and recorded that the <a href="/wiki/Cause\_of\_death" title="Cause of death">cause of death</a> was a gunshot wound to the skull.<sup id="cite\_ref-amex\_154-0" class="reference"><a href="#cite\_note-amex-154">&#91;142&#93;</a></sup><sup id="cite\_ref-155" class="reference"><a href="#cite\_note-155">&#91;143&#93;</a></sup></p><p>Three years after the autopsy, Kennedy's brain—which had been removed and preserved for later analysis—was found to be missing from the <a href="/wiki/National\_Archives\_and\_Records\_Administration" title="National Archives and Records Administration">National Archives</a>.<sup id="cite\_ref-bug157\_156-0" class="reference"><a href="#cite\_note-bug157-156">&#91;144&#93;</a></sup><sup id="cite\_ref-brain\_157-0" class="reference"><a href="#cite\_note-brain-157">&#91;145&#93;</a></sup> Conspiracy theorists often claim that the brain may have shown that the headshot entered from the front. Alternatively, it has been suggested that the president's brother, Attorney General <a href="/wiki/Robert\_F.\_Kennedy" title="Robert F. Kennedy">Robert F. Kennedy</a>, destroyed the brain to hide the extent of the <a href="/wiki/John\_F.\_Kennedy#Health" title="John F. Kennedy">president's chronic illnesses</a> and consequent medication.<sup id="cite\_ref-brain\_157-1" class="reference"><a href="#cite\_note-brain-157">&#91;145&#93;</a></sup> Some autopsy X-rays and photographs have also been lost.<sup id="cite\_ref-158" class="reference"><a href="#cite\_note-158">&#91;146&#93;</a></sup></p><p>Most historians regard the autopsy as the "most botched" segment of the government's investigation.<sup id="cite\_ref-Bugliosi\_2007\_p.\_382\_148-1" class="reference"><a href="#cite\_note-Bugliosi\_2007\_p.\_382-148">&#91;136&#93;</a></sup> The HSCA forensic pathology panel concluded that the autopsy had "extensive failings", including failure to take sufficient photographs, failure to determine the exact exit or entry point of the head bullet, not dissecting the back and neck, and neglecting to determine the angles of gunshot injuries relative to <a href="/wiki/Body\_axis" class="mw-redirect" title="Body axis">body axis</a>.<sup id="cite\_ref-159" class="reference"><a href="#cite\_note-159">&#91;147&#93;</a></sup> The panel further concluded that the two doctors were not qualified to have conducted a forensic autopsy. Panel member <a href="/w/index.php?title=Milton\_Helpern&amp;action=edit&amp;redlink=1" class="new" title="Milton Helpern (page does not exist)">Milton Helpern</a>—<a href="/wiki/Office\_of\_Chief\_Medical\_Examiner\_of\_the\_City\_of\_New\_York" title="Office of Chief Medical Examiner of the City of New York">Chief Medical Examiner for New York City</a>—said that selecting Humes (who had only taken a single course on forensic pathology) to lead the autopsy was "like sending a seven-year-old boy who has taken three lessons on the violin over to the <a href="/wiki/New\_York\_Philharmonic" title="New York Philharmonic">New York Philharmonic</a> and expecting him to perform a <a href="/wiki/Tchaikovsky" class="mw-redirect" title="Tchaikovsky">Tchaikovsky</a> symphony".<sup id="cite\_ref-160" class="reference"><a href="#cite\_note-160">&#91;148&#93;</a></sup></p><h3><span class="mw-headline" id="Funeral">Funeral</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main articles: <a href="/wiki/State\_funeral\_of\_John\_F.\_Kennedy" title="State funeral of John F. Kennedy">State funeral of John F. Kennedy</a> and <a href="/wiki/List\_of\_dignitaries\_at\_the\_state\_funeral\_of\_John\_F.\_Kennedy" title="List of dignitaries at the state funeral of John F. Kennedy">List of dignitaries at the state funeral of John F. Kennedy</a></div><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:John\_F.\_Kennedy\_Lying\_in\_State\_November\_25,\_1963\_(10965631824).jpg" class="mw-file-description"><img alt="Kennedy&#39;s coffin in front of the US Capitol" src="//upload.wikimedia.org/wikipedia/commons/thumb/c/c5/John\_F.\_Kennedy\_Lying\_in\_State\_November\_25%2C\_1963\_%2810965631824%29.jpg/220px-John\_F.\_Kennedy\_Lying\_in\_State\_November\_25%2C\_1963\_%2810965631824%29.jpg" decoding="async" width="220" height="222" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/c/c5/John\_F.\_Kennedy\_Lying\_in\_State\_November\_25%2C\_1963\_%2810965631824%29.jpg/330px-John\_F.\_Kennedy\_Lying\_in\_State\_November\_25%2C\_1963\_%2810965631824%29.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/c/c5/John\_F.\_Kennedy\_Lying\_in\_State\_November\_25%2C\_1963\_%2810965631824%29.jpg/440px-John\_F.\_Kennedy\_Lying\_in\_State\_November\_25%2C\_1963\_%2810965631824%29.jpg 2x" data-file-width="2273" data-file-height="2296" /></a><figcaption>Kennedy's coffin is carried from the <a href="/wiki/United\_States\_Capitol" title="United States Capitol">Capitol</a>, November 25</figcaption></figure><p>Following the autopsy, Kennedy lay in repose in the <a href="/wiki/East\_Room" title="East Room">East Room of the White House</a> for 24&#160;hours.<sup id="cite\_ref-161" class="reference"><a href="#cite\_note-161">&#91;149&#93;</a></sup><sup id="cite\_ref-162" class="reference"><a href="#cite\_note-162">&#91;150&#93;</a></sup> President Johnson issued <a href="https://en.wikisource.org/wiki/Proclamation\_3561" class="extiw" title="s:Proclamation 3561">Presidential Proclamation 3561</a>, declaring November 25 to be a <a href="/wiki/National\_day\_of\_mourning" title="National day of mourning">national day of mourning</a>,<sup id="cite\_ref-AssociatedPress-Page40\_163-0" class="reference"><a href="#cite\_note-AssociatedPress-Page40-163">&#91;151&#93;</a></sup><sup id="cite\_ref-164" class="reference"><a href="#cite\_note-164">&#91;152&#93;</a></sup> and that only essential emergency workers be at their posts.<sup id="cite\_ref-165" class="reference"><a href="#cite\_note-165">&#91;153&#93;</a></sup> The coffin was then carried on a <a href="/wiki/Black\_Jack\_(horse)" title="Black Jack (horse)">horse</a>-drawn <a href="/wiki/Limbers\_and\_caissons" title="Limbers and caissons">caisson</a> to the <a href="/wiki/United\_States\_Capitol" title="United States Capitol">Capitol</a> to lie in state. Hundreds of thousands of mourners lined up to view the guarded casket,<sup id="cite\_ref-WhitePage16\_166-0" class="reference"><a href="#cite\_note-WhitePage16-166">&#91;154&#93;</a></sup><sup id="cite\_ref-167" class="reference"><a href="#cite\_note-167">&#91;155&#93;</a></sup> with a quarter million passing through the <a href="/wiki/United\_States\_Capitol\_rotunda" title="United States Capitol rotunda">rotunda</a> during the 18 hours of lying in state.<sup id="cite\_ref-WhitePage16\_166-1" class="reference"><a href="#cite\_note-WhitePage16-166">&#91;154&#93;</a></sup> Even in the Soviet Union—according to a memo by FBI Director <a href="/wiki/J.\_Edgar\_Hoover" title="J. Edgar Hoover">J. Edgar Hoover</a>—news of the assassination "was greeted by great shock and consternation and church bells were tolled in the memory of President Kennedy".<sup id="cite\_ref-168" class="reference"><a href="#cite\_note-168">&#91;156&#93;</a></sup><sup id="cite\_ref-169" class="reference"><a href="#cite\_note-169">&#91;157&#93;</a></sup></p><p>Kennedy's funeral service was held on November 25, at <a href="/wiki/Cathedral\_of\_St.\_Matthew\_the\_Apostle" class="mw-redirect" title="Cathedral of St. Matthew the Apostle">St. Matthew's Cathedral</a>,<sup id="cite\_ref-WhitePage17\_170-0" class="reference"><a href="#cite\_note-WhitePage17-170">&#91;158&#93;</a></sup> with the <a href="/wiki/Requiem\_Mass" class="mw-redirect" title="Requiem Mass">Requiem Mass</a> led by Cardinal <a href="/wiki/Richard\_Cushing" title="Richard Cushing">Richard Cushing</a>.<sup id="cite\_ref-WhitePage17\_170-1" class="reference"><a href="#cite\_note-WhitePage17-170">&#91;158&#93;</a></sup> About 1,200 guests, including representatives from over 90 countries, attended.<sup id="cite\_ref-171" class="reference"><a href="#cite\_note-171">&#91;159&#93;</a></sup><sup id="cite\_ref-nbc126\_172-0" class="reference"><a href="#cite\_note-nbc126-172">&#91;160&#93;</a></sup> Although there was no formal eulogy,<sup id="cite\_ref-173" class="reference"><a href="#cite\_note-173">&#91;161&#93;</a></sup><sup id="cite\_ref-174" class="reference"><a href="#cite\_note-174">&#91;162&#93;</a></sup> Auxiliary Bishop <a href="/wiki/Philip\_M.\_Hannan" class="mw-redirect" title="Philip M. Hannan">Philip M. Hannan</a> read excerpts from Kennedy's speeches and writings.<sup id="cite\_ref-nbc126\_172-1" class="reference"><a href="#cite\_note-nbc126-172">&#91;160&#93;</a></sup> After the service, Kennedy was buried at <a href="/wiki/Arlington\_National\_Cemetery" title="Arlington National Cemetery">Arlington National Cemetery</a> in Virginia.<sup id="cite\_ref-175" class="reference"><a href="#cite\_note-175">&#91;163&#93;</a></sup> <a href="/wiki/John\_F.\_Kennedy\_Eternal\_Flame" title="John F. Kennedy Eternal Flame">An eternal flame</a> was lit at his burial site in 1967.<sup id="cite\_ref-176" class="reference"><a href="#cite\_note-176">&#91;164&#93;</a></sup></p><h3><span class="mw-headline" id="Killing\_of\_Oswald">Killing of Oswald</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Ruby\_shoots\_Oswald.jpg" class="mw-file-description"><img alt="Photograph of the moment Jack Ruby shot Oswald" src="//upload.wikimedia.org/wikipedia/commons/thumb/9/90/Ruby\_shoots\_Oswald.jpg/300px-Ruby\_shoots\_Oswald.jpg" decoding="async" width="300" height="230" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/9/90/Ruby\_shoots\_Oswald.jpg/450px-Ruby\_shoots\_Oswald.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/9/90/Ruby\_shoots\_Oswald.jpg/600px-Ruby\_shoots\_Oswald.jpg 2x" data-file-width="1451" data-file-height="1111" /></a><figcaption><a href="/wiki/Robert\_H.\_Jackson\_(photographer)" title="Robert H. Jackson (photographer)">Robert H. Jackson</a>'s photograph of <a href="/wiki/Jack\_Ruby" title="Jack Ruby">Jack Ruby</a> shooting Oswald, who was being escorted by police detective <a href="/wiki/Jim\_Leavelle" title="Jim Leavelle">Jim Leavelle</a> (tan suit) for the transfer from the city jail to the county jail. Ruby died in prison in 1967.</figcaption></figure><p>On Sunday, November 24, at 11:21&#160;a.m., as Oswald was being escorted to a car in the basement of Dallas Police headquarters for the transfer from the city jail to the county jail, he was shot by Dallas nightclub owner <a href="/wiki/Jack\_Ruby" title="Jack Ruby">Jack Ruby</a>. The shooting was broadcast live on television.<sup id="cite\_ref-Saturday2\_49-1" class="reference"><a href="#cite\_note-Saturday2-49">&#91;45&#93;</a></sup> <a href="/wiki/Robert\_H.\_Jackson\_(photographer)" title="Robert H. Jackson (photographer)">Robert H. Jackson</a> of the <i><a href="/wiki/Dallas\_Times\_Herald" title="Dallas Times Herald">Dallas Times Herald</a></i> photographed the shooting, for which he was awarded the 1964 <a href="/wiki/Pulitzer\_Prize\_for\_Photography" title="Pulitzer Prize for Photography">Pulitzer Prize for Photography</a>.<sup id="cite\_ref-Fischer\_177-0" class="reference"><a href="#cite\_note-Fischer-177">&#91;165&#93;</a></sup></p><p>Drifting in and out of consciousness, Oswald was taken by ambulance to Parkland Memorial Hospital; he was treated by the same surgeons who had tried to save Kennedy.<sup id="cite\_ref-178" class="reference"><a href="#cite\_note-178">&#91;166&#93;</a></sup> The bullet had entered his lower left chest but had not exited; major heart blood vessels such as the <a href="/wiki/Aorta" title="Aorta">aorta</a> and <a href="/wiki/Inferior\_vena\_cava" title="Inferior vena cava">inferior vena cava</a> were severed, and the spleen, kidney, and liver were hit.<sup id="cite\_ref-179" class="reference"><a href="#cite\_note-179">&#91;167&#93;</a></sup> Despite surgical intervention and <a href="/wiki/Defibrillation" title="Defibrillation">defibrillation</a>, Oswald died at 1:07&#160;p.m.<sup id="cite\_ref-180" class="reference"><a href="#cite\_note-180">&#91;168&#93;</a></sup></p><p>Arrested immediately after the shooting, Ruby testified to the Warren Commission that he had been distraught by Kennedy's death and that killing Oswald would spare "Mrs. Kennedy the discomfiture of coming back to trial". He also stated he shot Oswald on the spur of the moment when the opportunity presented itself, without considering any reason for doing so.<sup id="cite\_ref-rubyWC\_181-0" class="reference"><a href="#cite\_note-rubyWC-181">&#91;169&#93;</a></sup> Initially, Ruby wished to defend himself in his trial until his lawyer <a href="/wiki/Melvin\_Belli" title="Melvin Belli">Melvin Belli</a> dissuaded him: Belli argued that Ruby had an episode of <a href="/wiki/Temporal\_lobe\_epilepsy" title="Temporal lobe epilepsy">psychomotor epilepsy</a> and was thus not responsible.<sup id="cite\_ref-bug357\_182-0" class="reference"><a href="#cite\_note-bug357-182">&#91;170&#93;</a></sup> Ruby was convicted, but the <a href="/wiki/Rubenstein\_v.\_State" title="Rubenstein v. State">decision was overturned on appeal</a>. While awaiting retrial in 1967,<sup id="cite\_ref-183" class="reference"><a href="#cite\_note-183">&#91;171&#93;</a></sup> Ruby died of a <a href="/wiki/Pulmonary\_embolism" title="Pulmonary embolism">pulmonary embolism</a>, secondary to cancer. Like Oswald and Kennedy, Ruby was declared dead at Parkland Hospital.<sup id="cite\_ref-184" class="reference"><a href="#cite\_note-184">&#91;172&#93;</a></sup></p><h2><span class="mw-headline" id="Films\_and\_photographs\_of\_the\_assassination">Films and photographs of the assassination</span></h2><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1062260506"><div class="quotebox pullquote floatleft" style="width:19.3em; ; font-size: 85%; background-color: powderblue; padding:1.5em"><blockquote class="quotebox-quote left-aligned" style=""><p>My god, I saw the whole thing. I saw the man's brains come out of his head.</p></blockquote><p><cite class="left-aligned" style="">— <a href="/wiki/Abraham\_Zapruder" title="Abraham Zapruder">Abraham Zapruder</a><sup id="cite\_ref-trask76\_101-1" class="reference"><a href="#cite\_note-trask76-101">&#91;93&#93;</a></sup></cite></p></div><figure class="mw-default-size mw-halign-left" typeof="mw:File/Thumb"><a href="/wiki/File:Zaprudercamera.jpg" class="mw-file-description"><img alt="The Bell &amp; Howell Zoomatic movie camera used by Abraham Zapruder" src="//upload.wikimedia.org/wikipedia/commons/thumb/6/60/Zaprudercamera.jpg/220px-Zaprudercamera.jpg" decoding="async" width="220" height="230" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/6/60/Zaprudercamera.jpg/330px-Zaprudercamera.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/6/60/Zaprudercamera.jpg/440px-Zaprudercamera.jpg 2x" data-file-width="1284" data-file-height="1340" /></a><figcaption>The <a href="/wiki/Bell\_%26\_Howell" title="Bell &amp; Howell">Bell &amp; Howell</a> Zoomatic movie camera used by <a href="/wiki/Abraham\_Zapruder" title="Abraham Zapruder">Abraham Zapruder</a> to capture footage of the motorcade and Kennedy's killing, which later came to be known as the <a href="/wiki/Zapruder\_film" title="Zapruder film">Zapruder film</a>. The camera is preserved within the collection of the <a href="/wiki/National\_Archives\_and\_Records\_Administration" title="National Archives and Records Administration">National Archives</a>.</figcaption></figure><p>Standing on the pergola wall some 65 feet (20&#160;m) from the road,<sup id="cite\_ref-185" class="reference"><a href="#cite\_note-185">&#91;173&#93;</a></sup> tailor <a href="/wiki/Abraham\_Zapruder" title="Abraham Zapruder">Abraham Zapruder</a> recorded Kennedy's killing on 26&#160;seconds of silent <a href="/wiki/8\_mm\_film" title="8 mm film">8 mm film</a> — known as the <a href="/wiki/Zapruder\_film" title="Zapruder film">Zapruder film</a>.<sup id="cite\_ref-lifezap\_186-0" class="reference"><a href="#cite\_note-lifezap-186">&#91;174&#93;</a></sup> Frame 313 captures the exact moment at which Kennedy's head explodes.<sup id="cite\_ref-frenchies\_187-0" class="reference"><a href="#cite\_note-frenchies-187">&#91;175&#93;</a></sup> <i><a href="/wiki/Life\_(magazine)" title="Life (magazine)">Life</a></i> magazine published frame enlargements from the Zapruder film shortly after the assassination.<sup id="cite\_ref-lifezap\_186-1" class="reference"><a href="#cite\_note-lifezap-186">&#91;174&#93;</a></sup><sup id="cite\_ref-188" class="reference"><a href="#cite\_note-188">&#91;176&#93;</a></sup> The footage itself was first publicly shown at the 1969 <a href="/wiki/Trial\_of\_Clay\_Shaw" title="Trial of Clay Shaw">trial of Clay Shaw</a>, and on television in 1975 by <a href="/wiki/Geraldo\_Rivera" title="Geraldo Rivera">Geraldo Rivera</a>.<sup id="cite\_ref-189" class="reference"><a href="#cite\_note-189">&#91;177&#93;</a></sup> In 1999, an arbitration panel ordered the federal government to pay $615,384 per second of film to Zapruder's heirs, valuing the complete film at $16&#160;million (equivalent to $24.8&#160;million in 2022).<sup id="cite\_ref-190" class="reference"><a href="#cite\_note-190">&#91;178&#93;</a></sup><sup id="cite\_ref-191" class="reference"><a href="#cite\_note-191">&#91;179&#93;</a></sup></p><p>Zapruder was one of at least 32 people in Dealey Plaza known to have made film or still photographs at or around the time of the shooting.<sup id="cite\_ref-192" class="reference"><a href="#cite\_note-192">&#91;180&#93;</a></sup> Most notably among the photographers, <a href="/wiki/Mary\_Moorman" title="Mary Moorman">Mary Moorman</a> took several photos of Kennedy with her <a href="/wiki/Instant\_camera" title="Instant camera">Polaroid</a>, including one of Kennedy less than one-sixth of a second after the headshot.<sup id="cite\_ref-bug885\_193-0" class="reference"><a href="#cite\_note-bug885-193">&#91;181&#93;</a></sup></p><p>As well as Zapruder, <a href="/w/index.php?title=Charles\_Bronson\_(photographer)&amp;action=edit&amp;redlink=1" class="new" title="Charles Bronson (photographer) (page does not exist)">Charles Bronson</a>, <a href="/wiki/Marie\_Muchmore" title="Marie Muchmore">Marie Muchmore</a>, and <a href="/wiki/Orville\_Nix" title="Orville Nix">Orville Nix</a> filmed the assassination, but at farther distances than Zapruder.<sup id="cite\_ref-194" class="reference"><a href="#cite\_note-194">&#91;182&#93;</a></sup><sup id="cite\_ref-bug452\_195-0" class="reference"><a href="#cite\_note-bug452-195">&#91;183&#93;</a></sup> Of the three, only Nix — who filmed the assassination from the opposite side of Elm Street from Zapruder, capturing the grassy knoll — actually recorded the fatal shot.<sup id="cite\_ref-bug452\_195-1" class="reference"><a href="#cite\_note-bug452-195">&#91;183&#93;</a></sup><sup id="cite\_ref-nix\_196-0" class="reference"><a href="#cite\_note-nix-196">&#91;184&#93;</a></sup><sup id="cite\_ref-197" class="reference"><a href="#cite\_note-197">&#91;note 13&#93;</a></sup> In 1966, Nix claimed that, after he gave the film to the FBI, the duplicate that they returned had frames "missing" or "ruined". Although lower-quality duplicates exist, the original film has been missing since 1978.<sup id="cite\_ref-nix\_196-2" class="reference"><a href="#cite\_note-nix-196">&#91;184&#93;</a></sup> Previously unknown footage filmed by George Jefferies was released in 2007.<sup id="cite\_ref-198" class="reference"><a href="#cite\_note-198">&#91;185&#93;</a></sup><sup id="cite\_ref-199" class="reference"><a href="#cite\_note-199">&#91;186&#93;</a></sup> Recorded a few blocks before the shooting, the film captures Kennedy's bunched suit jacket, explaining the <a href="/wiki/Single-bullet\_theory#Location\_of\_back\_wound" title="Single-bullet theory">discrepancies between the location of the bullet hole in Kennedy's back and his jacket</a>.<sup id="cite\_ref-200" class="reference"><a href="#cite\_note-200">&#91;187&#93;</a></sup></p><p>Some films and photographs captured an unidentified woman apparently filming the assassination; researchers have nicknamed her the <a href="/wiki/Babushka\_Lady" title="Babushka Lady">Babushka Lady</a> due to the <a href="/wiki/Headscarf" title="Headscarf">shawl</a> around her head.<sup id="cite\_ref-201" class="reference"><a href="#cite\_note-201">&#91;188&#93;</a></sup> In 1978, <a href="/wiki/Gordon\_Arnold" title="Gordon Arnold">Gordon Arnold</a> came forward and claimed that he had filmed the assassination from the grassy knoll and that a police officer had confiscated his film.<sup id="cite\_ref-202" class="reference"><a href="#cite\_note-202">&#91;189&#93;</a></sup> Arnold is not visible in any photographs taken of the area, which <a href="/wiki/Vincent\_Bugliosi" title="Vincent Bugliosi">Vincent Bugliosi</a>—author of <i><a href="/wiki/Reclaiming\_History" title="Reclaiming History">Reclaiming History</a></i>—called "conclusive photographic proof that Arnold's story was fabricated".<sup id="cite\_ref-bug887\_203-0" class="reference"><a href="#cite\_note-bug887-203">&#91;190&#93;</a></sup></p><h2><span class="mw-headline" id="Official\_investigations">Official investigations</span></h2><h3><span class="mw-headline" id="Dallas\_Police">Dallas Police</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Lee\_Harvey\_Oswald\_1963.jpg" class="mw-file-description"><img alt="Oswald in police custody" src="//upload.wikimedia.org/wikipedia/commons/thumb/0/0e/Lee\_Harvey\_Oswald\_1963.jpg/170px-Lee\_Harvey\_Oswald\_1963.jpg" decoding="async" width="170" height="264" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/0/0e/Lee\_Harvey\_Oswald\_1963.jpg/255px-Lee\_Harvey\_Oswald\_1963.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/0/0e/Lee\_Harvey\_Oswald\_1963.jpg/340px-Lee\_Harvey\_Oswald\_1963.jpg 2x" data-file-width="653" data-file-height="1014" /></a><figcaption><a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a> in police custody</figcaption></figure><p>At the Dallas Police headquarters, officers interrogated Oswald about the shootings of Kennedy and Tippit; these intermittent interviews lasted for approximately 12&#160;hours between 2:30&#160;p.m. on November 22 and 11&#160;a.m. on November 24.<sup id="cite\_ref-204" class="reference"><a href="#cite\_note-204">&#91;191&#93;</a></sup> Throughout, Oswald denied any involvement and resorted to statements that were found to be false.<sup id="cite\_ref-warren180195\_205-0" class="reference"><a href="#cite\_note-warren180195-205">&#91;192&#93;</a></sup></p><p>Captain <a href="/wiki/J.\_W.\_Fritz" title="J. W. Fritz">J. W. Fritz</a> of the Homicide and Robbery Bureau did most of the questioning and kept only rudimentary notes.<sup id="cite\_ref-fritz\_206-0" class="reference"><a href="#cite\_note-fritz-206">&#91;193&#93;</a></sup><sup id="cite\_ref-207" class="reference"><a href="#cite\_note-207">&#91;194&#93;</a></sup> Days later, Fritz wrote a report of the interrogation from notes he made afterwards.<sup id="cite\_ref-fritz\_206-1" class="reference"><a href="#cite\_note-fritz-206">&#91;193&#93;</a></sup> There were no stenographic or tape recordings. Representatives of other law enforcement agencies were also present, including the FBI and the Secret Service, and occasionally participated in the questioning.<sup id="cite\_ref-warren180195\_205-1" class="reference"><a href="#cite\_note-warren180195-205">&#91;192&#93;</a></sup> Several of the FBI agents who were present wrote contemporaneous reports of the interrogation.<sup id="cite\_ref-208" class="reference"><a href="#cite\_note-208">&#91;195&#93;</a></sup></p><p>On the evening of November 22, Dallas Police performed <a href="/wiki/Paraffin\_test" class="mw-redirect" title="Paraffin test">paraffin tests</a> on Oswald's hands and right cheek in an effort to establish whether or not he had recently fired a weapon. The results were positive for the hands and negative for the right cheek. Such tests were unreliable,<sup id="cite\_ref-warren180195\_205-2" class="reference"><a href="#cite\_note-warren180195-205">&#91;192&#93;</a></sup><sup id="cite\_ref-209" class="reference"><a href="#cite\_note-209">&#91;196&#93;</a></sup> and the Warren Commission did not rely on these results.<sup id="cite\_ref-warren180195\_205-3" class="reference"><a href="#cite\_note-warren180195-205">&#91;192&#93;</a></sup></p><p>The Dallas police forced Oswald to host a press conference after midnight on November 23, and, early in the investigation, made many leaks to the media. Their conduct angered Johnson, who instructed the FBI to tell them to "stop talking about the assassination".<sup id="cite\_ref-kurtz2\_143-1" class="reference"><a href="#cite\_note-kurtz2-143">&#91;131&#93;</a></sup> Dallas Police, after the FBI expressed concerns that someone might try to kill Oswald, assured federal authorities that they would provide him adequate protection.<sup id="cite\_ref-210" class="reference"><a href="#cite\_note-210">&#91;197&#93;</a></sup></p><h3><span class="mw-headline" id="FBI\_investigation">FBI investigation</span></h3><figure class="mw-default-size mw-halign-left" typeof="mw:File/Thumb"><a href="/wiki/File:Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy,\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg" class="mw-file-description"><img alt="Attorney General Robert F. Kennedy and President John F. Kennedy are pictured speaking at the White House" src="//upload.wikimedia.org/wikipedia/commons/thumb/8/8b/Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy%2C\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg/170px-Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy%2C\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg" decoding="async" width="170" height="170" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/8/8b/Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy%2C\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg/255px-Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy%2C\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/8/8b/Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy%2C\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg/340px-Presentation\_of\_the\_Young\_American\_Medals\_for\_Bravery.\_Attorney\_General\_Robert\_F.\_Kennedy%2C\_Director\_of\_F.B.I.\_J....\_-\_NARA\_-\_194254.jpg 2x" data-file-width="2700" data-file-height="2700" /></a><figcaption>FBI Director <a href="/wiki/J.\_Edgar\_Hoover" title="J. Edgar Hoover">J. Edgar Hoover</a> (pictured between <a href="/wiki/Robert\_F.\_Kennedy" title="Robert F. Kennedy">Robert</a> and <a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a> in May 1963) wrote in a 1964 memo that "we left no stone unturned".<sup id="cite\_ref-bug338\_211-0" class="reference"><a href="#cite\_note-bug338-211">&#91;198&#93;</a></sup></figcaption></figure><p>The FBI immediately launched an investigation into the assassination, relying on a federal statute that forbade assaulting a federal officer. Within 24 hours of the killing, FBI Director Hoover sent President Johnson a preliminary report finding that Oswald was the sole culprit. After Ruby killed Oswald, Johnson decided that the Texan authorities were incompetent and instructed the FBI to conduct a complete investigation.<sup id="cite\_ref-kurtz2\_143-2" class="reference"><a href="#cite\_note-kurtz2-143">&#91;131&#93;</a></sup></p><p>On December 9, 1963, the Warren Commission received the FBI's report of its investigation which concluded that three bullets had been fired&#8212;the first striking Kennedy in the upper back; the second striking Connally; and the third striking Kennedy in the head, killing him.<sup id="cite\_ref-:2\_212-0" class="reference"><a href="#cite\_note-:2-212">&#91;199&#93;</a></sup> The FBI continued to serve as the main investigative arm of the Warren Commission in the field. A total of 169 FBI agents worked on the case, conducting over 25,000 interviews and writing over 2,300 reports.<sup id="cite\_ref-bug338\_211-1" class="reference"><a href="#cite\_note-bug338-211">&#91;198&#93;</a></sup></p><p>The thoroughness of the FBI's investigation is contested. Bugliosi applauded its quality and cites conspiracy theorist <a href="/w/index.php?title=Harrison\_Edward\_Livingstone&amp;action=edit&amp;redlink=1" class="new" title="Harrison Edward Livingstone (page does not exist)">Harrison Edward Livingstone</a>'s praise of the FBI's commitment to following all leads.<sup id="cite\_ref-213" class="reference"><a href="#cite\_note-213">&#91;200&#93;</a></sup> In its 1979 report, the HSCA found that the FBI's investigation of pro- and anti-Castro Cubans, and any connections to Oswald or Ruby, was insufficient.<sup id="cite\_ref-bug338\_211-2" class="reference"><a href="#cite\_note-bug338-211">&#91;198&#93;</a></sup> The HSCA also noted that Hoover "seemed determined [to make the case against Oswald as the lone assassin] within 24 hours of the assassination".<sup id="cite\_ref-214" class="reference"><a href="#cite\_note-214">&#91;201&#93;</a></sup></p><h3><span class="mw-headline" id="Warren\_Commission">Warren Commission</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a></div><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg" class="mw-file-description"><img alt="Members of the Warren Commission present their report to President Johnson" src="//upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg/300px-Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg" decoding="async" width="300" height="231" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg/450px-Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg/600px-Warren\_Commission\_presenting\_report\_on\_assassination\_of\_John\_F.\_Kennedy\_to\_Lyndon\_Johnson.jpg 2x" data-file-width="2379" data-file-height="1833" /></a><figcaption>The <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a> presents its report to President Johnson. From left to right: <a href="/wiki/John\_J.\_McCloy" title="John J. McCloy">John McCloy</a>, <a href="/wiki/J.\_Lee\_Rankin" title="J. Lee Rankin">J. Lee Rankin</a> (General Counsel), Senator <a href="/wiki/Richard\_Russell,\_Jr." class="mw-redirect" title="Richard Russell, Jr.">Richard Russell</a>, Congressman <a href="/wiki/Gerald\_Ford" title="Gerald Ford">Gerald Ford</a>, Chief Justice <a href="/wiki/Earl\_Warren" title="Earl Warren">Earl Warren</a>, President <a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson</a>, <a href="/wiki/Allen\_Dulles" title="Allen Dulles">Allen Dulles</a>, Senator <a href="/wiki/John\_Sherman\_Cooper" title="John Sherman Cooper">John Sherman Cooper</a>, and Congressman <a href="/wiki/Hale\_Boggs" title="Hale Boggs">Hale Boggs</a>.</figcaption></figure><p>On November 29, President Johnson established by executive order "<a href="/wiki/Warren\_Commission" title="Warren Commission">The President's Commission on the Assassination of President Kennedy</a>" and selected Chief Justice <a href="/wiki/Earl\_Warren" title="Earl Warren">Earl Warren</a> of the <a href="/wiki/U.S.\_Supreme\_Court" class="mw-redirect" title="U.S. Supreme Court">U.S. Supreme Court</a> to chair the investigation, commonly known as the Warren Commission.<sup id="cite\_ref-215" class="reference"><a href="#cite\_note-215">&#91;202&#93;</a></sup><sup id="cite\_ref-kurtz2\_143-3" class="reference"><a href="#cite\_note-kurtz2-143">&#91;131&#93;</a></sup> Its 888-page final report was presented to Johnson on September 24, 1964, and made public three days later.<sup id="cite\_ref-216" class="reference"><a href="#cite\_note-216">&#91;203&#93;</a></sup> It concluded that <a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a> had acted alone in killing Kennedy and wounding Connally, and that <a href="/wiki/Jack\_Ruby" title="Jack Ruby">Jack Ruby</a> acted alone in killing Oswald.<sup id="cite\_ref-217" class="reference"><a href="#cite\_note-217">&#91;204&#93;</a></sup><sup id="cite\_ref-218" class="reference"><a href="#cite\_note-218">&#91;205&#93;</a></sup> It made no conclusions as to Oswald's motive, but noted his <a href="/wiki/Marxism" title="Marxism">Marxism</a>, <a href="/wiki/Anti-authoritarianism" title="Anti-authoritarianism">anti-authoritarianism</a>, violent tendencies, failure to form personal relationships, and his desire to be significant in history.<sup id="cite\_ref-219" class="reference"><a href="#cite\_note-219">&#91;206&#93;</a></sup></p><p>Upon examining the Zapruder film, commission staffers realized that the FBI's gunshot theory was impossible. The reaction times of Kennedy and Connally were too close to have been caused by two bullets from Oswald: the reaction interval was less than the 2.3 seconds that it took to reload.<sup id="cite\_ref-220" class="reference"><a href="#cite\_note-220">&#91;207&#93;</a></sup><sup id="cite\_ref-221" class="reference"><a href="#cite\_note-221">&#91;208&#93;</a></sup> This was one of the commission's most crucial findings: that a single shot caused the non-fatal wounds of Kennedy and Connally, known as the "single-bullet theory".<sup id="cite\_ref-222" class="reference"><a href="#cite\_note-222">&#91;209&#93;</a></sup><sup id="cite\_ref-223" class="reference"><a href="#cite\_note-223">&#91;210&#93;</a></sup> In May 1964, staffer <a href="/wiki/Arlen\_Specter" title="Arlen Specter">Arlen Specter</a> replicated the single bullet's trajectory via a reenactment in Dealey Plaza: the bullet's path was exactly consistent with Kennedy's and Connally's wounds.<sup id="cite\_ref-224" class="reference"><a href="#cite\_note-224">&#91;211&#93;</a></sup></p><p>Out of the eight commission members, three—Representative <a href="/wiki/Hale\_Boggs" title="Hale Boggs">Hale Boggs</a> and Senators <a href="/wiki/John\_Sherman\_Cooper" title="John Sherman Cooper">John Cooper</a> and <a href="/wiki/Richard\_Russell\_Jr." title="Richard Russell Jr.">Richard Russell</a>—found the theory "improbable"; their qualms were not mentioned in the final report.<sup id="cite\_ref-225" class="reference"><a href="#cite\_note-225">&#91;212&#93;</a></sup> Conspiracy theorists labelled this theory the "magic bullet theory", partly due to the bullet's intact and purportedly pristine state. However, the HSCA's <a href="/wiki/Michael\_Baden" title="Michael Baden">Michael Baden</a> noted that the bullet, despite its lack of fragmentation, was fundamentally deformed.<sup id="cite\_ref-posnerbullet\_82-1" class="reference"><a href="#cite\_note-posnerbullet-82">&#91;76&#93;</a></sup> In 2023, Secret Service Agent Paul Landis—who had stood on the running board of Kennedy's car—told <i>The New York Times</i> that he retrieved the "magic bullet" from immediately behind Kennedy's seat upon arrival at Parkland, and that he placed it on Kennedy's stretcher. Landis believes that the bullet dislodged from a shallow wound in Kennedy's back.<sup id="cite\_ref-226" class="reference"><a href="#cite\_note-226">&#91;213&#93;</a></sup></p><p>As well as the Warren Report's 27 published volumes, the commission created hundreds of thousands of pages of investigative reports and documents. <a href="/wiki/Relman\_Morin" title="Relman Morin">Relman Morin</a> stated that "Never in history was a crime probed as intensely"; Bugliosi concluded that the commission's basic findings have "held up remarkably well".<sup id="cite\_ref-227" class="reference"><a href="#cite\_note-227">&#91;214&#93;</a></sup> According to <a href="/wiki/Gerald\_Posner" title="Gerald Posner">Gerald Posner</a>, the Warren report is "universally derided" by the American public.<sup id="cite\_ref-228" class="reference"><a href="#cite\_note-228">&#91;215&#93;</a></sup> Walter Cronkite noted that, "Although the Warren Commission had full power to conduct its own independent investigation, it permitted the FBI and the CIA to investigate themselves – and so cast a permanent shadow on the answers."<sup id="cite\_ref-229" class="reference"><a href="#cite\_note-229">&#91;216&#93;</a></sup> According to a 2014 report by CIA Chief Historian <a href="/w/index.php?title=David\_Robarge&amp;action=edit&amp;redlink=1" class="new" title="David Robarge (page does not exist)">David Robarge</a>, then-CIA director <a href="/wiki/John\_A.\_McCone" title="John A. McCone">John A. McCone</a> was involved in a "benign cover-up" by withholding information from the commission.<sup id="cite\_ref-230" class="reference"><a href="#cite\_note-230">&#91;217&#93;</a></sup></p><h3><span class="mw-headline" id="Trial\_of\_Clay\_Shaw">Trial of Clay Shaw</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/Trial\_of\_Clay\_Shaw" title="Trial of Clay Shaw">Trial of Clay Shaw</a></div><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_(frente)\_(cropped).jpg" class="mw-file-description"><img alt="A portrait of Clay Shaw" src="//upload.wikimedia.org/wikipedia/commons/thumb/1/18/Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_%28frente%29\_%28cropped%29.jpg/190px-Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_%28frente%29\_%28cropped%29.jpg" decoding="async" width="190" height="220" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/1/18/Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_%28frente%29\_%28cropped%29.jpg/285px-Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_%28frente%29\_%28cropped%29.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/1/18/Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_%28frente%29\_%28cropped%29.jpg/380px-Cart%C3%A3o\_de\_imigra%C3%A7%C3%A3o\_de\_Clay\_LaVergne\_Shaw\_%28frente%29\_%28cropped%29.jpg 2x" data-file-width="765" data-file-height="885" /></a><figcaption><a href="/wiki/Clay\_Shaw" title="Clay Shaw">Clay Shaw</a> (pictured 1951) was <a href="/wiki/Trial\_of\_Clay\_Shaw" title="Trial of Clay Shaw">acquitted</a> by the New Orleans jury after less than an hour of deliberation.</figcaption></figure><p>On March 22, 1967, New Orleans District Attorney <a href="/wiki/Jim\_Garrison" title="Jim Garrison">Jim Garrison</a> arrested and charged New Orleans businessman <a href="/wiki/Clay\_Shaw" title="Clay Shaw">Clay Shaw</a> with conspiring to assassinate President Kennedy, with the help of Oswald, <a href="/wiki/David\_Ferrie" title="David Ferrie">David Ferrie</a>, and others.<sup id="cite\_ref-bug1347\_231-0" class="reference"><a href="#cite\_note-bug1347-231">&#91;218&#93;</a></sup> A respected businessman who had helped renovate and preserve the <a href="/wiki/French\_Quarter" title="French Quarter">French Quarter</a>,<sup id="cite\_ref-bug1347\_231-1" class="reference"><a href="#cite\_note-bug1347-231">&#91;218&#93;</a></sup> Shaw was described as "the unlikeliest villain since <a href="/wiki/Oscar\_Wilde" title="Oscar Wilde">Oscar Wilde</a>".<sup id="cite\_ref-232" class="reference"><a href="#cite\_note-232">&#91;219&#93;</a></sup> Both Shaw and the neurotic, avidly anti-Castro Ferrie were members of <a href="/wiki/LGBT\_history\_in\_Louisiana" title="LGBT history in Louisiana">New Orleans' gay community</a>.<sup id="cite\_ref-233" class="reference"><a href="#cite\_note-233">&#91;220&#93;</a></sup> Ferrie died, possibly by suicide, four days after news of the investigation broke.<sup id="cite\_ref-234" class="reference"><a href="#cite\_note-234">&#91;221&#93;</a></sup> On <i><a href="/wiki/The\_Tonight\_Show\_Starring\_Johnny\_Carson" title="The Tonight Show Starring Johnny Carson">The Tonight Show Starring Johnny Carson</a></i> in 1968, Garrison first publicly alleged that Shaw and Ferrie had been part of a <a href="/wiki/CIA\_Kennedy\_assassination\_conspiracy\_theory" title="CIA Kennedy assassination conspiracy theory">larger CIA scheme</a> to kill Kennedy and frame Oswald.<sup id="cite\_ref-235" class="reference"><a href="#cite\_note-235">&#91;222&#93;</a></sup> In the 34-day trial conducted in 1969,<sup id="cite\_ref-Bugliosi\_2007\_236-0" class="reference"><a href="#cite\_note-Bugliosi\_2007-236">&#91;223&#93;</a></sup> Garrison played the Zapruder film and argued that the backwards motion of Kennedy's head after the fatal shot was indicative of a shooter in front on the grassy knoll.<sup id="cite\_ref-backandtotheleft\_237-0" class="reference"><a href="#cite\_note-backandtotheleft-237">&#91;224&#93;</a></sup></p><p>After a brief deliberation, the jury found Shaw not guilty.<sup id="cite\_ref-Bugliosi\_2007\_236-1" class="reference"><a href="#cite\_note-Bugliosi\_2007-236">&#91;223&#93;</a></sup> <a href="/wiki/Mark\_Lane\_(author)" title="Mark Lane (author)">Mark Lane</a> interviewed the jurors after the trial and stated that some believed that Shaw likely was involved in a conspiracy but that there was insufficient evidence to convict.<sup id="cite\_ref-238" class="reference"><a href="#cite\_note-238">&#91;225&#93;</a></sup><sup id="cite\_ref-239" class="reference"><a href="#cite\_note-239">&#91;226&#93;</a></sup> Lane's claims have been disputed by playwright <a href="/wiki/James\_Kirkwood,\_Jr." class="mw-redirect" title="James Kirkwood, Jr.">James Kirkwood</a>—a personal friend of Clay Shaw—who said that he met several jurors who denied ever speaking to Lane.<sup id="cite\_ref-240" class="reference"><a href="#cite\_note-240">&#91;227&#93;</a></sup><sup id="cite\_ref-241" class="reference"><a href="#cite\_note-241">&#91;228&#93;</a></sup> Kirkwood also questioned Lane's claim that the jury believed that there was a conspiracy:<sup id="cite\_ref-242" class="reference"><a href="#cite\_note-242">&#91;229&#93;</a></sup> jury foreman Sidney Hebert told Kirkwood, "I didn't think too much of the Warren Report either until the trial. Now I think a lot more of it than I did before."<sup id="cite\_ref-243" class="reference"><a href="#cite\_note-243">&#91;230&#93;</a></sup></p><p>According to academic E. Jerald Ogg, the Shaw trial is now widely regarded as a "travesty of justice";<sup id="cite\_ref-244" class="reference"><a href="#cite\_note-244">&#91;231&#93;</a></sup> Kirkwood likened the trial to a <a href="/wiki/Spanish\_Inquisition" title="Spanish Inquisition">Spanish Inquisition</a> hearing.<sup id="cite\_ref-245" class="reference"><a href="#cite\_note-245">&#91;232&#93;</a></sup> Other observers have characterized the proceedings as relying on homophobia.<sup id="cite\_ref-246" class="reference"><a href="#cite\_note-246">&#91;233&#93;</a></sup> It remains the only trial to be brought for the Kennedy assassination.<sup id="cite\_ref-bug1347\_231-2" class="reference"><a href="#cite\_note-bug1347-231">&#91;218&#93;</a></sup> In 1979, former CIA director <a href="/wiki/Richard\_Helms" title="Richard Helms">Richard Helms</a> testified that Shaw had been a part-time contact of the <a href="/wiki/CIA\_activities\_in\_the\_United\_States#1951" title="CIA activities in the United States">Domestic Contact Service</a> of the CIA, through which Shaw volunteered information from his travels abroad, mostly to Latin America. However, according to <a href="/wiki/Max\_Holland" title="Max Holland">Max Holland</a>, some 150,000 Americans were contacts.<sup id="cite\_ref-Holland\_247-0" class="reference"><a href="#cite\_note-Holland-247">&#91;234&#93;</a></sup> In 1993, the PBS program <i><a href="/wiki/Frontline\_(U.S.\_TV\_series)" class="mw-redirect" title="Frontline (U.S. TV series)">Frontline</a></i> obtained a 1955 group photograph that featured Ferrie and Oswald together at a 1955 cookout for the <a href="/wiki/Civil\_Air\_Patrol" title="Civil Air Patrol">Civil Air Patrol</a>: Ferrie had denied ever knowing Oswald.<sup id="cite\_ref-frontline\_248-0" class="reference"><a href="#cite\_note-frontline-248">&#91;235&#93;</a></sup></p><h3><span class="mw-headline" id="Ramsey\_Clark\_Panel">Ramsey Clark Panel</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg" class="mw-file-description"><img alt="President Lyndon B. Johnson and Attorney General Ramsey Clark shaking hands." src="//upload.wikimedia.org/wikipedia/commons/thumb/f/fd/President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg/220px-President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg" decoding="async" width="220" height="148" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/f/fd/President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg/330px-President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/f/fd/President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg/440px-President\_Lyndon\_B.\_Johnson\_and\_Attorney\_General\_Ramsey\_Clark.jpg 2x" data-file-width="5527" data-file-height="3724" /></a><figcaption>The panel organized by Attorney General <a href="/wiki/Ramsey\_Clark" title="Ramsey Clark">Ramsey Clark</a> (pictured with President <a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson</a> in 1968) found that two bullets struck Kennedy from behind.</figcaption></figure><p>Excluding Chief Justice Warren, the members of Warren Commission did not view the photographs or X-rays taken during Kennedy's autopsy. According to Warren, this was to avoid having to publicly release the explicit material to "sensation mongers".<sup id="cite\_ref-249" class="reference"><a href="#cite\_note-249">&#91;236&#93;</a></sup> Due to persistent speculation, in February 1968, Attorney General <a href="/wiki/Ramsey\_Clark" title="Ramsey Clark">Ramsey Clark</a> convened a panel of four medical experts to examine the photographs and X-rays from the Kennedy autopsy. Their findings concurred with the Warren Commission: Kennedy was struck by two bullets, both from behind.<sup id="cite\_ref-bug369\_250-0" class="reference"><a href="#cite\_note-bug369-250">&#91;237&#93;</a></sup></p><h3><span class="mw-headline" id="Rockefeller\_Commission">Rockefeller Commission</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/United\_States\_President%27s\_Commission\_on\_CIA\_Activities\_within\_the\_United\_States" title="United States President&#39;s Commission on CIA Activities within the United States">United States President's Commission on CIA Activities within the United States</a></div><p>In 1975, President <a href="/wiki/Gerald\_Ford" title="Gerald Ford">Gerald Ford</a>—who had been a member of the Warren Commission a decade prior—established the <a href="/wiki/United\_States\_President%27s\_Commission\_on\_CIA\_Activities\_within\_the\_United\_States" title="United States President&#39;s Commission on CIA Activities within the United States">United States President's Commission on CIA Activities within the United States</a>, better known as the Rockefeller Commission after its chairman, Vice President <a href="/wiki/Nelson\_Rockefeller" title="Nelson Rockefeller">Nelson Rockefeller</a>.<sup id="cite\_ref-251" class="reference"><a href="#cite\_note-251">&#91;238&#93;</a></sup><sup id="cite\_ref-ford\_252-0" class="reference"><a href="#cite\_note-ford-252">&#91;239&#93;</a></sup> The commission received a mandate to determine if any domestic activities by the CIA were unlawful and to make appropriate recommendations: accordingly, it also re-examined the Kennedy assassination.<sup id="cite\_ref-bug369\_250-1" class="reference"><a href="#cite\_note-bug369-250">&#91;237&#93;</a></sup></p><figure class="mw-default-size mw-halign-left" typeof="mw:File/Thumb"><a href="/wiki/File:Back-and-to-the-left-fairuse.png" class="mw-file-description"><img alt="Four juxtaposed frames from the Zapruder film illustrating the backwards motion of his head and body after the fatal head shot" src="//upload.wikimedia.org/wikipedia/en/thumb/8/8f/Back-and-to-the-left-fairuse.png/370px-Back-and-to-the-left-fairuse.png" decoding="async" width="370" height="138" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/8/8f/Back-and-to-the-left-fairuse.png 1.5x" data-file-width="517" data-file-height="193" /></a><figcaption>The <a href="/wiki/Rockefeller\_Commission" class="mw-redirect" title="Rockefeller Commission">Rockefeller Commission</a> first proposed that the backwards motion of Kennedy following the fatal shot—which conspiracy theorists claim is indicative of a shot from the grassy knoll—was due to a "seizure-like neuromuscular reaction".</figcaption></figure><p>After five months of investigation, the Rockefeller Commission submitted its report to President Ford.<sup id="cite\_ref-253" class="reference"><a href="#cite\_note-253">&#91;240&#93;</a></sup> The report reviewed the medical evidence and agreed that Kennedy had been killed by two shots from behind.<sup id="cite\_ref-bug369\_250-2" class="reference"><a href="#cite\_note-bug369-250">&#91;237&#93;</a></sup> Refuting Garrison's claims that the backwards motion of Kennedy's head seen on the Zapruder film was indicative of a grassy knoll shooter,<sup id="cite\_ref-backandtotheleft\_237-1" class="reference"><a href="#cite\_note-backandtotheleft-237">&#91;224&#93;</a></sup> the commission found that "such a motion would be caused by a violent straightening and stiffening of the entire body as a result of a seizure-like neuromuscular reaction to major damage inflicted to nerve centers in the brain".<sup id="cite\_ref-reitzes\_254-0" class="reference"><a href="#cite\_note-reitzes-254">&#91;241&#93;</a></sup> The later HSCA also suggested that the "<a href="/wiki/Newton%27s\_laws\_of\_motion#Third" title="Newton&#39;s laws of motion">propulsive effect resulting from brain matter</a>" ejected from the exit wound may have been responsible.<sup id="cite\_ref-255" class="reference"><a href="#cite\_note-255">&#91;242&#93;</a></sup> Pathologist <a href="/wiki/Vincent\_Di\_Maio" title="Vincent Di Maio">Vincent Di Maio</a> testified before the HSCA that the notion of a "transfer of momentum" from a grassy knoll bullet was unfounded and something from "<a href="/wiki/Arnold\_Schwarzenegger\_filmography" title="Arnold Schwarzenegger filmography">Arnold Schwarzenegger pictures</a>".<sup id="cite\_ref-reitzes\_254-1" class="reference"><a href="#cite\_note-reitzes-254">&#91;241&#93;</a></sup></p><p>The Rockefeller Commission also sought to determine whether CIA operatives—particularly <a href="/wiki/E.\_Howard\_Hunt" title="E. Howard Hunt">E. Howard Hunt</a> and <a href="/wiki/Frank\_Sturgis" title="Frank Sturgis">Frank Sturgis</a>—were present in Dealey Plaza during the assassination, and whether these two men were among the "<a href="/wiki/Three\_tramps" title="Three tramps">three tramps</a>" pictured shortly after assassination. The commission found no evidence for these claims.<sup id="cite\_ref-ford\_252-1" class="reference"><a href="#cite\_note-ford-252">&#91;239&#93;</a></sup> It also inquired into purported connections between the CIA and Oswald and Ruby, for which it found no evidence and concluded was "farfetched speculation".<sup id="cite\_ref-ford\_252-2" class="reference"><a href="#cite\_note-ford-252">&#91;239&#93;</a></sup> They concluded that there was "no credible evidence of CIA involvement".<sup id="cite\_ref-bug369\_250-3" class="reference"><a href="#cite\_note-bug369-250">&#91;237&#93;</a></sup></p><h3><span class="mw-headline" id="Church\_Committee">Church Committee</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/Church\_Committee" title="Church Committee">Church Committee</a></div><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:Church\_Committee\_report\_(Book\_II)\_(page\_1\_crop).jpg" class="mw-file-description"><img alt="Title page of Book II of the Church Committee report" src="//upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Church\_Committee\_report\_%28Book\_II%29\_%28page\_1\_crop%29.jpg/150px-Church\_Committee\_report\_%28Book\_II%29\_%28page\_1\_crop%29.jpg" decoding="async" width="150" height="250" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Church\_Committee\_report\_%28Book\_II%29\_%28page\_1\_crop%29.jpg/225px-Church\_Committee\_report\_%28Book\_II%29\_%28page\_1\_crop%29.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Church\_Committee\_report\_%28Book\_II%29\_%28page\_1\_crop%29.jpg/300px-Church\_Committee\_report\_%28Book\_II%29\_%28page\_1\_crop%29.jpg 2x" data-file-width="1536" data-file-height="2560" /></a><figcaption>Church Committee report (Book II)</figcaption></figure><p>In 1976, following the <a href="/wiki/Watergate\_scandal" title="Watergate scandal">Watergate scandal</a> and the revelation of CIA misconduct by <a href="/wiki/Seymour\_Hersh" title="Seymour Hersh">Seymour Hersh</a> (the CIA's so-called "<a href="/wiki/Family\_Jewels\_(Central\_Intelligence\_Agency)" title="Family Jewels (Central Intelligence Agency)">Family Jewels</a>"), the <a href="/wiki/U.S.\_Senate" class="mw-redirect" title="U.S. Senate">U.S. Senate</a> launched the <a href="/wiki/United\_States\_Senate\_Select\_Committee\_to\_Study\_Governmental\_Operations\_with\_Respect\_to\_Intelligence\_Activities" class="mw-redirect" title="United States Senate Select Committee to Study Governmental Operations with Respect to Intelligence Activities">United States Senate Select Committee to Study Governmental Operations with Respect to Intelligence Activities</a>—better known as the Church Committee after its chairman, Senator <a href="/wiki/Frank\_Church" title="Frank Church">Frank Church</a>.<sup id="cite\_ref-256" class="reference"><a href="#cite\_note-256">&#91;243&#93;</a></sup><sup id="cite\_ref-257" class="reference"><a href="#cite\_note-257">&#91;244&#93;</a></sup><sup id="cite\_ref-258" class="reference"><a href="#cite\_note-258">&#91;245&#93;</a></sup> The committee was to investigate all improper and unlawful actions by the CIA and FBI, both foreign and domestic. Due to persisting theories, the Church Committee organized a subcommittee (staffed by Senators <a href="/wiki/Richard\_Schweiker" title="Richard Schweiker">Richard Schweiker</a> and <a href="/wiki/Gary\_Hart" title="Gary Hart">Gary Hart</a>) to examine CIA and FBI conduct pertaining to the assassination.<sup id="cite\_ref-bug370\_259-0" class="reference"><a href="#cite\_note-bug370-259">&#91;246&#93;</a></sup></p><p>In its final report, the Church Committee concluded that there was no evidence of a CIA- or FBI-led conspiracy.<sup id="cite\_ref-bug370\_259-1" class="reference"><a href="#cite\_note-bug370-259">&#91;246&#93;</a></sup> They found that the original investigation into the assassination was "deficient" and criticized the FBI and CIA for withholding information from the Warren Commission. In particular, it noted that knowledge of the <a href="/wiki/CIA\_Assassination\_attempts\_on\_Fidel\_Castro" class="mw-redirect" title="CIA Assassination attempts on Fidel Castro">CIA's many failed attempts to assassinate Castro</a> may have significantly affected the course of the investigation.<sup id="cite\_ref-bug370\_259-2" class="reference"><a href="#cite\_note-bug370-259">&#91;246&#93;</a></sup><sup id="cite\_ref-thehorror\_260-0" class="reference"><a href="#cite\_note-thehorror-260">&#91;247&#93;</a></sup> Moreover, the Church Committee revealed that the CIA had conspired with the <a href="/wiki/Italian-American\_Mafia" class="mw-redirect" title="Italian-American Mafia">Mafia</a> in these plots against Castro.<sup id="cite\_ref-bug370\_259-3" class="reference"><a href="#cite\_note-bug370-259">&#91;246&#93;</a></sup><sup id="cite\_ref-261" class="reference"><a href="#cite\_note-261">&#91;248&#93;</a></sup> These revelations led to further public scrutiny of the assassination.<sup id="cite\_ref-thehorror\_260-1" class="reference"><a href="#cite\_note-thehorror-260">&#91;247&#93;</a></sup></p><h3><span class="mw-headline" id="United\_States\_House\_Select\_Committee\_on\_Assassinations">United States House Select Committee on Assassinations</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/United\_States\_House\_Select\_Committee\_on\_Assassinations" title="United States House Select Committee on Assassinations">United States House Select Committee on Assassinations</a></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:222px;max-width:222px"><div class="trow"><div class="tsingle" style="width:220px;max-width:220px"><div class="thumbimage" style="height:187px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:HSCA-Connally-7-166.jpg" class="mw-file-description"><img alt="A illustration shows the bullet, which had hit Kennedy a moment before, rotating and tumbling before entering Connally&#39;s skin, causing his entry wound." src="//upload.wikimedia.org/wikipedia/commons/thumb/1/1e/HSCA-Connally-7-166.jpg/218px-HSCA-Connally-7-166.jpg" decoding="async" width="218" height="188" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/1/1e/HSCA-Connally-7-166.jpg/327px-HSCA-Connally-7-166.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/1/1e/HSCA-Connally-7-166.jpg/436px-HSCA-Connally-7-166.jpg 2x" data-file-width="530" data-file-height="456" /></a></span></div><div class="thumbcaption">The HSCA concurred with the <a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a>'s <a href="/wiki/Single-bullet\_theory" title="Single-bullet theory">single-bullet theory</a>. (The figure illustrates how the oblong wound in Connally's back was indicative of a bullet which had been tumbling after striking an intervening object.)</div></div></div><div class="trow"><div class="tsingle" style="width:-nanpx;max-width:-nanpx"><div class="thumbimage" style="height:infpx;overflow:hidden"><span class="mw-default-size" typeof="mw:File"><span><audio id="mwe\_player\_0" controls="" preload="none" class="mw-file-element" width="220" style="width:220px;" data-durationhint="3722" data-mwtitle="JFK\_Assassination\_-\_HSCA\_-\_Dr.\_Cyril\_Wecht&#39;s\_testimony.ogg" data-mwprovider="wikimediacommons"><source src="//upload.wikimedia.org/wikipedia/commons/9/9a/JFK\_Assassination\_-\_HSCA\_-\_Dr.\_Cyril\_Wecht%27s\_testimony.ogg" type="audio/ogg; codecs=&quot;vorbis&quot;" data-width="0" data-height="0" /><source src="//upload.wikimedia.org/wikipedia/commons/transcoded/9/9a/JFK\_Assassination\_-\_HSCA\_-\_Dr.\_Cyril\_Wecht%27s\_testimony.ogg/JFK\_Assassination\_-\_HSCA\_-\_Dr.\_Cyril\_Wecht%27s\_testimony.ogg.mp3" type="audio/mpeg" data-transcodekey="mp3" data-width="0" data-height="0" /></audio></span></span></div><div class="thumbcaption">Of the nine-member medical panel, only Dr. <a href="/wiki/Cyril\_Wecht" title="Cyril Wecht">Cyril Wecht</a> (testimony above) rejected the theory.<sup id="cite\_ref-262" class="reference"><a href="#cite\_note-262">&#91;249&#93;</a></sup></div></div></div></div></div><p>As a result of increasing public and congressional skepticism of the Warren Commission's findings and the transparency of government agencies,<sup id="cite\_ref-thehorror\_260-2" class="reference"><a href="#cite\_note-thehorror-260">&#91;247&#93;</a></sup> in 1976 the House Select Committee on Assassinations was created to investigate the assassinations of Kennedy and <a href="/wiki/Assassination\_of\_Martin\_Luther\_King,\_Jr." class="mw-redirect" title="Assassination of Martin Luther King, Jr.">that of Martin Luther King, Jr.</a><sup id="cite\_ref-263" class="reference"><a href="#cite\_note-263">&#91;250&#93;</a></sup></p><p>The HSCA conducted its inquiry until 1978 and issued its final report the following year, concluding that Kennedy was likely assassinated as a result of a <a href="/wiki/Conspiracy\_(crime)" class="mw-redirect" title="Conspiracy (crime)">conspiracy</a>.<sup id="cite\_ref-264" class="reference"><a href="#cite\_note-264">&#91;251&#93;</a></sup> They concluded that there was a "high probability" that a fourth shot was fired from the grassy knoll, but they stated that this shot missed Kennedy.<sup id="cite\_ref-bugxii\_265-0" class="reference"><a href="#cite\_note-bugxii-265">&#91;252&#93;</a></sup> Concerning the conclusions of "probable conspiracy", four of the twelve committee members wrote dissenting opinions.<sup id="cite\_ref-stokes2\_266-0" class="reference"><a href="#cite\_note-stokes2-266">&#91;253&#93;</a></sup></p><p>The HSCA also concluded that previous investigations into Oswald's responsibility were "thorough and reliable" but did not adequately investigate the possibility of a conspiracy, and that federal agencies performed with "varying degrees of competency".<sup id="cite\_ref-267" class="reference"><a href="#cite\_note-267">&#91;254&#93;</a></sup> Specifically, the FBI and CIA were found to be deficient in sharing information with other agencies and the Warren Commission. Instead of furnishing all relevant information, the FBI and CIA only responded to specific requests and were still occasionally inadequate.<sup id="cite\_ref-268" class="reference"><a href="#cite\_note-268">&#91;255&#93;</a></sup> Furthermore, the Secret Service did not properly analyze information it possessed prior to the assassination and was inadequately prepared to protect Kennedy.<sup id="cite\_ref-stokes2\_266-1" class="reference"><a href="#cite\_note-stokes2-266">&#91;253&#93;</a></sup></p><p>The chief reason for the conclusion of "probable conspiracy" was, according to the report's dissent, the subsequently discredited acoustic analysis of a <a href="/wiki/John\_F.\_Kennedy\_assassination\_Dictabelt\_recording" title="John F. Kennedy assassination Dictabelt recording">police channel Dictabelt recording</a>.<sup id="cite\_ref-bugxii\_265-1" class="reference"><a href="#cite\_note-bugxii-265">&#91;252&#93;</a></sup><sup id="cite\_ref-CBAReport\_269-0" class="reference"><a href="#cite\_note-CBAReport-269">&#91;256&#93;</a></sup><sup id="cite\_ref-JusticeDeptMemo\_270-0" class="reference"><a href="#cite\_note-JusticeDeptMemo-270">&#91;257&#93;</a></sup> In accordance with the recommendations of the HSCA, the Dictabelt recording and acoustic evidence of a second assassin was subsequently reexamined. In light of investigative reports from the FBI's Technical Services Division and a specially appointed <a href="/wiki/National\_Academy\_of\_Sciences" title="National Academy of Sciences">National Academy of Sciences</a> Committee determining that "reliable acoustic data do not support a conclusion that there was a second gunman",<sup id="cite\_ref-CBAReport\_269-1" class="reference"><a href="#cite\_note-CBAReport-269">&#91;256&#93;</a></sup> the Justice Department concluded "that no persuasive evidence can be identified to support the theory of a conspiracy" in the Kennedy assassination.<sup id="cite\_ref-JusticeDeptMemo\_270-1" class="reference"><a href="#cite\_note-JusticeDeptMemo-270">&#91;257&#93;</a></sup></p><h3><span class="mw-headline" id="JFK\_Act\_and\_Assassination\_Records\_Review\_Board">JFK Act and Assassination Records Review Board</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/President\_John\_F.\_Kennedy\_Assassination\_Records\_Collection\_Act\_of\_1992" title="President John F. Kennedy Assassination Records Collection Act of 1992">President John F. Kennedy Assassination Records Collection Act of 1992</a></div><figure class="mw-default-size mw-halign-left" typeof="mw:File/Thumb"><a href="/wiki/File:Oliver\_Stone\_01.jpg" class="mw-file-description"><img alt="A portrait of Oliver Stone" src="//upload.wikimedia.org/wikipedia/commons/thumb/5/54/Oliver\_Stone\_01.jpg/180px-Oliver\_Stone\_01.jpg" decoding="async" width="180" height="230" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/5/54/Oliver\_Stone\_01.jpg/270px-Oliver\_Stone\_01.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/5/54/Oliver\_Stone\_01.jpg/360px-Oliver\_Stone\_01.jpg 2x" data-file-width="798" data-file-height="1019" /></a><figcaption><a href="/wiki/Oliver\_Stone" title="Oliver Stone">Oliver Stone</a>'s 1991 film <i><a href="/wiki/JFK\_(film)" title="JFK (film)">JFK</a></i> spurred the "<a href="/wiki/President\_John\_F.\_Kennedy\_Assassination\_Records\_Collection\_Act\_of\_1992" title="President John F. Kennedy Assassination Records Collection Act of 1992">JFK Act</a>", which mandated the release of all relevant classified files.</figcaption></figure><p>In 1991, <a href="/wiki/Oliver\_Stone" title="Oliver Stone">Oliver Stone</a>'s film <i><a href="/wiki/JFK\_(film)" title="JFK (film)">JFK</a></i> renewed interest in the assassination and particularly in the still-classified files relating to the killing. In response, Congress passed the <a href="/wiki/President\_John\_F.\_Kennedy\_Assassination\_Records\_Collection\_Act\_of\_1992" title="President John F. Kennedy Assassination Records Collection Act of 1992">JFK Records Act</a>, which called for the National Archives to collect and release all assassination-related documents within 25 years.<sup id="cite\_ref-271" class="reference"><a href="#cite\_note-271">&#91;258&#93;</a></sup><sup id="cite\_ref-2017a\_272-0" class="reference"><a href="#cite\_note-2017a-272">&#91;259&#93;</a></sup><sup id="cite\_ref-273" class="reference"><a href="#cite\_note-273">&#91;260&#93;</a></sup> The act also mandated the creation of an independent office, the <a href="/wiki/Assassination\_Records\_Review\_Board" class="mw-redirect" title="Assassination Records Review Board">Assassination Records Review Board</a>, to review the submitted records for completeness and continued secrecy. From 1994 until 1998, the Assassination Records Review Board gathered and unsealed about 60,000 documents comprising over 4&#160;million pages.<sup id="cite\_ref-274" class="reference"><a href="#cite\_note-274">&#91;261&#93;</a></sup><sup id="cite\_ref-275" class="reference"><a href="#cite\_note-275">&#91;262&#93;</a></sup></p><p>A 1998 staff report for the Assassinations Records Review Board contended that brain photographs in the Kennedy records may not be of Kennedy's brain, reportedly showing much less damage than Kennedy sustained. Dr. Boswell refuted these allegations.<sup id="cite\_ref-276" class="reference"><a href="#cite\_note-276">&#91;263&#93;</a></sup> The board also found that, conflicting with the photographic images showing no such defect, several witnesses (at both Parkland hospital and the autopsy) remembered a large wound in the back of Kennedy's head.<sup id="cite\_ref-277" class="reference"><a href="#cite\_note-277">&#91;264&#93;</a></sup> The board, and board member Jeremy Gunn, stressed the problems with witness testimony, urging people to weigh all of the evidence, with due concern for human error, rather than take single statements as "proof" for one theory or another.<sup id="cite\_ref-278" class="reference"><a href="#cite\_note-278">&#91;265&#93;</a></sup></p><p>All remaining assassination-related records were scheduled to be released by October 2017, with the exception of documents certified for continued postponement by succeeding presidents due to "identifiable harm... to the military, defense, intelligence operations, law enforcement, or conduct of foreign relations... of such gravity that it outweighs the public interest in disclosure."<sup id="cite\_ref-279" class="reference"><a href="#cite\_note-279">&#91;266&#93;</a></sup><sup id="cite\_ref-Trump\_280-0" class="reference"><a href="#cite\_note-Trump-280">&#91;267&#93;</a></sup> President <a href="/wiki/Donald\_Trump" title="Donald Trump">Donald Trump</a> said in October 2017 that he would not block the release of documents,<sup id="cite\_ref-Trump\_280-1" class="reference"><a href="#cite\_note-Trump-280">&#91;267&#93;</a></sup> but in April 2018—the deadline he set to release all JFK records—Trump blocked the release of some records until October 2021.<sup id="cite\_ref-281" class="reference"><a href="#cite\_note-281">&#91;268&#93;</a></sup><sup id="cite\_ref-2017a\_272-1" class="reference"><a href="#cite\_note-2017a-272">&#91;259&#93;</a></sup> President <a href="/wiki/Joe\_Biden" title="Joe Biden">Joe Biden</a>, citing the <a href="/wiki/COVID-19\_pandemic" title="COVID-19 pandemic">COVID-19 pandemic</a>, delayed the release further,<sup id="cite\_ref-282" class="reference"><a href="#cite\_note-282">&#91;269&#93;</a></sup><sup id="cite\_ref-283" class="reference"><a href="#cite\_note-283">&#91;270&#93;</a></sup> before releasing 13,173 unredacted documents in 2022.<sup id="cite\_ref-matza\_284-0" class="reference"><a href="#cite\_note-matza-284">&#91;271&#93;</a></sup> A second group of files were unsealed in June 2023, at which point 99 percent of documents had been made public.<sup id="cite\_ref-matza\_284-1" class="reference"><a href="#cite\_note-matza-284">&#91;271&#93;</a></sup><sup id="cite\_ref-285" class="reference"><a href="#cite\_note-285">&#91;272&#93;</a></sup></p><h2><span class="mw-headline" id="Conspiracy\_theories">Conspiracy theories</span></h2><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">Main article: <a href="/wiki/John\_F.\_Kennedy\_assassination\_conspiracy\_theories" title="John F. Kennedy assassination conspiracy theories">John F. Kennedy assassination conspiracy theories</a></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1096954695/mw-parser-output/.tmulti"><div class="thumb tmulti tright"><div class="thumbinner multiimageinner" style="width:492px;max-width:492px"><div class="trow"><div class="tsingle" style="width:223px;max-width:223px"><div class="thumbimage" style="height:147px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Grassy\_Knoll.jpg" class="mw-file-description"><img alt="The wooden fence on the grassy knoll" src="//upload.wikimedia.org/wikipedia/commons/thumb/8/80/Grassy\_Knoll.jpg/221px-Grassy\_Knoll.jpg" decoding="async" width="221" height="147" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/8/80/Grassy\_Knoll.jpg/332px-Grassy\_Knoll.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/8/80/Grassy\_Knoll.jpg/442px-Grassy\_Knoll.jpg 2x" data-file-width="4831" data-file-height="3221" /></a></span></div><div class="thumbcaption">The wooden fence on the <a href="/wiki/Grassy\_knoll" class="mw-redirect" title="Grassy knoll">grassy knoll</a>, where many theories claim that a second gunman stood</div></div><div class="tsingle" style="width:265px;max-width:265px"><div class="thumbimage" style="height:147px;overflow:hidden"><span typeof="mw:File"><a href="/wiki/File:Badgeman.jpg" class="mw-file-description"><img alt="A photo of the purported badgeman" src="//upload.wikimedia.org/wikipedia/commons/thumb/f/f7/Badgeman.jpg/263px-Badgeman.jpg" decoding="async" width="263" height="148" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/f/f7/Badgeman.jpg/395px-Badgeman.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/f/f7/Badgeman.jpg 2x" data-file-width="451" data-file-height="253" /></a></span></div><div class="thumbcaption">The "<a href="/wiki/Badge\_Man" title="Badge Man">Badge Man</a>" can purportedly be seen firing a weapon from the grassy knoll in this expansion of the <a href="/wiki/Mary\_Moorman\_photograph" class="mw-redirect" title="Mary Moorman photograph">Mary Moorman photograph</a>.<sup id="cite\_ref-bug885\_193-1" class="reference"><a href="#cite\_note-bug885-193">&#91;181&#93;</a></sup></div></div></div></div></div><p>The Kennedy assassination has been described as "the mother of all conspiracies".<sup id="cite\_ref-286" class="reference"><a href="#cite\_note-286">&#91;273&#93;</a></sup> Polls have found that a majority of Americans believe that there was a conspiracy;<sup id="cite\_ref-Gallup,\_Inc\_287-0" class="reference"><a href="#cite\_note-Gallup,\_Inc-287">&#91;274&#93;</a></sup><sup id="cite\_ref-288" class="reference"><a href="#cite\_note-288">&#91;275&#93;</a></sup> some 1,000 to 2,000 books—mostly pro-conspiracy—have been written about the killing.<sup id="cite\_ref-289" class="reference"><a href="#cite\_note-289">&#91;276&#93;</a></sup> Across different theories, Oswald's role varies from co-conspirator to entirely innocent.<sup id="cite\_ref-290" class="reference"><a href="#cite\_note-290">&#91;277&#93;</a></sup><sup id="cite\_ref-ARRB-C1\_291-0" class="reference"><a href="#cite\_note-ARRB-C1-291">&#91;278&#93;</a></sup> Common culprits include the FBI, the CIA, the U.S. military,<sup id="cite\_ref-ARRB-C1\_291-1" class="reference"><a href="#cite\_note-ARRB-C1-291">&#91;278&#93;</a></sup> the Mafia,<sup id="cite\_ref-xlii\_292-0" class="reference"><a href="#cite\_note-xlii-292">&#91;279&#93;</a></sup> the <a href="/wiki/Military-industrial\_complex" class="mw-redirect" title="Military-industrial complex">military-industrial complex</a>,<sup id="cite\_ref-xlii\_292-1" class="reference"><a href="#cite\_note-xlii-292">&#91;279&#93;</a></sup> Vice President Johnson, Castro, the <a href="/wiki/KGB" title="KGB">KGB</a>, or some combination thereof.<sup id="cite\_ref-293" class="reference"><a href="#cite\_note-293">&#91;280&#93;</a></sup> Bugliosi estimated that a total of 42 groups, 82 assassins, and 214 people had been accused in various assassination theories.<sup id="cite\_ref-294" class="reference"><a href="#cite\_note-294">&#91;281&#93;</a></sup></p><p>Conspiracy theorists often argue that there were multiple shooters—a "triangulation of crossfire"—and that the fatal shot was fired from the grassy knoll and struck Kennedy in the front of the head.<sup id="cite\_ref-295" class="reference"><a href="#cite\_note-295">&#91;282&#93;</a></sup> Individuals present in Dealey Plaza have been the subject of much speculation, including the <a href="/wiki/Three\_tramps" title="Three tramps">three tramps</a>, the <a href="/wiki/Umbrella\_man\_(JFK\_assassination)" title="Umbrella man (JFK assassination)">umbrella man</a>, and the purported <a href="/wiki/Badge\_Man" title="Badge Man">Badge Man</a>.<sup id="cite\_ref-296" class="reference"><a href="#cite\_note-296">&#91;283&#93;</a></sup><sup id="cite\_ref-297" class="reference"><a href="#cite\_note-297">&#91;284&#93;</a></sup><sup id="cite\_ref-298" class="reference"><a href="#cite\_note-298">&#91;285&#93;</a></sup> Conspiracy theorists argue that the autopsy and official investigations were flawed or, at worst, complicit,<sup id="cite\_ref-299" class="reference"><a href="#cite\_note-299">&#91;286&#93;</a></sup> and that witnesses to the Kennedy assassination met mysterious and suspicious deaths.<sup id="cite\_ref-300" class="reference"><a href="#cite\_note-300">&#91;287&#93;</a></sup></p><p>Conspiracy theories have been espoused by notable figures, such as <a href="/wiki/L.\_Fletcher\_Prouty" title="L. Fletcher Prouty">L. Fletcher Prouty</a>, Chief of Special Operations for the <a href="/wiki/Joint\_Chiefs\_of\_Staff" title="Joint Chiefs of Staff">Joint Chiefs of Staff</a> under Kennedy, who believed that elements of the U.S. military and intelligence communities had conspired to assassinate the president.<sup id="cite\_ref-301" class="reference"><a href="#cite\_note-301">&#91;288&#93;</a></sup> Governor Connally also rejected the single-bullet theory,<sup id="cite\_ref-302" class="reference"><a href="#cite\_note-302">&#91;289&#93;</a></sup><sup id="cite\_ref-303" class="reference"><a href="#cite\_note-303">&#91;290&#93;</a></sup> and President Johnson reportedly expressed doubt regarding the Warren Commission's conclusions prior to his death.<sup id="cite\_ref-304" class="reference"><a href="#cite\_note-304">&#91;291&#93;</a></sup> According to <a href="/wiki/Robert\_F.\_Kennedy\_Jr." title="Robert F. Kennedy Jr.">Robert F. Kennedy Jr.</a>, his father believed that the Warren Report was a "shoddy piece of craftsmanship" and that John F. Kennedy had been killed by a conspiracy, possibly involving Cuban exiles and the CIA.<sup id="cite\_ref-305" class="reference"><a href="#cite\_note-305">&#91;292&#93;</a></sup> Communist rulers like Castro and Soviet leader <a href="/wiki/Nikita\_Khrushchev" title="Nikita Khrushchev">Nikita Khrushchev</a> believed that Kennedy had been killed by right-wing Americans.<sup id="cite\_ref-306" class="reference"><a href="#cite\_note-306">&#91;293&#93;</a></sup> Former CIA director <a href="/wiki/R.\_James\_Woolsey" class="mw-redirect" title="R. James Woolsey">R. James Woolsey</a> has argued that Oswald killed Kennedy as part of a Soviet conspiracy.<sup id="cite\_ref-307" class="reference"><a href="#cite\_note-307">&#91;294&#93;</a></sup></p><h2><span class="mw-headline" id="Legacy">Legacy</span></h2><h3><span class="mw-headline" id="Political\_impact\_and\_memorialization">Political impact and memorialization</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:US\_Half\_Dollar\_Obverse\_2015.png" class="mw-file-description"><img alt="A 2015 Kennedy half dollar" src="//upload.wikimedia.org/wikipedia/commons/thumb/0/07/US\_Half\_Dollar\_Obverse\_2015.png/180px-US\_Half\_Dollar\_Obverse\_2015.png" decoding="async" width="180" height="178" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/0/07/US\_Half\_Dollar\_Obverse\_2015.png/270px-US\_Half\_Dollar\_Obverse\_2015.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/0/07/US\_Half\_Dollar\_Obverse\_2015.png/360px-US\_Half\_Dollar\_Obverse\_2015.png 2x" data-file-width="1984" data-file-height="1960" /></a><figcaption>Congress authorized the minting of a new 50-cent piece, the <a href="/wiki/Kennedy\_half\_dollar" title="Kennedy half dollar">Kennedy half dollar</a>, in December 1963.<sup id="cite\_ref-mint\_308-0" class="reference"><a href="#cite\_note-mint-308">&#91;295&#93;</a></sup></figcaption></figure><p>On November 27—five days after the assassination—President Johnson delivered his "<a href="/wiki/Let\_Us\_Continue" title="Let Us Continue">Let Us Continue</a>" speech to Congress.<sup id="cite\_ref-309" class="reference"><a href="#cite\_note-309">&#91;296&#93;</a></sup> Effectively an <a href="/wiki/United\_States\_presidential\_inauguration" title="United States presidential inauguration">inaugural address</a>,<sup id="cite\_ref-310" class="reference"><a href="#cite\_note-310">&#91;297&#93;</a></sup> Johnson called for the realization of Kennedy's policies, particularly on <a href="/wiki/Civil\_rights\_movement" title="Civil rights movement">civil rights</a>; this effort soon materialized as the <a href="/wiki/Civil\_Rights\_Act\_of\_1964" title="Civil Rights Act of 1964">Civil Rights Act of 1964</a>.<sup id="cite\_ref-311" class="reference"><a href="#cite\_note-311">&#91;298&#93;</a></sup> Confusion surrounding Johnson's succession led to the <a href="/wiki/Twenty-fifth\_Amendment\_to\_the\_United\_States\_Constitution" title="Twenty-fifth Amendment to the United States Constitution">Twenty-fifth Amendment to the U.S Constitution</a>, which was adopted in 1967 and affirmed that the vice president became president upon the president's death.<sup id="cite\_ref-312" class="reference"><a href="#cite\_note-312">&#91;299&#93;</a></sup></p><p>On November 29, President Johnson issued Executive Order 11129, renaming Florida's <a href="/wiki/Cape\_Canaveral" title="Cape Canaveral">Cape Canaveral</a>—a name borne since at least 1530—to Cape Kennedy.<sup id="cite\_ref-313" class="reference"><a href="#cite\_note-313">&#91;300&#93;</a></sup><sup id="cite\_ref-315" class="reference"><a href="#cite\_note-315">&#91;note 14&#93;</a></sup> NASA's Launch Operations Center, located on the cape, was also renamed as the <a href="/wiki/Kennedy\_Space\_Center" title="Kennedy Space Center">Kennedy Space Center</a>.<sup id="cite\_ref-316" class="reference"><a href="#cite\_note-316">&#91;302&#93;</a></sup> The federal government honored Kennedy in other ways, such as replacing the <a href="/wiki/Franklin\_half\_dollar" title="Franklin half dollar">Benjamin Franklin half dollar</a> with the <a href="/wiki/Kennedy\_half\_dollar" title="Kennedy half dollar">Kennedy half dollar</a>,<sup id="cite\_ref-mint\_308-1" class="reference"><a href="#cite\_note-mint-308">&#91;295&#93;</a></sup> and renaming Washington, D.C.'s long-planned National Culture Center as the <a href="/wiki/John\_F.\_Kennedy\_Center\_for\_the\_Performing\_Arts" title="John F. Kennedy Center for the Performing Arts">John F. Kennedy Center for the Performing Arts</a>.<sup id="cite\_ref-317" class="reference"><a href="#cite\_note-317">&#91;303&#93;</a></sup> New York City's airport was also renamed as the <a href="/wiki/John\_F.\_Kennedy\_International\_Airport" title="John F. Kennedy International Airport">John F. Kennedy International Airport</a>.<sup id="cite\_ref-318" class="reference"><a href="#cite\_note-318">&#91;304&#93;</a></sup></p><p>Kennedy's assassination also resulted in an overhaul of the Secret Service and its procedures. Open limousines were eliminated, staffing was significantly increased, and specialized teams like counter-sniper units were established. The agency's budget has also increased, from $5.5 million in 1963 (equivalent to $42&#160;million in 2013) to over $1.6 billion by the 50th anniversary in 2013.<sup id="cite\_ref-319" class="reference"><a href="#cite\_note-319">&#91;305&#93;</a></sup></p><h3><span class="mw-headline" id="Cultural\_impact\_and\_depictions">Cultural impact and depictions</span></h3><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1033289096"><div role="note" class="hatnote navigation-not-searchable">See also: <a href="/wiki/Assassination\_of\_John\_F.\_Kennedy\_in\_popular\_culture" title="Assassination of John F. Kennedy in popular culture">Assassination of John F. Kennedy in popular culture</a></div><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1062260506"><div class="quotebox pullquote floatright" style="width:28em; ; font-size: 85%; background-color: powderblue; padding:1.5em"><blockquote class="quotebox-quote left-aligned" style=""><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1126788409"><div class="plainlist" style="margin-left:1em;text-indent:-1em;"><ul><li>They say they can't believe it; It's a sacrilegious shame.</li><li>Now, who would want to hurt such a hero of the game?</li><li>But you know I predicted it; I knew he had to fall.</li><li>How did it happen? Hope his suffering was small.</li><li>Tell me every detail, for I've got to know it all,</li><li>And do you have a picture of the pain?</li></ul></div></blockquote><p><cite class="left-aligned" style="">— <a href="/wiki/Phil\_Ochs" title="Phil Ochs">Phil Ochs</a>' song "<a href="/wiki/Crucifixion\_(song)" title="Crucifixion (song)">Crucifixion</a>" (1966)<sup id="cite\_ref-320" class="reference"><a href="#cite\_note-320">&#91;306&#93;</a></sup></cite></p></div><p>John F. Kennedy's assassination was the first of four major assassinations during the 1960s, coming two years before the <a href="/wiki/Assassination\_of\_Malcolm\_X" title="Assassination of Malcolm X">assassination of Malcolm X</a> in 1965, and five years before the assassinations of Martin Luther King Jr. and <a href="/wiki/Assassination\_of\_Robert\_F.\_Kennedy" title="Assassination of Robert F. Kennedy">Robert F. Kennedy</a> in 1968.<sup id="cite\_ref-321" class="reference"><a href="#cite\_note-321">&#91;307&#93;</a></sup> For the public, Kennedy's assassination mythologized him into a heroic figure.<sup id="cite\_ref-322" class="reference"><a href="#cite\_note-322">&#91;308&#93;</a></sup> Although scholars typically regard Kennedy as a good but not great president,<sup id="cite\_ref-brinkley\_323-0" class="reference"><a href="#cite\_note-brinkley-323">&#91;309&#93;</a></sup> public opinion polls consistently find him the most popular post-WWII president.<sup id="cite\_ref-brinkley\_323-1" class="reference"><a href="#cite\_note-brinkley-323">&#91;309&#93;</a></sup><sup id="cite\_ref-324" class="reference"><a href="#cite\_note-324">&#91;310&#93;</a></sup></p><p>Kennedy's murder left a <a href="/wiki/Flashbulb\_memory" title="Flashbulb memory">lasting impression</a> on many. As with the <a href="/wiki/Attack\_on\_Pearl\_Harbor" title="Attack on Pearl Harbor">attack on Pearl Harbor</a> of December 7, 1941, and, much later, the <a href="/wiki/September\_11\_attacks" title="September 11 attacks">September 11 attacks</a> in 2001, asking "Where were you when you heard about President Kennedy's assassination?" became a common topic of discussion.<sup id="cite\_ref-325" class="reference"><a href="#cite\_note-325">&#91;311&#93;</a></sup><sup id="cite\_ref-326" class="reference"><a href="#cite\_note-326">&#91;312&#93;</a></sup> Journalist <a href="/wiki/Dan\_Rather" title="Dan Rather">Dan Rather</a> opined that the Kennedy assassination will be discussed "a hundred years from now, a thousand years from now, in somewhat the same way as people discuss the <i><a href="/wiki/Iliad" title="Iliad">Iliad</a></i>. Different people read <a href="/wiki/Homer" title="Homer">Homer</a>'s description of the war and come to different conclusions, and so it shall be for Kennedy's death."<sup id="cite\_ref-327" class="reference"><a href="#cite\_note-327">&#91;313&#93;</a></sup></p><p>Along with Oliver Stone's <i>JFK</i>, the assassination has been portrayed in several films: the pro-conspiracy, <a href="/wiki/Dalton\_Trumbo" title="Dalton Trumbo">Dalton Trumbo</a>-written <i><a href="/wiki/Executive\_Action\_(film)" title="Executive Action (film)">Executive Action</a></i> (1973) was the first feature film to depict the assassination.<sup id="cite\_ref-328" class="reference"><a href="#cite\_note-328">&#91;314&#93;</a></sup> Besides explicit portrayals, some critics have argued that the Zapruder film—which itself has been featured in many films and television episodes—advanced <a href="/wiki/Cin%C3%A9ma\_v%C3%A9rit%C3%A9" title="Cinéma vérité">cinéma vérité</a> or inspired more <a href="/wiki/Violence\_in\_art#In\_films" title="Violence in art">graphic depictions of violence</a> in <a href="/wiki/American\_cinema" class="mw-redirect" title="American cinema">American cinema</a>.<sup id="cite\_ref-frenchies\_187-1" class="reference"><a href="#cite\_note-frenchies-187">&#91;175&#93;</a></sup><sup id="cite\_ref-329" class="reference"><a href="#cite\_note-329">&#91;315&#93;</a></sup><sup id="cite\_ref-330" class="reference"><a href="#cite\_note-330">&#91;316&#93;</a></sup><sup id="cite\_ref-331" class="reference"><a href="#cite\_note-331">&#91;317&#93;</a></sup> Many works of literature have also explored the killing, such as <a href="/wiki/Don\_DeLillo" title="Don DeLillo">Don DeLillo</a>'s 1988 novel <i><a href="/wiki/Libra\_(novel)" title="Libra (novel)">Libra</a></i> in which Oswald is a CIA agent,<sup id="cite\_ref-332" class="reference"><a href="#cite\_note-332">&#91;318&#93;</a></sup> <a href="/wiki/James\_Ellroy" title="James Ellroy">James Ellroy</a>'s 1995 work <i><a href="/wiki/American\_Tabloid" title="American Tabloid">American Tabloid</a></i>,<sup id="cite\_ref-333" class="reference"><a href="#cite\_note-333">&#91;319&#93;</a></sup> and <a href="/wiki/Stephen\_King" title="Stephen King">Stephen King</a>'s 2011 time travel novel <i><a href="/wiki/11/22/63" title="11/22/63">11/22/63</a></i>.<sup id="cite\_ref-334" class="reference"><a href="#cite\_note-334">&#91;320&#93;</a></sup> The assassination has also been featured in several musical compositions, such as <a href="/wiki/Igor\_Stravinsky" title="Igor Stravinsky">Igor Stravinsky</a>'s 1964 piece <i><a href="/wiki/Elegy\_for\_J.F.K." title="Elegy for J.F.K.">Elegy for J.F.K.</a></i> and <a href="/wiki/Phil\_Ochs" title="Phil Ochs">Phil Ochs</a>' 1966 song "<a href="/wiki/Crucifixion\_(song)" title="Crucifixion (song)">Crucifixion</a>",<sup id="cite\_ref-335" class="reference"><a href="#cite\_note-335">&#91;321&#93;</a></sup><sup id="cite\_ref-gates\_336-0" class="reference"><a href="#cite\_note-gates-336">&#91;322&#93;</a></sup> which reportedly brought Robert Kennedy to tears.<sup id="cite\_ref-gates\_336-1" class="reference"><a href="#cite\_note-gates-336">&#91;322&#93;</a></sup><sup id="cite\_ref-337" class="reference"><a href="#cite\_note-337">&#91;323&#93;</a></sup> Other songs include "<a href="/wiki/Abraham,\_Martin\_and\_John" title="Abraham, Martin and John">Abraham, Martin and John</a>" (1968) and <a href="/wiki/Bob\_Dylan" title="Bob Dylan">Bob Dylan</a>'s "<a href="/wiki/Murder\_Most\_Foul\_(song)" title="Murder Most Foul (song)">Murder Most Foul</a>" (2020).<sup id="cite\_ref-338" class="reference"><a href="#cite\_note-338">&#91;324&#93;</a></sup><sup id="cite\_ref-339" class="reference"><a href="#cite\_note-339">&#91;325&#93;</a></sup></p><h3><span id="Artifacts.2C\_museums.2C\_and\_locations\_today"></span><span class="mw-headline" id="Artifacts,\_museums,\_and\_locations\_today">Artifacts, museums, and locations today</span></h3><figure class="mw-default-size" typeof="mw:File/Thumb"><a href="/wiki/File:X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_(19474957334).jpg" class="mw-file-description"><img alt="A painted white &quot;X&quot; marks where the spot on Elm Street where the fatal bullet hit Kennedy in Dealey Plaza" src="//upload.wikimedia.org/wikipedia/commons/thumb/5/56/X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_%2819474957334%29.jpg/170px-X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_%2819474957334%29.jpg" decoding="async" width="170" height="227" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/5/56/X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_%2819474957334%29.jpg/255px-X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_%2819474957334%29.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/5/56/X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_%2819474957334%29.jpg/340px-X\_in\_Road\_Marks\_Where\_Fatal\_Shot\_Hit\_President\_Kennedy\_-\_Dealey\_Plaza\_-\_Dallas\_-\_Texas\_-\_USA\_%2819474957334%29.jpg 2x" data-file-width="2736" data-file-height="3648" /></a><figcaption>An "X" in the <a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a> roadway marks where the fatal bullet struck Kennedy.<sup id="cite\_ref-dealey\_340-0" class="reference"><a href="#cite\_note-dealey-340">&#91;326&#93;</a></sup></figcaption></figure><p>In 1993, the <a href="/wiki/National\_Park\_Service" title="National Park Service">National Park Service</a> designated Dealey Plaza, the surrounding buildings, the overpass, and a portion of the adjacent railyard as a <a href="/wiki/National\_Historic\_Landmark\_District" title="National Historic Landmark District">National Historic Landmark District</a>.<sup id="cite\_ref-dealey\_340-1" class="reference"><a href="#cite\_note-dealey-340">&#91;326&#93;</a></sup> The Depository and its <a href="/wiki/Sixth\_Floor\_Museum\_at\_Dealey\_Plaza" title="Sixth Floor Museum at Dealey Plaza">Sixth Floor Museum</a>, operated by the city of Dallas, draw over 325,000 visitors annually.<sup id="cite\_ref-341" class="reference"><a href="#cite\_note-341">&#91;327&#93;</a></sup></p><p>The <a href="/wiki/VC-137C\_SAM\_26000" title="VC-137C SAM 26000">Boeing 707</a> that served as Air Force One at the time of the assassination is on display at the <a href="/wiki/National\_Museum\_of\_the\_United\_States\_Air\_Force" title="National Museum of the United States Air Force">National Museum of the United States Air Force</a>; Kennedy's limousine is at the <a href="/wiki/Henry\_Ford\_Museum" class="mw-redirect" title="Henry Ford Museum">Henry Ford Museum</a>.<sup id="cite\_ref-relics\_342-0" class="reference"><a href="#cite\_note-relics-342">&#91;328&#93;</a></sup> The <a href="/wiki/Lincoln\_Catafalque" title="Lincoln Catafalque">Lincoln Catafalque</a>, on which Kennedy's coffin rested in the Capitol, is exhibited at the <a href="/wiki/United\_States\_Capitol\_Visitor\_Center" title="United States Capitol Visitor Center">Capitol Visitor Center</a>.<sup id="cite\_ref-343" class="reference"><a href="#cite\_note-343">&#91;329&#93;</a></sup> Jacqueline's pink suit, autopsy X-rays, and President Kennedy's blood-stained clothing are in the National Archives, with access controlled by the Kennedy family. Other items in the Archives include Parkland Hospital trauma room equipment; Oswald's rifle, diary, and revolver; bullet fragments; and the limousine's windshield.<sup id="cite\_ref-relics\_342-1" class="reference"><a href="#cite\_note-relics-342">&#91;328&#93;</a></sup> The Texas State Archives preserve Connally's bullet-punctured clothes; the gun Ruby used to kill Oswald came into the possession of Ruby's brother Earl, and was sold in 1991 for $220,000 (equivalent to $396,000 in 2022).<sup id="cite\_ref-344" class="reference"><a href="#cite\_note-344">&#91;330&#93;</a></sup></p><p>At the direction of Robert F. Kennedy, some items were destroyed. The casket in which Kennedy's body was transported from Dallas to Washington was dropped into the sea, because "its public display would be extremely offensive and contrary to public policy".<sup id="cite\_ref-345" class="reference"><a href="#cite\_note-345">&#91;331&#93;</a></sup></p><div style="clear:both;"></div><h2><span class="mw-headline" id="Notes">Notes</span></h2><style data-mw-deduplicate="TemplateStyles:r1011085734">.mw-parser-output .reflist{font-size:90%;margin-bottom:0.5em;list-style-type:decimal}.mw-parser-output .reflist .references{font-size:100%;margin-bottom:0;list-style-type:inherit}.mw-parser-output .reflist-columns-2{column-width:30em}.mw-parser-output .reflist-columns-3{column-width:25em}.mw-parser-output .reflist-columns{margin-top:0.3em}.mw-parser-output .reflist-columns ol{margin-top:0}.mw-parser-output .reflist-columns li{page-break-inside:avoid;break-inside:avoid-column}.mw-parser-output .reflist-upper-alpha{list-style-type:upper-alpha}.mw-parser-output .reflist-upper-roman{list-style-type:upper-roman}.mw-parser-output .reflist-lower-alpha{list-style-type:lower-alpha}.mw-parser-output .reflist-lower-greek{list-style-type:lower-greek}.mw-parser-output .reflist-lower-roman{list-style-type:lower-roman}</style><div class="reflist reflist-columns references-column-width" style="column-width: 30em;"><ol class="references"><li id="cite\_note-17"><span class="mw-cite-backlink"><b><a href="#cite\_ref-17">^</a></b></span> <span class="reference-text">This photo and a similar one are known as the "backyard photographs"; according to Bugliosi, it is one of the pieces of evidence most damning for Oswald. Oswald told Dallas police that the photographs were not genuine and that someone must have superimposed his head.<sup id="cite\_ref-15" class="reference"><a href="#cite\_note-15">&#91;15&#93;</a></sup> Marina Oswald testified that she took the pictures.<sup id="cite\_ref-16" class="reference"><a href="#cite\_note-16">&#91;16&#93;</a></sup></span></li><li id="cite\_note-27"><span class="mw-cite-backlink"><b><a href="#cite\_ref-27">^</a></b></span> <span class="reference-text">In 1964, KGB Agent <a href="/wiki/Yuri\_Nosenko" title="Yuri Nosenko">Yuri Nosenko</a> defected to the United States. He divulged that Soviet intelligence surveilled Oswald, regarded him as mentally unstable, and had no association with him.<sup id="cite\_ref-25" class="reference"><a href="#cite\_note-25">&#91;24&#93;</a></sup> Although the FBI trusted Nosenko, the CIA believed that he was a <a href="/wiki/Mole\_(espionage)" title="Mole (espionage)">mole</a> and convinced the Warren Commission not to interview him.<sup id="cite\_ref-26" class="reference"><a href="#cite\_note-26">&#91;25&#93;</a></sup></span></li><li id="cite\_note-42"><span class="mw-cite-backlink"><b><a href="#cite\_ref-42">^</a></b></span> <span class="reference-text">At Oswald's request, he met with FBI Special Agent John Quigley while in custody. Posner cites this as proof that Oswald was not a government agent, questioning why he might "blow his cover".<sup id="cite\_ref-41" class="reference"><a href="#cite\_note-41">&#91;39&#93;</a></sup></span></li><li id="cite\_note-47"><span class="mw-cite-backlink"><b><a href="#cite\_ref-47">^</a></b></span> <span class="reference-text"><a href="/wiki/Silvia\_Odio" title="Silvia Odio">Silvia Odio</a> testified to the Warren Commission that, one evening in September 1963, Oswald and anti-Castro Cubans visited her house to request donations for the anti-Castro movement. One of the Cubans later called Odio and mentioned that Oswald said it would be "easy" to assassinate Kennedy and that it should have been done after the Bay of Pigs. <a href="/wiki/Vincent\_Bugliosi" title="Vincent Bugliosi">Vincent Bugliosi</a> accused fellow anti-conspiracy theorists like <a href="/wiki/Gerald\_Posner" title="Gerald Posner">Gerald Posner</a> of distorting and downplaying this event in their writings, which provides Oswald with a strong motive to kill Kennedy.<sup id="cite\_ref-46" class="reference"><a href="#cite\_note-46">&#91;43&#93;</a></sup></span></li><li id="cite\_note-53"><span class="mw-cite-backlink"><b><a href="#cite\_ref-53">^</a></b></span> <span class="reference-text">Jack Dougherty, the only witness who saw Oswald enter the Depository on the morning of the assassination, testified to the Warren Commission that he did not remember seeing Oswald with any package.<sup id="cite\_ref-51" class="reference"><a href="#cite\_note-51">&#91;47&#93;</a></sup> Bugliosi questioned his reliability as a witness: Dougherty's father told FBI agents on November 23 that his son "had considerable difficulty in coordinating his mental facilities with his speech".<sup id="cite\_ref-52" class="reference"><a href="#cite\_note-52">&#91;48&#93;</a></sup></span></li><li id="cite\_note-71"><span class="mw-cite-backlink"><b><a href="#cite\_ref-71">^</a></b></span> <span class="reference-text">After the first shot, witness Virgie Rachley—an employee at the Texas School Book Depository—reported seeing sparks on the pavement shortly behind the president's limousine.<sup id="cite\_ref-bugliosi39\_70-0" class="reference"><a href="#cite\_note-bugliosi39-70">&#91;65&#93;</a></sup></span></li><li id="cite\_note-90"><span class="mw-cite-backlink"><b><a href="#cite\_ref-90">^</a></b></span> <span class="reference-text">Student Billy Harper later found a fragment of Kennedy's skull on the road.<sup id="cite\_ref-89" class="reference"><a href="#cite\_note-89">&#91;83&#93;</a></sup></span></li><li id="cite\_note-100"><span class="mw-cite-backlink"><b><a href="#cite\_ref-100">^</a></b></span> <span class="reference-text">The journalists pictured with them arrived as the end of the motorcade passed through Dealey Plaza.<sup id="cite\_ref-99" class="reference"><a href="#cite\_note-99">&#91;92&#93;</a></sup></span></li><li id="cite\_note-107"><span class="mw-cite-backlink"><b><a href="#cite\_ref-107">^</a></b></span> <span class="reference-text">Bugliosi notes that Lee Bowers Jr. did not mention the "commotion" in an earlier affidavit, in which Bowers did take time to list all other suspicious happenings like circling vehicles with "<a href="/wiki/Barry\_Goldwater" title="Barry Goldwater">Goldwater for '64</a>" stickers. Moreover, conspiracy theorist Jim Moore questions whether Bowers could even have seen the area. Bowers testified that he "threw [the] red-on-red [signal]" just after the fatal shot, but the grassy knoll was partially obstructed from Bowers' position at the work panel.<sup id="cite\_ref-106" class="reference"><a href="#cite\_note-106">&#91;98&#93;</a></sup></span></li><li id="cite\_note-117"><span class="mw-cite-backlink"><b><a href="#cite\_ref-117">^</a></b></span> <span class="reference-text">Three spent cartridges were found on the floor. One live round was found in the rifle. Dallas policemen thoroughly photographed the rifle before its removal.<sup id="cite\_ref-116" class="reference"><a href="#cite\_note-116">&#91;107&#93;</a></sup></span></li><li id="cite\_note-123"><span class="mw-cite-backlink"><b><a href="#cite\_ref-123">^</a></b></span> <span class="reference-text">Lieutenant Day of the Dallas police examined the weapon prior to its seizure by the FBI. He found and photographed fingerprints on the trigger housing. Although Day believed the prints to be those of Oswald's right middle and ring fingers, the ridges were not clear enough to make a positive identification. Day then discovered a palm-print on the barrel underneath the wooden stock. He tentatively identified it as Oswald's, but was not able to photograph or analyze it in more depth as the FBI took the Carcano.<sup id="cite\_ref-121" class="reference"><a href="#cite\_note-121">&#91;111&#93;</a></sup> In D.C., FBI fingerprint expert Sebastian Latona found the photographs and extant prints to be "insufficient" as to make any conclusion. The rifle was returned to the Dallas police on November 24.<sup id="cite\_ref-bug801\_120-1" class="reference"><a href="#cite\_note-bug801-120">&#91;110&#93;</a></sup> Five days later, the FBI made a positive identification using a card from Day.<sup id="cite\_ref-122" class="reference"><a href="#cite\_note-122">&#91;112&#93;</a></sup></span></li><li id="cite\_note-141"><span class="mw-cite-backlink"><b><a href="#cite\_ref-141">^</a></b></span> <span class="reference-text">At the time of Kennedy's assassination, most of his cabinet was on a trip to Japan.<sup id="cite\_ref-140" class="reference"><a href="#cite\_note-140">&#91;129&#93;</a></sup></span></li><li id="cite\_note-197"><span class="mw-cite-backlink"><b><a href="#cite\_ref-197">^</a></b></span> <span class="reference-text">Nix himself believed that the shots had come from the grassy knoll.<sup id="cite\_ref-nix\_196-1" class="reference"><a href="#cite\_note-nix-196">&#91;184&#93;</a></sup></span></li><li id="cite\_note-315"><span class="mw-cite-backlink"><b><a href="#cite\_ref-315">^</a></b></span> <span class="reference-text">In 1973, due to Floridians' discontent with the change, Florida Governor <a href="/wiki/Reubin\_Askew" title="Reubin Askew">Reubin Askew</a> mandated that Cape Kennedy be referred to as Cape Canaveral on all state documents and maps. The <a href="/wiki/U.S.\_Board\_of\_Geographic\_Names" class="mw-redirect" title="U.S. Board of Geographic Names">U.S. Board of Geographic Names</a> accepted the name change later that year.<sup id="cite\_ref-314" class="reference"><a href="#cite\_note-314">&#91;301&#93;</a></sup></span></li></ol></div><h2><span class="mw-headline" id="Citations">Citations</span></h2><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1011085734"><div class="reflist reflist-columns references-column-width" style="column-width: 20em;"><ol class="references"><li id="cite\_note-1"><span class="mw-cite-backlink"><b><a href="#cite\_ref-1">^</a></b></span> <span class="reference-text"><a href="#WhiteHouse">"John F. Kennedy". The White House.</a></span></li><li id="cite\_note-2"><span class="mw-cite-backlink"><b><a href="#cite\_ref-2">^</a></b></span> <span class="reference-text"><a href="#Senate">"John F. Kennedy: A Featured Biography". United States Senate.</a></span></li><li id="cite\_note-bugliosixi-3"><span class="mw-cite-backlink">^ <a href="#cite\_ref-bugliosixi\_3-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-bugliosixi\_3-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (1998)</a>, p. xi.</span></li><li id="cite\_note-4"><span class="mw-cite-backlink"><b><a href="#cite\_ref-4">^</a></b></span> <span class="reference-text"><a href="#Electoral">"1960 Electoral College Results". National Archives.</a></span></li><li id="cite\_note-5"><span class="mw-cite-backlink"><b><a href="#cite\_ref-5">^</a></b></span> <span class="reference-text"><a href="#Cold">"1960 The Cold War". John F. Kennedy Presidential Library and Museum.</a></span></li><li id="cite\_note-6"><span class="mw-cite-backlink"><b><a href="#cite\_ref-6">^</a></b></span> <span class="reference-text"><a href="#Sabato">Sabato (2013)</a>, pp. 422–423.</span></li><li id="cite\_note-7"><span class="mw-cite-backlink"><b><a href="#cite\_ref-7">^</a></b></span> <span class="reference-text"><a href="#Hinckle\_and\_Turner">Hinckle &amp; Turner (1981)</a>, pp. ix, 15, 18.</span></li><li id="cite\_note-8"><span class="mw-cite-backlink"><b><a href="#cite\_ref-8">^</a></b></span> <span class="reference-text"><a href="#Jones">Jones (2008)</a>, pp. 41, 50, 94.</span></li><li id="cite\_note-9"><span class="mw-cite-backlink"><b><a href="#cite\_ref-9">^</a></b></span> <span class="reference-text"><a href="#Borger">Borger (2022)</a></span></li><li id="cite\_note-10"><span class="mw-cite-backlink"><b><a href="#cite\_ref-10">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, pp. 13–16.</span></li><li id="cite\_note-11"><span class="mw-cite-backlink"><b><a href="#cite\_ref-11">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2008">Bugliosi (2008)</a>, pp. 17–23.</span></li><li id="cite\_note-WarrenCommission-Page28-12"><span class="mw-cite-backlink"><b><a href="#cite\_ref-WarrenCommission-Page28\_12-0">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 28.</span></li><li id="cite\_note-warren40-13"><span class="mw-cite-backlink">^ <a href="#cite\_ref-warren40\_13-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-warren40\_13-1"><sup><i><b>b</b></i></sup></a> <a href="#cite\_ref-warren40\_13-2"><sup><i><b>c</b></i></sup></a> <a href="#cite\_ref-warren40\_13-3"><sup><i><b>d</b></i></sup></a> <a href="#cite\_ref-warren40\_13-4"><sup><i><b>e</b></i></sup></a></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 40.</span></li><li id="cite\_note-14"><span class="mw-cite-backlink"><b><a href="#cite\_ref-14">^</a></b></span> <span class="reference-text"><a href="#White">White (1965)</a>, p. 3.</span></li><li id="cite\_note-15"><span class="mw-cite-backlink"><b><a href="#cite\_ref-15">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 792.</span></li><li id="cite\_note-16"><span class="mw-cite-backlink"><b><a href="#cite\_ref-16">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 793.</span></li><li id="cite\_note-18"><span class="mw-cite-backlink"><b><a href="#cite\_ref-18">^</a></b></span> <span class="reference-text"><a href="#Pontchartrain">Pontchartrain (2019)</a></span></li><li id="cite\_note-19"><span class="mw-cite-backlink"><b><a href="#cite\_ref-19">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 683.</span></li><li id="cite\_note-Philippines-20"><span class="mw-cite-backlink">^ <a href="#cite\_ref-Philippines\_20-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-Philippines\_20-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, p. 28.</span></li><li id="cite\_note-21"><span class="mw-cite-backlink"><b><a href="#cite\_ref-21">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 17–19.</span></li><li id="cite\_note-22"><span class="mw-cite-backlink"><b><a href="#cite\_ref-22">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 32–33.</span></li><li id="cite\_note-23"><span class="mw-cite-backlink"><b><a href="#cite\_ref-23">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 32–33, 46.</span></li><li id="cite\_note-24"><span class="mw-cite-backlink"><b><a href="#cite\_ref-24">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 46–53.</span></li><li id="cite\_note-25"><span class="mw-cite-backlink"><b><a href="#cite\_ref-25">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 34–36.</span></li><li id="cite\_note-26"><span class="mw-cite-backlink"><b><a href="#cite\_ref-26">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 38–39.</span></li><li id="cite\_note-28"><span class="mw-cite-backlink"><b><a href="#cite\_ref-28">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 697.</span></li><li id="cite\_note-29"><span class="mw-cite-backlink"><b><a href="#cite\_ref-29">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, p. 53.</span></li><li id="cite\_note-30"><span class="mw-cite-backlink"><b><a href="#cite\_ref-30">^</a></b></span> <span class="reference-text"><a href="#McMillan">McMillan (1977)</a>, pp. 64–65.</span></li><li id="cite\_note-Warren\_1964,\_p.\_712-31"><span class="mw-cite-backlink">^ <a href="#cite\_ref-Warren\_1964,\_p.\_712\_31-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-Warren\_1964,\_p.\_712\_31-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 712.</span></li><li id="cite\_note-32"><span class="mw-cite-backlink"><b><a href="#cite\_ref-32">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 714.</span></li><li id="cite\_note-33"><span class="mw-cite-backlink"><b><a href="#cite\_ref-33">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 82–83, 85, 100.</span></li><li id="cite\_note-34"><span class="mw-cite-backlink"><b><a href="#cite\_ref-34">^</a></b></span> <span class="reference-text"><a href="#Summers">Summers (2013)</a>, pp. 152–160.</span></li><li id="cite\_note-35"><span class="mw-cite-backlink"><b><a href="#cite\_ref-35">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 183.</span></li><li id="cite\_note-36"><span class="mw-cite-backlink"><b><a href="#cite\_ref-36">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, p. 403.</span></li><li id="cite\_note-37"><span class="mw-cite-backlink"><b><a href="#cite\_ref-37">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 125–127.</span></li><li id="cite\_note-38"><span class="mw-cite-backlink"><b><a href="#cite\_ref-38">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, pp. 728–729.</span></li><li id="cite\_note-39"><span class="mw-cite-backlink"><b><a href="#cite\_ref-39">^</a></b></span> <span class="reference-text"><a href="#Summers">Summers (2013)</a>, p. 211.</span></li><li id="cite\_note-40"><span class="mw-cite-backlink"><b><a href="#cite\_ref-40">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 151–152.</span></li><li id="cite\_note-41"><span class="mw-cite-backlink"><b><a href="#cite\_ref-41">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 153–155.</span></li><li id="cite\_note-43"><span class="mw-cite-backlink"><b><a href="#cite\_ref-43">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 172–190.</span></li><li id="cite\_note-44"><span class="mw-cite-backlink"><b><a href="#cite\_ref-44">^</a></b></span> <span class="reference-text"><a href="#Posner">Posner (1993)</a>, pp. 173–189.</span></li><li id="cite\_note-45"><span class="mw-cite-backlink"><b><a href="#cite\_ref-45">^</a></b></span> <span class="reference-text"><a href="#Sabato">Sabato (2013)</a>, pp. 183–185.</span></li><li id="cite\_note-46"><span class="mw-cite-backlink"><b><a href="#cite\_ref-46">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. xxxvii.</span></li><li id="cite\_note-WCR-C1-48"><span class="mw-cite-backlink"><b><a href="#cite\_ref-WCR-C1\_48-0">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, pp. 14–15.</span></li><li id="cite\_note-Saturday2-49"><span class="mw-cite-backlink">^ <a href="#cite\_ref-Saturday2\_49-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-Saturday2\_49-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#Bagdikian">Bagdikian (1963)</a>, p. 26.</span></li><li id="cite\_note-50"><span class="mw-cite-backlink"><b><a href="#cite\_ref-50">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, pp. 6, 165.</span></li><li id="cite\_note-51"><span class="mw-cite-backlink"><b><a href="#cite\_ref-51">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 819.</span></li><li id="cite\_note-52"><span class="mw-cite-backlink"><b><a href="#cite\_ref-52">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 820.</span></li><li id="cite\_note-54"><span class="mw-cite-backlink"><b><a href="#cite\_ref-54">^</a></b></span> <span class="reference-text"><a href="#Warren">Warren (1964)</a>, pp. 130–135.</span></li><li id="cite\_note-55"><span class="mw-cite-backlink"><b><a href="#cite\_ref-55">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, pp. 23–24.</span></li><li id="cite\_note-odonnell-56"><span class="mw-cite-backlink">^ <a href="#cite\_ref-odonnell\_56-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-odonnell\_56-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#O&#39;Donnell">Testimony of Kenneth P. O'Donnell</a>, Warren Commission Hearings.</span></li><li id="cite\_note-57"><span class="mw-cite-backlink"><b><a href="#cite\_ref-57">^</a></b></span> <span class="reference-text"><a href="#Blaine">Blaine (2011)</a>, p. 196.</span></li><li id="cite\_note-58"><span class="mw-cite-backlink"><b><a href="#cite\_ref-58">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2008">Bugliosi (2008)</a>, pp. 25, 41.</span></li><li id="cite\_note-59"><span class="mw-cite-backlink"><b><a href="#cite\_ref-59">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, pp. 29.</span></li><li id="cite\_note-60"><span class="mw-cite-backlink"><b><a href="#cite\_ref-60">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2008">Bugliosi (2008)</a>, p. 30.</span></li><li id="cite\_note-61"><span class="mw-cite-backlink"><b><a href="#cite\_ref-61">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, pp. 19–20, 30–38, 49.</span></li><li id="cite\_note-62"><span class="mw-cite-backlink"><b><a href="#cite\_ref-62">^</a></b></span> <span class="reference-text"><a href="#Death">"November 22, 1963: Death of the President". John F. 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150–152.</span></li><li id="cite\_note-131"><span class="mw-cite-backlink"><b><a href="#cite\_ref-131">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2008">Bugliosi (2008)</a>, p. 153.</span></li><li id="cite\_note-132"><span class="mw-cite-backlink"><b><a href="#cite\_ref-132">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 161.</span></li><li id="cite\_note-133"><span class="mw-cite-backlink"><b><a href="#cite\_ref-133">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2008">Bugliosi (2008)</a>, p. 85.</span></li><li id="cite\_note-134"><span class="mw-cite-backlink"><b><a href="#cite\_ref-134">^</a></b></span> <span class="reference-text"><a href="#Arlington">"Biographical sketch of Dr. George Gregory Burkley". 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PBS</a></span></li><li id="cite\_note-155"><span class="mw-cite-backlink"><b><a href="#cite\_ref-155">^</a></b></span> <span class="reference-text"><a href="#Burkley">Burkley (1963)</a></span></li><li id="cite\_note-bug157-156"><span class="mw-cite-backlink"><b><a href="#cite\_ref-bug157\_156-0">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 157.</span></li><li id="cite\_note-brain-157"><span class="mw-cite-backlink">^ <a href="#cite\_ref-brain\_157-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-brain\_157-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#Saner">Saner (2013)</a></span></li><li id="cite\_note-158"><span class="mw-cite-backlink"><b><a href="#cite\_ref-158">^</a></b></span> <span class="reference-text"><a href="#Kurtz">Kurtz (1982)</a>, p. 9.</span></li><li id="cite\_note-159"><span class="mw-cite-backlink"><b><a href="#cite\_ref-159">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, pp. 382–383.</span></li><li id="cite\_note-160"><span class="mw-cite-backlink"><b><a href="#cite\_ref-160">^</a></b></span> <span class="reference-text"><a href="#Bugliosi2007">Bugliosi (2007)</a>, p. 384.</span></li><li id="cite\_note-161"><span class="mw-cite-backlink"><b><a href="#cite\_ref-161">^</a></b></span> <span class="reference-text"><a href="#assoc">Associated Press (1963)</a>, pp. 36–37, 56–57, 68.</span></li><li id="cite\_note-162"><span class="mw-cite-backlink"><b><a href="#cite\_ref-162">^</a></b></span> <span class="reference-text"><a href="#nyc"><i>The New York Times</i> (2003)</a>, pp. 197–201.</span></li><li id="cite\_note-AssociatedPress-Page40-163"><span class="mw-cite-backlink"><b><a href="#cite\_ref-AssociatedPress-Page40\_163-0">^</a></b></span> <span class="reference-text"><a href="#assoc">Associated Press (1963)</a>, p. 40.</span></li><li id="cite\_note-164"><span class="mw-cite-backlink"><b><a href="#cite\_ref-164">^</a></b></span> <span class="reference-text"><a href="#Heritage"><i>American Heritage</i> (1964)</a>, pp. 52–53.</span></li><li id="cite\_note-165"><span class="mw-cite-backlink"><b><a href="#cite\_ref-165">^</a></b></span> <span class="reference-text"><a href="#Closed">"Government Offices Closed by President". <i>The Washington Post</i>.</a></span></li><li id="cite\_note-WhitePage16-166"><span class="mw-cite-backlink">^ <a href="#cite\_ref-WhitePage16\_166-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-WhitePage16\_166-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#White">White (1965)</a>, p. 16.</span></li><li id="cite\_note-167"><span class="mw-cite-backlink"><b><a href="#cite\_ref-167">^</a></b></span> <span class="reference-text"><a href="#NBC">NBC News (1966)</a>, pp. 106–107, 110, 114–115, 119–123, 133–134.</span></li><li id="cite\_note-168"><span class="mw-cite-backlink"><b><a href="#cite\_ref-168">^</a></b></span> <span class="reference-text"><a href="#Neuman">Neuman (2017)</a></span></li><li id="cite\_note-169"><span class="mw-cite-backlink"><b><a href="#cite\_ref-169">^</a></b></span> <span class="reference-text"><a href="#Russkies">Hoover (1963)</a></span></li><li id="cite\_note-WhitePage17-170"><span class="mw-cite-backlink">^ <a href="#cite\_ref-WhitePage17\_170-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-WhitePage17\_170-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#White">White (1965)</a>, p. 17.</span></li><li id="cite\_note-171"><span class="mw-cite-backlink"><b><a href="#cite\_ref-171">^</a></b></span> <span class="reference-text"><a href="#assoc">Associated Press (1963)</a>, p. 93.</span></li><li id="cite\_note-nbc126-172"><span class="mw-cite-backlink">^ <a href="#cite\_ref-nbc126\_172-0"><sup><i><b>a</b></i></sup></a> <a href="#cite\_ref-nbc126\_172-1"><sup><i><b>b</b></i></sup></a></span> <span class="reference-text"><a href="#NBC">NBC News (1966)</a>, p. 126.</span></li><li id="cite\_note-173"><span class="mw-cite-backlink"><b><a href="#cite\_ref-173">^</a></b></span> <span class="reference-text"><a href="#assoc">Associated Press (1963)</a>, pp. 94, 96.</span></li><li id="cite\_note-174"><span class="mw-cite-backlink"><b><a href="#cite\_ref-174">^</a></b></span> <span class="reference-text"><a href="#Spivak">Spivak (1963)</a></span></li><li id="cite\_note-175"><span class="mw-cite-backlink"><b><a href="#cite\_ref-175">^</a></b></span> <span class="reference-text"><a href="#White">White (1965)</a>, p. 18.</span></li><li id="cite\_note-176"><span class="mw-cite-backlink"><b><a href="#cite\_ref-176">^</a></b></span> <span class="reference-text"><a href="#ANC">"President John Fitzgerald Kennedy Gravesite". 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United States Government Printing Office. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20210511003730/https://www.archives.gov/files/research/jfk/review-board/report/arrb-final-report.pdf">Archived</a> <span class="cs1-format">(PDF)</span> from the original on May 11, 2021.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Abook&amp;rft.genre=report&amp;rft.btitle=Final+Report+of+the+Assassination+Records+Review+Board&amp;rft.pub=United+States+Government+Printing+Office&amp;rft.date=1998-09-30&amp;rft.au=Assassination+Records+Review+Board&amp;rft\_id=https%3A%2F%2Fwww.archives.gov%2Fresearch%2Fjfk%2Freview-board%2Freport%2Farrb-final-report.pdf&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li></ul></div><h4><span id="Warren\_Commission\_documents.2C\_exhibits.2C\_and\_testimonies"></span><span class="mw-headline" id="Warren\_Commission\_documents,\_exhibits,\_and\_testimonies">Warren Commission documents, exhibits, and testimonies</span></h4><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1054258005"><div class="refbegin refbegin-columns references-column-width" style="column-width: 30em"><ul><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="GovConnally" class="citation report cs1"><a rel="nofollow" class="external text" href="http://www.aarclibrary.org/publib/jfk/wc/wcvols/wh4/html/WC\_Vol4\_0069a.htm">Testimony of Gov. John Bowden Connally, Jr</a>. <i>Warren Commission Hearings</i> (Report). Vol.&#160;IV. pp.&#160;129–146. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20130315071911/http://www.aarclibrary.org/publib/jfk/wc/wcvols/wh4/html/WC\_Vol4\_0069a.htm">Archived</a> from the original on March 15, 2013 &#8211; via Assassination Archives and Research Center.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Abook&amp;rft.genre=report&amp;rft.btitle=Testimony+of+Gov.+John+Bowden+Connally%2C+Jr&amp;rft.pages=129-146&amp;rft\_id=http%3A%2F%2Fwww.aarclibrary.org%2Fpublib%2Fjfk%2Fwc%2Fwcvols%2Fwh4%2Fhtml%2FWC\_Vol4\_0069a.htm&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="MsConnally" class="citation report cs1"><a rel="nofollow" class="external text" href="http://www.aarclibrary.org/publib/jfk/wc/wcvols/wh4/html/WC\_Vol4\_0077b.htm">Testimony of Mrs. John Bowden Connally, Jr</a>. <i>Warren Commission Hearings</i> (Report). Vol.&#160;IV. pp.&#160;146–149. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20130315072011/http://www.aarclibrary.org/publib/jfk/wc/wcvols/wh4/html/WC\_Vol4\_0077b.htm">Archived</a> from the original on March 15, 2013 &#8211; via Assassination Archives and Research Center.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Abook&amp;rft.genre=report&amp;rft.btitle=Testimony+of+Mrs.+John+Bowden+Connally%2C+Jr&amp;rft.pages=146-149&amp;rft\_id=http%3A%2F%2Fwww.aarclibrary.org%2Fpublib%2Fjfk%2Fwc%2Fwcvols%2Fwh4%2Fhtml%2FWC\_Vol4\_0077b.htm&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="Jackie" class="citation report cs1"><a rel="nofollow" class="external text" href="http://www.aarclibrary.org/publib/jfk/wc/wcvols/wh5/html/WC\_Vol5\_0094b.htm">Testimony of Mrs. John F. 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Retrieved <span class="nowrap">October 21,</span> 2017</span>.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajournal&amp;rft.genre=article&amp;rft.jtitle=Winston-Salem+Journal&amp;rft.atitle=Trump+has+no+plan+to+block+scheduled+release+of+JFK+records&amp;rft.date=2017-10-21&amp;rft\_id=http%3A%2F%2Fwww.journalnow.com%2Fnews%2Fnation\_world\_ap%2Ftrump-has-no-plan-to-block-scheduled-release-of-jfk%2Farticle\_689bbba3-9933-5145-aab7-e7eeb2ed3abe.html&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="Vollman" class="citation news cs1">Vollman, William T. (February 26, 1995). <a rel="nofollow" class="external text" href="https://archive.nytimes.com/www.nytimes.com/books/01/05/20/specials/tabloid.html?\_r=1&amp;oref=slogin">"En Route to the Grassy Knoll"</a>. <i>The New York Times</i>. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20230527214016/https://archive.nytimes.com/www.nytimes.com/books/01/05/20/specials/tabloid.html?\_r=1&amp;oref=slogin">Archived</a> from the original on May 27, 2023<span class="reference-accessdate">. Retrieved <span class="nowrap">May 27,</span> 2023</span>.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajournal&amp;rft.genre=article&amp;rft.jtitle=The+New+York+Times&amp;rft.atitle=En+Route+to+the+Grassy+Knoll&amp;rft.date=1995-02-26&amp;rft.aulast=Vollman&amp;rft.aufirst=William+T.&amp;rft\_id=https%3A%2F%2Farchive.nytimes.com%2Fwww.nytimes.com%2Fbooks%2F01%2F05%2F20%2Fspecials%2Ftabloid.html%3F\_r%3D1%26oref%3Dslogin&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="Cronkite" class="citation news cs1"><a rel="nofollow" class="external text" href="https://www.npr.org/transcripts/246628793">"Walter Cronkite On The Assassination Of John F. Kennedy"</a>. NPR. November 22, 2013. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20220628013459/https://www.npr.org/transcripts/246628793">Archived</a> from the original on June 28, 2022<span class="reference-accessdate">. Retrieved <span class="nowrap">June 7,</span> 2023</span>.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajournal&amp;rft.genre=article&amp;rft.atitle=Walter+Cronkite+On+The+Assassination+Of+John+F.+Kennedy&amp;rft.date=2013-11-22&amp;rft\_id=https%3A%2F%2Fwww.npr.org%2Ftranscripts%2F246628793&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="Frontline" class="citation web cs1"><a rel="nofollow" class="external text" href="https://www.pbs.org/wgbh/pages/frontline/shows/oswald/glimpse/ferrie.html">"Who Was Lee Harvey Oswald"</a>. <i>Frontline</i>. PBS. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20070930012241/http://www.pbs.org/wgbh/pages/frontline/shows/oswald/glimpse/ferrie.html">Archived</a> from the original on September 30, 2007<span class="reference-accessdate">. Retrieved <span class="nowrap">September 30,</span> 2007</span>.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajournal&amp;rft.genre=unknown&amp;rft.jtitle=Frontline&amp;rft.atitle=Who+Was+Lee+Harvey+Oswald&amp;rft\_id=https%3A%2F%2Fwww.pbs.org%2Fwgbh%2Fpages%2Ffrontline%2Fshows%2Foswald%2Fglimpse%2Fferrie.html&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite id="Electoral" class="citation web cs1"><a rel="nofollow" class="external text" href="https://www.archives.gov/electoral-college/1960">"1960 Electoral College Results"</a>. National Archives. November 5, 2019. <a rel="nofollow" class="external text" href="https://web.archive.org/web/20230422180529/https://www.archives.gov/electoral-college/1960">Archived</a> from the original on April 22, 2023<span class="reference-accessdate">. Retrieved <span class="nowrap">May 16,</span> 2023</span>.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Abook&amp;rft.genre=unknown&amp;rft.btitle=1960+Electoral+College+Results&amp;rft.pub=National+Archives&amp;rft.date=2019-11-05&amp;rft\_id=https%3A%2F%2Fwww.archives.gov%2Felectoral-college%2F1960&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li></ul></div><h2><span class="mw-headline" id="External\_links">External links</span></h2><style data-mw-deduplicate="TemplateStyles:r1134653256">.mw-parser-output .side-box{margin:4px 0;box-sizing:border-box;border:1px solid #aaa;font-size:88%;line-height:1.25em;background-color:#f9f9f9;display:flow-root}.mw-parser-output .side-box-abovebelow,.mw-parser-output .side-box-text{padding:0.25em 0.9em}.mw-parser-output .side-box-image{padding:2px 0 2px 0.9em;text-align:center}.mw-parser-output .side-box-imageright{padding:2px 0.9em 2px 0;text-align:center}@media(min-width:500px){.mw-parser-output .side-box-flex{display:flex;align-items:center}.mw-parser-output .side-box-text{flex:1}}@media(min-width:720px){.mw-parser-output .side-box{width:238px}.mw-parser-output .side-box-right{clear:right;float:right;margin-left:1em}.mw-parser-output .side-box-left{margin-right:1em}}</style><div class="side-box side-box-right plainlinks sistersitebox"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1126788409"><div class="side-box-flex"><div class="side-box-image"><span class="noviewer" typeof="mw:File"><span><img alt="" src="//upload.wikimedia.org/wikipedia/en/thumb/4/4a/Commons-logo.svg/30px-Commons-logo.svg.png" decoding="async" width="30" height="40" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/4/4a/Commons-logo.svg/45px-Commons-logo.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/4/4a/Commons-logo.svg/59px-Commons-logo.svg.png 2x" data-file-width="1024" data-file-height="1376" /></span></span></div><div class="side-box-text plainlist">Wikimedia Commons has media related to <span style="font-weight: bold; font-style: italic;"><a href="https://commons.wikimedia.org/wiki/Category:Assassination\_of\_John\_F.\_Kennedy" class="extiw" title="commons:Category:Assassination of John F. Kennedy">Assassination of John F. Kennedy</a></span>.</div></div></div><ul><li><a rel="nofollow" class="external text" href="https://web.archive.org/web/20080526082205/http://www.jfk.org/go/home">The Sixth Floor Museum at Dealey Plaza</a></li><li><a rel="nofollow" class="external text" href="https://www.archives.gov/research/jfk/">The President John F. Kennedy Assassination Records Collection</a> – National Archives and Records Administration</li><li><a rel="nofollow" class="external text" href="http://www.cbsnews.com/feature/jfk-assassination/">JFK Assassination:A look back at the death of President John F. Kennedy 50 years ago</a> – CBS News</li><li><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1133582631"><cite class="citation web cs1"><a rel="nofollow" class="external text" href="http://www.jfklibrary.org/JFK/JFK-in-History/November-22-1963-Death-of-the-President.aspx">"November 22, 1963: Death of the President"</a>. John F. Kennedy Presidential Library and Museum.</cite><span title="ctx\_ver=Z39.88-2004&amp;rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Abook&amp;rft.genre=unknown&amp;rft.btitle=November+22%2C+1963%3A+Death+of+the+President&amp;rft.pub=John+F.+Kennedy+Presidential+Library+and+Museum&amp;rft\_id=http%3A%2F%2Fwww.jfklibrary.org%2FJFK%2FJFK-in-History%2FNovember-22-1963-Death-of-the-President.aspx&amp;rfr\_id=info%3Asid%2Fen.wikipedia.org%3AAssassination+of+John+F.+Kennedy" class="Z3988"></span></li><li><a rel="nofollow" class="external text" href="https://archive.org/details/nationalsecurityarchive-weisberg">"Weisberg Collection on the JFK Assassination"</a> – Internet Archive</li><li><a rel="nofollow" class="external text" href="https://books.google.com/books?id=DFMEAAAAMBAJ&amp;pg=PA38">LIFE Magazine Nov. 25, 1966</a></li><li><a rel="nofollow" class="external text" href="http://legacy.lib.utexas.edu/taro/utarl/02307/arl-02307.html">John F. Kennedy Assassination Collection</a> <a href="/wiki/Finding\_aid" title="Finding aid">finding aid</a> at <a href="/wiki/University\_of\_Texas\_at\_Arlington#Libraries" title="University of Texas at Arlington">University of Texas at Arlington Libraries Special Collections</a> via Texas Archival Resources Online (TARO)</li></ul><div class="navbox-styles"><style data-mw-deduplicate="TemplateStyles:r1129693374">.mw-parser-output .hlist dl,.mw-parser-output .hlist ol,.mw-parser-output .hlist ul{margin:0;padding:0}.mw-parser-output .hlist dd,.mw-parser-output .hlist dt,.mw-parser-output .hlist li{margin:0;display:inline}.mw-parser-output .hlist.inline,.mw-parser-output .hlist.inline dl,.mw-parser-output .hlist.inline ol,.mw-parser-output .hlist.inline ul,.mw-parser-output .hlist dl dl,.mw-parser-output .hlist dl ol,.mw-parser-output .hlist dl ul,.mw-parser-output .hlist ol dl,.mw-parser-output .hlist ol ol,.mw-parser-output .hlist ol ul,.mw-parser-output .hlist ul dl,.mw-parser-output .hlist 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.navbar-ct-full{font-size:114%;margin:0 7em}.mw-parser-output .navbar-ct-mini{font-size:114%;margin:0 4em}</style><div class="navbar plainlinks hlist navbar-mini"><ul><li class="nv-view"><a href="/wiki/Template:Assassination\_of\_John\_F.\_Kennedy" title="Template:Assassination of John F. Kennedy"><abbr title="View this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">v</abbr></a></li><li class="nv-talk"><a href="/wiki/Template\_talk:Assassination\_of\_John\_F.\_Kennedy" title="Template talk:Assassination of John F. Kennedy"><abbr title="Discuss this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">t</abbr></a></li><li class="nv-edit"><a href="/wiki/Special:EditPage/Template:Assassination\_of\_John\_F.\_Kennedy" title="Special:EditPage/Template:Assassination of John F. Kennedy"><abbr title="Edit this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">e</abbr></a></li></ul></div><div id="Assassination\_of\_John\_F.\_Kennedy" style="font-size:114%;margin:0 4em"><a class="mw-selflink selflink">Assassination of John F. Kennedy</a></div></th></tr><tr><td class="navbox-abovebelow" colspan="2"><div><ul><li><b><a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a></b></li><li><b><a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Lee Harvey Oswald</a></b></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a class="mw-selflink selflink">Assassination</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/John\_F.\_Kennedy\_assassination\_rifle" title="John F. Kennedy assassination rifle">Assassination rifle</a></li><li><a href="/wiki/Timeline\_of\_the\_John\_F.\_Kennedy\_assassination" title="Timeline of the John F. Kennedy assassination">Timeline</a></li><li><a href="/wiki/J.\_D.\_Tippit" title="J. D. Tippit">J. D. Tippit</a></li><li><a href="/wiki/John\_Connally" title="John Connally">John Connally</a></li><li><a href="/wiki/Nellie\_Connally" title="Nellie Connally">Nellie Connally</a></li><li><a href="/wiki/Jacqueline\_Kennedy\_Onassis" title="Jacqueline Kennedy Onassis">Jacqueline Kennedy</a><ul><li><a href="/wiki/Pink\_Chanel\_suit\_of\_Jacqueline\_Bouvier\_Kennedy" title="Pink Chanel suit of Jacqueline Bouvier Kennedy">Pink Chanel suit</a></li></ul></li><li><a href="/wiki/James\_Tague" title="James Tague">James Tague</a></li><li><a href="/wiki/William\_Greer" title="William Greer">William Greer</a></li><li><a href="/wiki/Roy\_Kellerman" title="Roy Kellerman">Roy Kellerman</a></li><li><a href="/wiki/Clint\_Hill\_(Secret\_Service)" title="Clint Hill (Secret Service)">Clint Hill</a></li><li><a href="/wiki/Zapruder\_film" title="Zapruder film">Zapruder film</a><ul><li><a href="/wiki/Abraham\_Zapruder" title="Abraham Zapruder">Abraham Zapruder</a></li></ul></li><li><a href="/wiki/Dealey\_Plaza" title="Dealey Plaza">Dealey Plaza</a></li><li><a href="/wiki/Texas\_School\_Book\_Depository" title="Texas School Book Depository">Texas School Book Depository</a><ul><li><a href="/wiki/Sixth\_Floor\_Museum\_at\_Dealey\_Plaza" title="Sixth Floor Museum at Dealey Plaza">Sixth Floor Museum</a></li></ul></li><li><a href="/wiki/SS-100-X" class="mw-redirect" title="SS-100-X">Presidential limousine</a></li><li><a href="/wiki/Parkland\_Memorial\_Hospital" title="Parkland Memorial Hospital">Parkland Hospital</a></li><li><a href="/wiki/Category:Witnesses\_to\_the\_assassination\_of\_John\_F.\_Kennedy" title="Category:Witnesses to the assassination of John F. Kennedy">Witnesses</a></li><li><a href="/wiki/Marie\_Muchmore" title="Marie Muchmore">Marie Muchmore</a></li><li><a href="/wiki/Orville\_Nix" title="Orville Nix">Orville Nix</a></li><li><a href="/wiki/Three\_tramps" title="Three tramps">Three tramps</a></li><li><a href="/wiki/Spanish\_Lady" title="Spanish Lady">Spanish Lady</a></li><li><a href="/wiki/Badge\_Man" title="Badge Man">Badge Man</a></li><li><a href="/wiki/Umbrella\_man\_(JFK\_assassination)" title="Umbrella man (JFK assassination)">Umbrella man</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Aftermath</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/John\_F.\_Kennedy\_autopsy" title="John F. Kennedy autopsy">Autopsy</a></li><li><a href="/wiki/Reactions\_to\_the\_assassination\_of\_John\_F.\_Kennedy" title="Reactions to the assassination of John F. Kennedy">Reactions</a></li><li><a href="/wiki/First\_inauguration\_of\_Lyndon\_B.\_Johnson" title="First inauguration of Lyndon B. Johnson">Johnson inauguration</a></li><li><a href="/wiki/Jack\_Ruby" title="Jack Ruby">Jack Ruby</a></li><li><i><a href="/wiki/Rubenstein\_v.\_State" title="Rubenstein v. State">Ruby v. Texas</a></i></li><li><a href="/wiki/John\_F.\_Kennedy\_assassination\_Dictabelt\_recording" title="John F. Kennedy assassination Dictabelt recording">Dictabelt recording</a></li><li><a href="/wiki/John\_F.\_Kennedy\_assassination\_conspiracy\_theories" title="John F. Kennedy assassination conspiracy theories">Conspiracy theories</a><ul><li><a href="/wiki/CIA\_Kennedy\_assassination\_conspiracy\_theory" title="CIA Kennedy assassination conspiracy theory">CIA</a></li></ul></li><li><a href="/wiki/Single-bullet\_theory" title="Single-bullet theory">Single-bullet theory</a></li><li><a href="/wiki/President\_John\_F.\_Kennedy\_Assassination\_Records\_Collection\_Act\_of\_1992" title="President John F. Kennedy Assassination Records Collection Act of 1992">1992 Assassination Records Act</a></li><li><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy\_in\_popular\_culture" title="Assassination of John F. Kennedy in popular culture">In popular culture</a></li><li><a href="/wiki/Robert\_N.\_McClelland" title="Robert N. McClelland">Robert N. McClelland (surgeon)</a></li><li><a href="/wiki/Charles\_R.\_Baxter" title="Charles R. Baxter">Charles Baxter (physician)</a></li><li><a href="/wiki/Malcolm\_Perry\_(physician)" title="Malcolm Perry (physician)">Malcolm Perry (physician)</a></li><li><a href="/wiki/Earl\_Rose\_(coroner)" title="Earl Rose (coroner)">Earl Rose (coroner)</a></li><li><a href="/wiki/John\_Fitzgerald\_Kennedy\_Memorial" title="John Fitzgerald Kennedy Memorial">Dallas memorial</a></li></ul></div><table class="nowraplinks navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/State\_funeral\_of\_John\_F.\_Kennedy" title="State funeral of John F. Kennedy">State funeral</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/List\_of\_dignitaries\_at\_the\_state\_funeral\_of\_John\_F.\_Kennedy" title="List of dignitaries at the state funeral of John F. Kennedy">Foreign dignitaries</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Eternal\_Flame" title="John F. Kennedy Eternal Flame">Burial site and Eternal Flame</a></li><li><a href="/wiki/Black\_Jack\_(horse)" title="Black Jack (horse)">Black Jack (horse)</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Investigations</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Warren\_Commission" title="Warren Commission">Warren Commission</a></li><li><a href="/wiki/Trial\_of\_Clay\_Shaw" title="Trial of Clay Shaw">Jim Garrison investigation</a></li><li><a href="/wiki/United\_States\_House\_Select\_Committee\_on\_Assassinations" title="United States House Select Committee on Assassinations">House Select Committee on Assassinations</a></li><li><a href="/wiki/Category:Researchers\_of\_the\_assassination\_of\_John\_F.\_Kennedy" title="Category:Researchers of the assassination of John F. Kennedy">Researchers</a></li></ul></div></td></tr></tbody></table><div></div></td></tr><tr><td class="navbox-abovebelow hlist" colspan="2"><div><ul><li><a href="/wiki/Category:Assassination\_of\_John\_F.\_Kennedy" title="Category:Assassination of John F. Kennedy">Category</a></li></ul></div></td></tr></tbody></table></div><div class="navbox-styles"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1061467846"></div><div role="navigation" class="navbox" aria-labelledby="John\_F.\_Kennedy" style="padding:3px"><table class="nowraplinks hlist mw-collapsible mw-collapsed navbox-inner" style="border-spacing:0;background:transparent;color:inherit"><tbody><tr><th scope="col" class="navbox-title" colspan="3"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1063604349"><div class="navbar plainlinks hlist navbar-mini"><ul><li class="nv-view"><a href="/wiki/Template:John\_F.\_Kennedy" title="Template:John F. Kennedy"><abbr title="View this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">v</abbr></a></li><li class="nv-talk"><a href="/wiki/Template\_talk:John\_F.\_Kennedy" title="Template talk:John F. Kennedy"><abbr title="Discuss this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">t</abbr></a></li><li class="nv-edit"><a href="/wiki/Special:EditPage/Template:John\_F.\_Kennedy" title="Special:EditPage/Template:John F. Kennedy"><abbr title="Edit this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">e</abbr></a></li></ul></div><div id="John\_F.\_Kennedy" style="font-size:114%;margin:0 4em"><a href="/wiki/John\_F.\_Kennedy" title="John F. Kennedy">John F. Kennedy</a></div></th></tr><tr><td class="navbox-abovebelow" colspan="3"><div><ul><li><span class="nowrap"><a href="/wiki/List\_of\_presidents\_of\_the\_United\_States" title="List of presidents of the United States">35th</a> <a href="/wiki/President\_of\_the\_United\_States" title="President of the United States">President of the United States</a> (1961–1963)</span></li><li><span class="nowrap"><a href="/wiki/List\_of\_United\_States\_senators\_from\_Massachusetts" title="List of United States senators from Massachusetts">U.S. Senator from Massachusetts</a> (1953–1960)</span></li><li><span class="nowrap"><a href="/wiki/List\_of\_United\_States\_representatives\_from\_Massachusetts" title="List of United States representatives from Massachusetts">U.S. Representative</a> for <a href="/wiki/Massachusetts%27s\_11th\_congressional\_district" title="Massachusetts&#39;s 11th congressional district">MA–11</a> (1947–1953)</span></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/Presidency\_of\_John\_F.\_Kennedy" title="Presidency of John F. Kennedy">Presidency</a><br />(<a href="/wiki/Timeline\_of\_the\_John\_F.\_Kennedy\_presidency" title="Timeline of the John F. Kennedy presidency">timeline</a>)</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><b>Presidential office:</b> <a href="/wiki/Presidential\_transition\_of\_John\_F.\_Kennedy" title="Presidential transition of John F. Kennedy">Transition</a></li><li><a href="/wiki/Inauguration\_of\_John\_F.\_Kennedy" title="Inauguration of John F. Kennedy">Inauguration</a></li><li><a href="/wiki/John\_F.\_Kennedy#Administration,\_Cabinet,\_and\_judicial\_appointments\_1961–63" title="John F. Kennedy">Cabinet</a></li><li><a href="/wiki/List\_of\_federal\_judges\_appointed\_by\_John\_F.\_Kennedy" title="List of federal judges appointed by John F. Kennedy">Judicial appointments</a><ul><li><a href="/wiki/John\_F.\_Kennedy\_Supreme\_Court\_candidates" title="John F. Kennedy Supreme Court candidates">Supreme Court</a></li></ul></li><li><a href="https://en.wikisource.org/wiki/Author:John\_Fitzgerald\_Kennedy/Executive\_orders" class="extiw" title="wikisource:Author:John Fitzgerald Kennedy/Executive orders">Executive Orders</a></li><li><a href="https://en.wikisource.org/wiki/Author:John\_Fitzgerald\_Kennedy/Presidential\_Proclamations" class="extiw" title="wikisource:Author:John Fitzgerald Kennedy/Presidential Proclamations">Presidential Proclamations</a></li><li><a href="/wiki/List\_of\_people\_pardoned\_or\_granted\_clemency\_by\_the\_President\_of\_the\_United\_States#John\_F.\_Kennedy" class="mw-redirect" title="List of people pardoned or granted clemency by the President of the United States">Presidential pardons</a></li></ul><ul><li><b>Domestic policy:</b> <a href="/wiki/Clean\_Air\_Act\_(United\_States)" title="Clean Air Act (United States)">Clean Air Act</a></li><li><a href="/wiki/Communications\_Satellite\_Act\_of\_1962" title="Communications Satellite Act of 1962">Communications Satellite Act</a></li><li><a href="/wiki/Community\_Mental\_Health\_Act" title="Community Mental Health Act">Community Mental Health Act</a></li><li><a href="/wiki/Equal\_Pay\_Act\_of\_1963" title="Equal Pay Act of 1963">Equal Pay Act</a></li><li><a href="/wiki/Executive\_Order\_10925" title="Executive Order 10925">Federal affirmative action</a></li><li><a href="/wiki/Executive\_Order\_11063" title="Executive Order 11063">Federal housing segregation ban</a></li><li><a href="/wiki/Kennedy\_march" title="Kennedy march">Fifty-mile hikes</a></li><li><a href="/wiki/Food\_for\_Peace" title="Food for Peace">Food for Peace</a></li><li><a href="/wiki/New\_Frontier" title="New Frontier">New Frontier</a></li><li><a href="/wiki/Supplemental\_Nutrition\_Assistance\_Program#Pilot\_Food\_Stamp\_Program\_(1961–1964)" title="Supplemental Nutrition Assistance Program">Pilot Food Stamp Program</a></li><li><a href="/wiki/Presidential\_Medal\_of\_Freedom" title="Presidential Medal of Freedom">Presidential Medal of Freedom</a></li><li><a href="/wiki/Space\_policy\_of\_the\_United\_States#Kennedy\_administration" title="Space policy of the United States">Space policy</a></li><li><a href="/wiki/Presidential\_Commission\_on\_the\_Status\_of\_Women" title="Presidential Commission on the Status of Women">Status of Women (Presidential Commission)</a></li><li><a href="/wiki/Stand\_in\_the\_Schoolhouse\_Door" title="Stand in the Schoolhouse Door">University of Alabama integration</a></li><li><a href="/wiki/Voter\_Education\_Project" title="Voter Education Project">Voter Education Project</a></li><li><a href="/wiki/All-Channel\_Receiver\_Act" title="All-Channel Receiver Act">All-Channel Receiver Act</a></li><li><a href="/wiki/Oil\_Pollution\_Act\_of\_1961" title="Oil Pollution Act of 1961">Oil Pollution Act</a></li><li><a href="/wiki/Revenue\_Act\_of\_1962" title="Revenue Act of 1962">Revenue Act of 1962</a></li><li><a href="/wiki/Consolidated\_Farm\_and\_Rural\_Development\_Act\_of\_1961" title="Consolidated Farm and Rural Development Act of 1961">Consolidated Farm and Rural Development Act</a></li></ul><ul><li><b><a href="/wiki/Foreign\_policy\_of\_the\_John\_F.\_Kennedy\_administration" title="Foreign policy of the John F. Kennedy administration">Foreign policy</a>:</b> <a href="/wiki/Alliance\_for\_Progress" title="Alliance for Progress">Alliance for Progress</a></li><li><a href="/wiki/Arms\_Control\_and\_Disarmament\_Agency" title="Arms Control and Disarmament Agency">Arms Control and Disarmament Agency</a><ul><li><a href="/wiki/Partial\_Nuclear\_Test\_Ban\_Treaty" title="Partial Nuclear Test Ban Treaty">Partial Nuclear Test Ban Treaty</a></li></ul></li><li><a href="/wiki/Flexible\_response" title="Flexible response">Flexible response</a></li><li><a href="/wiki/Kennedy\_Doctrine" title="Kennedy Doctrine">Kennedy Doctrine</a></li><li><a href="/wiki/Peace\_Corps" title="Peace Corps">Peace Corps</a></li><li><a href="/wiki/Trade\_Expansion\_Act" title="Trade Expansion Act">Trade Expansion Act</a></li><li><a href="/wiki/United\_States\_Agency\_for\_International\_Development" title="United States Agency for International Development">USAID</a></li><li><a href="/wiki/Vietnam\_War#The\_Kennedy\_years,\_1961–63" title="Vietnam War">Vietnam War</a></li><li>Cuba: <a href="/wiki/Bay\_of\_Pigs\_Invasion" title="Bay of Pigs Invasion">Bay of Pigs Invasion</a></li><li><a href="/wiki/Cuban\_Project" class="mw-redirect" title="Cuban Project">Cuban Project</a></li><li><a href="/wiki/Cuban\_Missile\_Crisis" title="Cuban Missile Crisis">Cuban Missile Crisis</a><ul><li><a href="/wiki/EXCOMM" title="EXCOMM">ExComm</a></li></ul></li><li>Soviet Union: <a href="/wiki/Berlin\_Crisis\_of\_1961" title="Berlin Crisis of 1961">Berlin Crisis</a></li><li><a href="/wiki/Moscow%E2%80%93Washington\_hotline" title="Moscow–Washington hotline">Moscow–Washington hotline</a></li><li><a href="/wiki/Vienna\_summit" title="Vienna summit">Vienna summit</a></li></ul><ul><li><b>White House:</b> <a href="/wiki/SS-100-X" class="mw-redirect" title="SS-100-X">Presidential limousine</a></li><li><a href="/wiki/S/Y\_Manitou" class="mw-redirect" title="S/Y Manitou">Presidential yacht</a></li><li><a href="/wiki/Resolute\_desk" title="Resolute desk"><i>Resolute</i> desk</a></li><li><a href="/wiki/Situation\_Room" title="Situation Room">Situation Room</a></li></ul></div></td><td class="noviewer navbox-image" rowspan="9" style="width:1px;padding:0 0 0 2px"><div><span typeof="mw:File"><a href="/wiki/File:John\_F.\_Kennedy,\_White\_House\_color\_photo\_portrait.jpg" class="mw-file-description"><img src="//upload.wikimedia.org/wikipedia/commons/thumb/c/c3/John\_F.\_Kennedy%2C\_White\_House\_color\_photo\_portrait.jpg/100px-John\_F.\_Kennedy%2C\_White\_House\_color\_photo\_portrait.jpg" decoding="async" width="100" height="130" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/c/c3/John\_F.\_Kennedy%2C\_White\_House\_color\_photo\_portrait.jpg/150px-John\_F.\_Kennedy%2C\_White\_House\_color\_photo\_portrait.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/c/c3/John\_F.\_Kennedy%2C\_White\_House\_color\_photo\_portrait.jpg/200px-John\_F.\_Kennedy%2C\_White\_House\_color\_photo\_portrait.jpg 2x" data-file-width="1419" data-file-height="1840" /></a></span><br /><br /><span typeof="mw:File"><a href="/wiki/File:Seal\_of\_the\_President\_of\_the\_United\_States.svg" class="mw-file-description"><img src="//upload.wikimedia.org/wikipedia/commons/thumb/3/36/Seal\_of\_the\_President\_of\_the\_United\_States.svg/100px-Seal\_of\_the\_President\_of\_the\_United\_States.svg.png" decoding="async" width="100" height="100" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/3/36/Seal\_of\_the\_President\_of\_the\_United\_States.svg/150px-Seal\_of\_the\_President\_of\_the\_United\_States.svg.png 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/3/36/Seal\_of\_the\_President\_of\_the\_United\_States.svg/200px-Seal\_of\_the\_President\_of\_the\_United\_States.svg.png 2x" data-file-width="2424" data-file-height="2425" /></a></span></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Presidential<br />speeches</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Inauguration\_of\_John\_F.\_Kennedy#The\_inaugural\_address" title="Inauguration of John F. Kennedy">Inaugural address</a></li><li><a href="/wiki/American\_University\_speech" title="American University speech">American University speech</a></li><li>"<a href="/wiki/We\_choose\_to\_go\_to\_the\_Moon" title="We choose to go to the Moon">We choose to go to the Moon</a>"</li><li><a href="/wiki/Report\_to\_the\_American\_People\_on\_Civil\_Rights" title="Report to the American People on Civil Rights">Report to the American People on Civil Rights</a></li><li>"<a href="/wiki/Ich\_bin\_ein\_Berliner" title="Ich bin ein Berliner">Ich bin ein Berliner</a>"</li><li>"<a href="/wiki/A\_rising\_tide\_lifts\_all\_boats" title="A rising tide lifts all boats">A rising tide lifts all boats</a>"</li><li><a href="/wiki/Remarks\_at\_Amherst\_College\_on\_the\_Arts" title="Remarks at Amherst College on the Arts">Remarks at Amherst College on the Arts</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/Electoral\_history\_of\_John\_F.\_Kennedy" title="Electoral history of John F. Kennedy">Elections</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li>U.S. House of Representatives elections: <a href="/wiki/1946\_United\_States\_House\_of\_Representatives\_elections" title="1946 United States House of Representatives elections">1946</a></li><li><a href="/wiki/1948\_United\_States\_House\_of\_Representatives\_elections" title="1948 United States House of Representatives elections">1948</a></li><li><a href="/wiki/1950\_United\_States\_House\_of\_Representatives\_elections" title="1950 United States House of Representatives elections">1950</a></li><li>U.S. Senate elections in Massachusetts: <a href="/wiki/1952\_United\_States\_Senate\_election\_in\_Massachusetts" title="1952 United States Senate election in Massachusetts">1952</a></li><li><a href="/wiki/1958\_United\_States\_Senate\_election\_in\_Massachusetts" title="1958 United States Senate election in Massachusetts">1958</a></li><li><a href="/wiki/1960\_Democratic\_Party\_presidential\_primaries" title="1960 Democratic Party presidential primaries">1960 presidential primaries</a></li><li><a href="/wiki/John\_F.\_Kennedy\_1960\_presidential\_campaign" title="John F. Kennedy 1960 presidential campaign">1960 presidential campaign</a></li><li>Democratic National Conventions: <a href="/wiki/1956\_Democratic\_National\_Convention" title="1956 Democratic National Convention">1956</a></li><li><a href="/wiki/1960\_Democratic\_National\_Convention" title="1960 Democratic National Convention">1960</a></li><li><a href="/wiki/1960\_United\_States\_presidential\_election" title="1960 United States presidential election">U.S. presidential election 1960</a><ul><li><a href="/wiki/1960\_United\_States\_presidential\_debates" title="1960 United States presidential debates">debates</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Personal life</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/John\_Fitzgerald\_Kennedy\_National\_Historic\_Site" title="John Fitzgerald Kennedy National Historic Site">Birthplace and childhood home</a></li><li><a href="/wiki/Kennedy\_Compound" title="Kennedy Compound">Kennedy Compound</a></li><li><a href="/wiki/Hickory\_Hill\_(McLean,\_Virginia)" title="Hickory Hill (McLean, Virginia)">Hickory Hill</a></li><li><a href="/wiki/Wexford\_(Marshall,\_Virginia)" title="Wexford (Marshall, Virginia)">Wexford</a></li><li>Navy service: <a href="/wiki/Patrol\_torpedo\_boat\_PT-109" title="Patrol torpedo boat PT-109"><i>PT-109</i></a><ul><li><a href="/wiki/Biuku\_Gasa\_and\_Eroni\_Kumana" title="Biuku Gasa and Eroni Kumana">Biuku Gasa and Eroni Kumana</a></li><li><a href="/wiki/Arthur\_Reginald\_Evans" title="Arthur Reginald Evans">Arthur Evans</a></li></ul></li><li><a href="/wiki/Patrol\_torpedo\_boat\_PT-59" title="Patrol torpedo boat PT-59"><i>PT-59</i></a></li><li><a href="/wiki/Castle\_Hot\_Springs\_(Arizona)" title="Castle Hot Springs (Arizona)">Castle Hot Springs</a></li><li><a href="/wiki/Hammersmith\_Farm" title="Hammersmith Farm">Hammersmith Farm</a></li><li><a href="/wiki/Coretta\_Scott\_King#John\_F.\_Kennedy\_phone\_call" title="Coretta Scott King">Coretta Scott King phone call</a></li><li><a href="/wiki/Rocking\_chair#The\_John\_F.\_Kennedy\_Rocking\_Chair" title="Rocking chair">Rocking chair</a></li><li>"<a href="/wiki/Happy\_Birthday,\_Mr.\_President" title="Happy Birthday, Mr. President">Happy Birthday, Mr. President</a>"</li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Books</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Why\_England\_Slept" title="Why England Slept"><i>Why England Slept</i> <small>(1940)</small></a></li><li><a href="/wiki/Profiles\_in\_Courage" title="Profiles in Courage"><i>Profiles in Courage</i> <small>(1956)</small></a></li><li><a href="/wiki/A\_Nation\_of\_Immigrants" title="A Nation of Immigrants"><i>A Nation of Immigrants</i> <small>(1958)</small></a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Death</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a class="mw-selflink selflink">Assassination</a><ul><li><a href="/wiki/Timeline\_of\_the\_John\_F.\_Kennedy\_assassination" title="Timeline of the John F. Kennedy assassination">timeline</a></li><li><a href="/wiki/Reactions\_to\_the\_assassination\_of\_John\_F.\_Kennedy" title="Reactions to the assassination of John F. Kennedy">reactions</a></li><li><a href="/wiki/Assassination\_of\_John\_F.\_Kennedy\_in\_popular\_culture" title="Assassination of John F. Kennedy in popular culture">in popular culture</a></li></ul></li><li><a href="/wiki/State\_funeral\_of\_John\_F.\_Kennedy" title="State funeral of John F. Kennedy">State funeral</a><ul><li><a href="/wiki/Black\_Jack\_(horse)" title="Black Jack (horse)">Riderless horse</a></li><li><a href="/wiki/List\_of\_dignitaries\_at\_the\_state\_funeral\_of\_John\_F.\_Kennedy" title="List of dignitaries at the state funeral of John F. Kennedy">attending dignitaries</a></li></ul></li><li><a href="/wiki/John\_F.\_Kennedy\_Eternal\_Flame" title="John F. Kennedy Eternal Flame">Gravesite and Eternal Flame</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Legacy</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Bibliography\_of\_John\_F.\_Kennedy" title="Bibliography of John F. Kennedy">Bibliography</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Presidential\_Library\_and\_Museum" title="John F. Kennedy Presidential Library and Museum">John F. Kennedy Presidential Library and Museum</a><ul><li><a href="/wiki/Profile\_in\_Courage\_Award" title="Profile in Courage Award">Profile in Courage Award</a></li></ul></li><li><a href="/wiki/Twenty-fourth\_Amendment\_to\_the\_United\_States\_Constitution" title="Twenty-fourth Amendment to the United States Constitution">Twenty-fourth Amendment</a></li><li><a href="/wiki/Civil\_Rights\_Act\_of\_1964" title="Civil Rights Act of 1964">Civil Rights Act of 1964</a></li><li><a href="/wiki/Apollo\_11" title="Apollo 11">Apollo 11 Moon landing</a></li><li><a href="/wiki/Equal\_Employment\_Opportunity\_Commission" title="Equal Employment Opportunity Commission">Equal Employment Opportunity Commission</a></li><li><a href="/wiki/Kennedy\_Space\_Center" title="Kennedy Space Center">Kennedy Space Center</a></li><li><a href="/wiki/Kennedy\_Round" title="Kennedy Round">Kennedy Round</a></li><li><a href="/wiki/United\_States\_Department\_of\_Housing\_and\_Urban\_Development" title="United States Department of Housing and Urban Development">U.S. Department of Housing and Urban Development</a></li><li><a href="/wiki/AmeriCorps\_VISTA" title="AmeriCorps VISTA">VISTA</a></li><li><a href="/wiki/Cultural\_depictions\_of\_John\_F.\_Kennedy" title="Cultural depictions of John F. Kennedy">Cultural depictions</a><ul><li><a href="/wiki/Category:Films\_about\_John\_F.\_Kennedy" title="Category:Films about John F. Kennedy">films</a></li><li><a href="/wiki/Kennedy\_half\_dollar" title="Kennedy half dollar">Kennedy half dollar</a></li><li><a href="/wiki/Presidents\_of\_the\_United\_States\_on\_U.S.\_postage\_stamps#John\_F.\_Kennedy" title="Presidents of the United States on U.S. postage stamps">U.S. postage stamps</a></li><li><a href="/wiki/Five\_cents\_John\_Kennedy" title="Five cents John Kennedy">U.S. five cent stamp</a></li><li><a href="/wiki/Lincoln%E2%80%93Kennedy\_coincidences\_urban\_legend" title="Lincoln–Kennedy coincidences urban legend">Lincoln–Kennedy coincidences</a></li></ul></li><li><a href="/wiki/Operation\_Sail" title="Operation Sail">Operation Sail</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/List\_of\_things\_named\_after\_John\_F.\_Kennedy" title="List of things named after John F. Kennedy">Memorials,<br />namesakes</a></th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Harvard\_Kennedy\_School" title="Harvard Kennedy School">Harvard Kennedy School</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Center\_for\_the\_Performing\_Arts" title="John F. Kennedy Center for the Performing Arts">Kennedy Center for the Performing Arts</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Federal\_Building" title="John F. Kennedy Federal Building">John F. Kennedy Federal Building (Boston)</a></li><li><a href="/wiki/John\_F.\_Kennedy\_International\_Airport" title="John F. Kennedy International Airport">John F. Kennedy International Airport</a></li><li><a href="/wiki/Statue\_of\_John\_F.\_Kennedy\_(Boston)" title="Statue of John F. Kennedy (Boston)">Boston statue</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Memorial\_(Brooklyn)" title="John F. Kennedy Memorial (Brooklyn)">Brooklyn memorial</a></li><li><a href="/wiki/John\_Fitzgerald\_Kennedy\_Memorial" title="John Fitzgerald Kennedy Memorial">Dallas memorial</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Memorial\_(Hyannis,\_Massachusetts)" title="John F. Kennedy Memorial (Hyannis, Massachusetts)">Hyannis memorial</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Memorial,\_London" title="John F. Kennedy Memorial, London">London memorial</a></li><li><a href="/wiki/John\_Fitzgerald\_Kennedy\_Memorial\_(Portland,\_Oregon)" title="John Fitzgerald Kennedy Memorial (Portland, Oregon)">Portland memorial</a></li><li><a href="/wiki/Runnymede#John\_F.\_Kennedy\_Memorial" title="Runnymede">Runnymede memorial</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Arboretum" title="John F. Kennedy Arboretum">John F. Kennedy Arboretum</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Memorial\_Bridge" title="John F. Kennedy Memorial Bridge">John F. Kennedy Memorial Bridge</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Special\_Warfare\_Center\_and\_School" title="John F. Kennedy Special Warfare Center and School">John F. Kennedy Special Warfare Center and School</a></li><li><a href="/wiki/John\_F.\_Kennedy\_University" title="John F. Kennedy University">John F. Kennedy University (defunct)</a></li><li><a href="/wiki/John\_F.\_Kennedy\_Stadium\_(Philadelphia)" title="John F. Kennedy Stadium (Philadelphia)">John F. Kennedy Stadium</a></li><li><a href="/wiki/Kennedy\_Expressway" title="Kennedy Expressway">Kennedy Expressway</a></li><li><a href="/wiki/Mount\_Kennedy" title="Mount Kennedy">Mount Kennedy</a></li><li><a href="/wiki/MV\_John\_F.\_Kennedy" title="MV John F. Kennedy">MV <i>John F. Kennedy</i></a></li><li><a href="/wiki/USS\_John\_F.\_Kennedy\_(CV-67)" title="USS John F. Kennedy (CV-67)">USS&#160;<i>John F. Kennedy</i>&#160;<span class="nowrap">(CV-67)</span></a></li><li><a href="/wiki/USS\_John\_F.\_Kennedy\_(CVN-79)" title="USS John F. Kennedy (CVN-79)">USS&#160;<i>John F. Kennedy</i>&#160;<span class="nowrap">(CVN-79)</span></a></li><li><a href="/wiki/Yad\_Kennedy" title="Yad Kennedy">Yad Kennedy</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/Kennedy\_family" title="Kennedy family">Family</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Jacqueline\_Kennedy\_Onassis" title="Jacqueline Kennedy Onassis">Jacqueline Bouvier</a> (wife)</li><li><a href="/wiki/Caroline\_Kennedy" title="Caroline Kennedy">Caroline Kennedy</a> (daughter)</li><li><a href="/wiki/John\_F.\_Kennedy\_Jr." title="John F. Kennedy Jr.">John F. Kennedy Jr.</a> (son)</li><li><a href="/wiki/Patrick\_Bouvier\_Kennedy" title="Patrick Bouvier Kennedy">Patrick Bouvier Kennedy</a> (son)</li><li><a href="/wiki/Rose\_Schlossberg" title="Rose Schlossberg">Rose Schlossberg</a> (granddaughter)</li><li><a href="/wiki/Tatiana\_Schlossberg" title="Tatiana Schlossberg">Tatiana Schlossberg</a> (granddaughter)</li><li><a href="/wiki/Jack\_Schlossberg" title="Jack Schlossberg">Jack Schlossberg</a> (grandson)</li><li><a href="/wiki/Joseph\_P.\_Kennedy\_Sr." title="Joseph P. Kennedy Sr.">Joseph P. Kennedy Sr.</a> (father)</li><li><a href="/wiki/Rose\_Kennedy" title="Rose Kennedy">Rose Fitzgerald</a> (mother)</li><li><a href="/wiki/Joseph\_P.\_Kennedy\_Jr." title="Joseph P. Kennedy Jr.">Joseph P. Kennedy Jr.</a> (brother)</li><li><a href="/wiki/Rosemary\_Kennedy" title="Rosemary Kennedy">Rosemary Kennedy</a> (sister)</li><li><a href="/wiki/Kathleen\_Cavendish,\_Marchioness\_of\_Hartington" title="Kathleen Cavendish, Marchioness of Hartington">Kathleen Cavendish, Marchioness of Hartington</a> (sister)</li><li><a href="/wiki/Eunice\_Kennedy\_Shriver" title="Eunice Kennedy Shriver">Eunice Kennedy Shriver</a> (sister)</li><li><a href="/wiki/Patricia\_Kennedy\_Lawford" title="Patricia Kennedy Lawford">Patricia Kennedy Lawford</a> (sister)</li><li><a href="/wiki/Robert\_F.\_Kennedy" title="Robert F. Kennedy">Robert F. Kennedy</a> (brother)</li><li><a href="/wiki/Jean\_Kennedy\_Smith" title="Jean Kennedy Smith">Jean Kennedy Smith</a> (sister)</li><li><a href="/wiki/Ted\_Kennedy" title="Ted Kennedy">Ted Kennedy</a> (brother)</li><li><a href="/wiki/P.\_J.\_Kennedy" title="P. J. Kennedy">P. J. Kennedy</a> (grandfather)</li><li><a href="/wiki/John\_F.\_Fitzgerald" title="John F. Fitzgerald">John F. Fitzgerald</a> (grandfather)</li><li><a href="/wiki/Pushinka" title="Pushinka">Pushinka</a> (dog)</li></ul></div></td></tr><tr><td class="navbox-abovebelow hlist" colspan="3"><div><ul><li><b><a href="/wiki/Dwight\_D.\_Eisenhower" title="Dwight D. Eisenhower">← Dwight D. Eisenhower</a></b></li><li><b><a href="/wiki/Lyndon\_B.\_Johnson" title="Lyndon B. Johnson">Lyndon B. Johnson →</a></b></li></ul><ul><li><b><span class="noviewer" typeof="mw:File"><span title="Category"><img alt="" src="//upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/16px-Symbol\_category\_class.svg.png" decoding="async" width="16" height="16" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/23px-Symbol\_category\_class.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/31px-Symbol\_category\_class.svg.png 2x" data-file-width="180" data-file-height="185" /></span></span> <a href="/wiki/Category:John\_F.\_Kennedy" title="Category:John F. Kennedy">Category</a></b></li></ul></div></td></tr></tbody></table></div><div class="navbox-styles"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1061467846"></div><div role="navigation" class="navbox" aria-labelledby="Assassination\_attempts\_on\_presidents\_of\_the\_United\_States" style="padding:3px"><table class="nowraplinks hlist mw-collapsible autocollapse navbox-inner" style="border-spacing:0;background:transparent;color:inherit"><tbody><tr><th scope="col" class="navbox-title" colspan="2"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1063604349"><div class="navbar plainlinks hlist navbar-mini"><ul><li class="nv-view"><a href="/wiki/Template:Assassination\_attempts\_on\_presidents\_of\_the\_United\_States" title="Template:Assassination attempts on presidents of the United States"><abbr title="View this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">v</abbr></a></li><li class="nv-talk"><a href="/wiki/Template\_talk:Assassination\_attempts\_on\_presidents\_of\_the\_United\_States" title="Template talk:Assassination attempts on presidents of the United States"><abbr title="Discuss this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">t</abbr></a></li><li class="nv-edit"><a href="/wiki/Special:EditPage/Template:Assassination\_attempts\_on\_presidents\_of\_the\_United\_States" title="Special:EditPage/Template:Assassination attempts on presidents of the United States"><abbr title="Edit this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">e</abbr></a></li></ul></div><div id="Assassination\_attempts\_on\_presidents\_of\_the\_United\_States" style="font-size:114%;margin:0 4em">Assassination attempts on <a href="/wiki/President\_of\_the\_United\_States" title="President of the United States">presidents of the United States</a></div></th></tr><tr><th scope="row" class="navbox-group" style="width:1%">Successful</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Assassination\_of\_Abraham\_Lincoln" title="Assassination of Abraham Lincoln">Abraham Lincoln</a><ul><li><a href="/wiki/John\_Wilkes\_Booth" title="John Wilkes Booth">Booth</a></li></ul></li><li><a href="/wiki/Assassination\_of\_James\_A.\_Garfield" title="Assassination of James A. Garfield">James A. Garfield</a><ul><li><a href="/wiki/Charles\_J.\_Guiteau" title="Charles J. Guiteau">Guiteau</a></li></ul></li><li><a href="/wiki/Assassination\_of\_William\_McKinley" title="Assassination of William McKinley">William McKinley</a><ul><li><a href="/wiki/Leon\_Czolgosz" title="Leon Czolgosz">Czolgosz</a></li></ul></li><li><a class="mw-selflink selflink">John F. Kennedy</a><ul><li><a href="/wiki/Lee\_Harvey\_Oswald" title="Lee Harvey Oswald">Oswald</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Failed</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Richard\_Lawrence\_(failed\_assassin)" title="Richard Lawrence (failed assassin)">Andrew Jackson</a></li><li><a href="/wiki/Baltimore\_Plot" title="Baltimore Plot">Abraham Lincoln</a></li><li><a href="/wiki/Attempted\_assassination\_of\_Theodore\_Roosevelt" title="Attempted assassination of Theodore Roosevelt">Theodore Roosevelt</a></li><li><a href="/wiki/Giuseppe\_Zangara" title="Giuseppe Zangara">Franklin D. Roosevelt</a></li><li><a href="/wiki/Attempted\_assassination\_of\_Harry\_S.\_Truman" title="Attempted assassination of Harry S. Truman">Harry S. Truman</a></li><li><a href="/wiki/Richard\_Paul\_Pavlick" title="Richard Paul Pavlick">John F. Kennedy</a></li><li><a href="/wiki/Samuel\_Byck" title="Samuel Byck">Richard Nixon</a></li><li>Gerald Ford<ul><li><a href="/wiki/Attempted\_assassination\_of\_Gerald\_Ford\_in\_Sacramento" title="Attempted assassination of Gerald Ford in Sacramento">Sacramento</a></li><li><a href="/wiki/Attempted\_assassination\_of\_Gerald\_Ford\_in\_San\_Francisco" title="Attempted assassination of Gerald Ford in San Francisco">San Francisco</a></li></ul></li><li><a href="/wiki/Attempted\_assassination\_of\_Ronald\_Reagan" title="Attempted assassination of Ronald Reagan">Ronald Reagan</a></li><li><a href="/wiki/Francisco\_Martin\_Duran" title="Francisco Martin Duran">Bill Clinton</a></li><li><a href="/wiki/Security\_incidents\_involving\_George\_W.\_Bush" title="Security incidents involving George W. Bush">George W. Bush</a></li><li><a href="/wiki/Security\_incidents\_involving\_Barack\_Obama" title="Security incidents involving Barack Obama">Barack Obama</a></li><li><a href="/wiki/Security\_incidents\_involving\_Donald\_Trump" title="Security incidents involving Donald Trump">Donald Trump</a></li></ul></div></td></tr><tr><td class="navbox-abovebelow" colspan="2"><div><a href="/wiki/List\_of\_United\_States\_presidential\_assassination\_attempts\_and\_plots" title="List of United States presidential assassination attempts and plots">List of presidential assassination attempts and plots</a></div></td></tr></tbody></table></div><div class="navbox-styles"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1061467846"></div><div role="navigation" class="navbox" aria-labelledby="History\_of\_the\_United\_States" style="padding:3px"><table class="nowraplinks hlist mw-collapsible autocollapse navbox-inner" style="border-spacing:0;background:transparent;color:inherit"><tbody><tr><th scope="col" class="navbox-title" colspan="2"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1129693374"><link rel="mw-deduplicated-inline-style" href="mw-data:TemplateStyles:r1063604349"><div class="navbar plainlinks hlist navbar-mini"><ul><li class="nv-view"><a href="/wiki/Template:US\_history" title="Template:US history"><abbr title="View this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">v</abbr></a></li><li class="nv-talk"><a href="/wiki/Template\_talk:US\_history" title="Template talk:US history"><abbr title="Discuss this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">t</abbr></a></li><li class="nv-edit"><a href="/wiki/Special:EditPage/Template:US\_history" title="Special:EditPage/Template:US history"><abbr title="Edit this template" style=";;background:none transparent;border:none;box-shadow:none;padding:0;">e</abbr></a></li></ul></div><div id="History\_of\_the\_United\_States" style="font-size:114%;margin:0 4em"><a href="/wiki/History\_of\_the\_United\_States" title="History of the United States">History of the United States</a></div></th></tr><tr><td class="navbox-abovebelow" colspan="2" style="font-weight: bold;"><div><ul><li><a href="/wiki/Timeline\_of\_United\_States\_history" class="mw-redirect" title="Timeline of United States history">Timeline</a></li><li><a href="/wiki/Outline\_of\_United\_States\_history" title="Outline of United States history">Outline</a></li></ul></div></td></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"></div><table class="nowraplinks mw-collapsible mw-collapsed navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="col" class="navbox-title" colspan="2"><div id="Events" style="font-size:114%;margin:0 4em">Events</div></th></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"></div><table class="nowraplinks navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="row" class="navbox-group" style="width:1%">Pre-Colonial</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><b><a href="/wiki/Geological\_history\_of\_North\_America" title="Geological history of North America">Prehistoric</a></b></li><li><b><a href="/wiki/Pre-Columbian\_era" title="Pre-Columbian era">Pre-Columbian Era</a></b></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/Colonial\_history\_of\_the\_United\_States" title="Colonial history of the United States">Colonial</a></th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Exploration\_of\_North\_America" title="Exploration of North America">Exploration of North America</a></li><li><a href="/wiki/European\_colonization\_of\_the\_Americas" title="European colonization of the Americas">European colonization</a></li><li><a href="/wiki/Native\_American\_disease\_and\_epidemics" title="Native American disease and epidemics">Native American epidemics</a></li><li><a href="/wiki/History\_of\_Jamestown,\_Virginia\_(1607%E2%80%931699)" title="History of Jamestown, Virginia (1607–1699)">Settlement of Jamestown</a></li><li><a href="/wiki/Thirteen\_Colonies" title="Thirteen Colonies">Thirteen Colonies</a></li><li><a href="/wiki/Atlantic\_slave\_trade" title="Atlantic slave trade">Atlantic slave trade</a></li><li><a href="/wiki/King\_William%27s\_War" title="King William&#39;s War">King William's War</a></li><li><a href="/wiki/Queen\_Anne%27s\_War" title="Queen Anne&#39;s War">Queen Anne's War</a></li><li><a href="/wiki/Dummer%27s\_War" title="Dummer&#39;s War">Dummer's War</a></li><li><a href="/wiki/First\_Great\_Awakening" title="First Great Awakening">First Great Awakening</a></li><li><a href="/wiki/War\_of\_Jenkins%27\_Ear" title="War of Jenkins&#39; Ear">War of Jenkins' Ear</a></li><li><a href="/wiki/King\_George%27s\_War" title="King George&#39;s War">King George's War</a></li><li><a href="/wiki/American\_Revolution#Origin" title="American Revolution">Prelude to Revolution</a><ul><li><a href="/wiki/American\_Enlightenment" title="American Enlightenment">American Enlightenment</a></li><li><a href="/wiki/French\_and\_Indian\_War" title="French and Indian War">French and Indian War</a></li><li><a href="/wiki/Royal\_Proclamation\_of\_1763" title="Royal Proclamation of 1763">Proclamation of 1763</a></li><li><a href="/wiki/Sugar\_Act" title="Sugar Act">Sugar Act</a></li><li><a href="/wiki/Stamp\_Act\_Congress" title="Stamp Act Congress">Stamp Act Congress</a></li><li><a href="/wiki/Sons\_of\_Liberty" title="Sons of Liberty">Sons of Liberty</a></li><li><a href="/wiki/Boston\_Massacre" title="Boston Massacre">Boston Massacre</a></li><li><a href="/wiki/Boston\_Tea\_Party" title="Boston Tea Party">Boston Tea Party</a></li><li><a href="/wiki/Intolerable\_Acts" title="Intolerable Acts">Intolerable Acts</a></li><li><a href="/wiki/First\_Continental\_Congress" title="First Continental Congress">First Continental Congress</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1776%E2%80%931789)" title="History of the United States (1776–1789)">1776–1789</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/American\_Revolution" title="American Revolution">American Revolution</a><ul><li><a href="/wiki/War" title="War">War</a></li><li><a href="/wiki/Second\_Continental\_Congress" title="Second Continental Congress">Second Continental Congress</a></li><li><a href="/wiki/United\_States\_Declaration\_of\_Independence" title="United States Declaration of Independence">Declaration of Independence</a></li><li><a href="/wiki/Treaty\_of\_Paris\_(1783)" title="Treaty of Paris (1783)">Treaty of Paris</a></li></ul></li><li><a href="/wiki/Confederation\_Period" class="mw-redirect" title="Confederation Period">Confederation Period</a><ul><li><a href="/wiki/Philadelphia\_Mutiny" class="mw-redirect" title="Philadelphia Mutiny">Philadelphia Mutiny</a></li><li><a href="/wiki/Shays%27\_Rebellion" title="Shays&#39; Rebellion">Shays' Rebellion</a></li><li><a href="/wiki/Northwest\_Ordinance" title="Northwest Ordinance">Northwest Ordinance</a></li><li><a href="/wiki/History\_of\_the\_United\_States\_Constitution" title="History of the United States Constitution">Drafting and ratification of the Constitution</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1789%E2%80%931849)" title="History of the United States (1789–1849)">1789–1849</a></th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Federalist\_Era" title="Federalist Era">Federalist Era</a><ul><li><a href="/wiki/Whiskey\_Rebellion" title="Whiskey Rebellion">Whiskey Rebellion</a></li><li><a href="/wiki/Quasi-War" title="Quasi-War">Quasi-War</a></li></ul></li><li><a href="/wiki/Jeffersonian\_Democracy" class="mw-redirect" title="Jeffersonian Democracy">Jeffersonian Era</a><ul><li><a href="/wiki/Louisiana\_Purchase" title="Louisiana Purchase">Louisiana Purchase</a></li><li><a href="/wiki/War\_of\_1812" title="War of 1812">War of 1812</a></li></ul></li><li><a href="/wiki/Era\_of\_Good\_Feelings" title="Era of Good Feelings">Era of Good Feelings</a><ul><li><a href="/wiki/Missouri\_Compromise" title="Missouri Compromise">Missouri Compromise</a></li><li><a href="/wiki/Monroe\_Doctrine" title="Monroe Doctrine">Monroe Doctrine</a></li></ul></li><li><a href="/wiki/Jacksonian\_Democracy" class="mw-redirect" title="Jacksonian Democracy">Jacksonian Era</a><ul><li><a href="/wiki/Trail\_of\_Tears" title="Trail of Tears">Trail of Tears</a></li><li><a href="/wiki/Nat\_Turner%27s\_Rebellion" class="mw-redirect" title="Nat Turner&#39;s Rebellion">Nat Turner's Rebellion</a></li><li><a href="/wiki/Nullification\_Crisis" class="mw-redirect" title="Nullification Crisis">Nullification Crisis</a></li><li><a href="/wiki/Manifest\_destiny" title="Manifest destiny">Westward Expansion</a></li><li><a href="/wiki/Mexican-American\_War" class="mw-redirect" title="Mexican-American War">Mexican-American War</a></li><li><a href="/wiki/Seneca\_Falls\_Convention" title="Seneca Falls Convention">Seneca Falls Convention</a></li></ul></li><li><a href="/wiki/Industrial\_Revolution#United\_States" title="Industrial Revolution">First Industrial Revolution</a></li><li><a href="/wiki/Second\_Great\_Awakening" title="Second Great Awakening">Second Great Awakening</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1849%E2%80%931865)" title="History of the United States (1849–1865)">1849–1865</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Antebellum\_South" title="Antebellum South">Antebellum Era</a></li><li><a href="/wiki/California\_Gold\_Rush" title="California Gold Rush">California Gold Rush</a></li><li><a href="/wiki/Origins\_of\_the\_American\_Civil\_War" title="Origins of the American Civil War">Prelude to War</a><ul><li><a href="/wiki/Compromise\_of\_1850" title="Compromise of 1850">Compromise of 1850</a></li><li><a href="/wiki/Fugitive\_Slave\_Act\_of\_1850" title="Fugitive Slave Act of 1850">Fugitive Slave Act</a></li><li><a href="/wiki/Kansas-Nebraska\_Act" class="mw-redirect" title="Kansas-Nebraska Act">Kansas-Nebraska Act</a><ul><li><a href="/wiki/Bleeding\_Kansas" title="Bleeding Kansas">Bleeding Kansas</a></li></ul></li><li><a href="/wiki/Dred\_Scott\_Decision" class="mw-redirect" title="Dred Scott Decision">Dred Scott Decision</a></li><li><a href="/wiki/1860\_United\_States\_presidential\_election" title="1860 United States presidential election">Election of Lincoln</a></li><li><a href="/wiki/Confederate\_States\_of\_America#Secession" title="Confederate States of America">Secession</a></li></ul></li><li><a href="/wiki/American\_Civil\_War" title="American Civil War">Civil War</a><ul><li><a href="/wiki/Emancipation\_Proclamation" title="Emancipation Proclamation">Emancipation Proclamation</a></li><li><a href="/wiki/Assassination\_of\_Abraham\_Lincoln" title="Assassination of Abraham Lincoln">Lincoln Assassination</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1865%E2%80%931918)" class="mw-redirect" title="History of the United States (1865–1918)">1865–1918</a></th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Reconstruction\_era" title="Reconstruction era">Reconstruction era</a><ul><li><a href="/wiki/Reconstruction\_Amendments" title="Reconstruction Amendments">Amendments</a></li><li><a href="/wiki/First\_transcontinental\_railroad" title="First transcontinental railroad">First transcontinental railroad</a></li><li><a href="/wiki/Ku\_Klux\_Klan" title="Ku Klux Klan">Ku Klux Klan</a></li><li><a href="/wiki/Enforcement\_Acts" title="Enforcement Acts">Enforcement Acts</a></li><li><a href="/wiki/Compromise\_of\_1877" title="Compromise of 1877">Compromise of 1877</a></li></ul></li><li><a href="/wiki/Second\_Industrial\_Revolution#United\_States" title="Second Industrial Revolution">Second Industrial Revolution</a></li><li><a href="/wiki/Gilded\_Age" title="Gilded Age">Gilded Age</a><ul><li><a href="/wiki/Gospel\_of\_Wealth" class="mw-redirect" title="Gospel of Wealth">Gospel of Wealth</a></li><li><a href="/wiki/Chinese\_Exclusion\_Act" title="Chinese Exclusion Act">Chinese Exclusion Act</a></li><li><a href="/wiki/Pendleton\_Act" class="mw-redirect" title="Pendleton Act">Pendleton Act</a></li><li><a href="/wiki/Haymarket\_riot" class="mw-redirect" title="Haymarket riot">Haymarket riot</a></li><li><a href="/wiki/Sherman\_Antitrust\_Act" title="Sherman Antitrust Act">Sherman Antitrust Act</a></li></ul></li><li><a href="/wiki/Progressive\_Era" title="Progressive Era">Progressive Era</a><ul><li><a href="/wiki/Spanish%E2%80%93American\_War" title="Spanish–American War">Spanish–American War</a></li><li><a href="/wiki/American\_imperialism" title="American imperialism">Imperialism</a></li><li><a href="/wiki/Square\_Deal" title="Square Deal">Square Deal</a></li></ul></li><li><a href="/wiki/Nadir\_of\_American\_race\_relations" title="Nadir of American race relations">Nadir of American race relations</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1917%E2%80%931945)" title="History of the United States (1917–1945)">1917–1945</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/United\_States\_in\_World\_War\_I" title="United States in World War I">World War I</a><ul><li><a href="/wiki/Paris\_Peace\_Conference\_(1919%E2%80%931920)#American\_approach" title="Paris Peace Conference (1919–1920)">Paris Peace Conference</a></li></ul></li><li><a href="/wiki/First\_Red\_Scare" title="First Red Scare">First Red Scare</a></li><li><a href="/wiki/Roaring\_Twenties" title="Roaring Twenties">Roaring Twenties</a><ul><li><a href="/wiki/Prohibition\_in\_the\_United\_States" title="Prohibition in the United States">Prohibition</a></li><li><a href="/wiki/Women%27s\_suffrage\_in\_the\_United\_States" title="Women&#39;s suffrage in the United States">Women's suffrage</a></li><li><a href="/wiki/Tulsa\_race\_massacre" title="Tulsa race massacre">Tulsa race massacre</a></li><li><a href="/wiki/Ku\_Klux\_Klan#Second\_Klan:\_1915–1944" title="Ku Klux Klan">Second Klan</a></li><li><a href="/wiki/Harlem\_Renaissance" title="Harlem Renaissance">Harlem Renaissance</a></li></ul></li><li><a href="/wiki/Great\_Depression" title="Great Depression">Great Depression</a><ul><li><a href="/wiki/Great\_Crash" class="mw-redirect" title="Great Crash">Great Crash</a></li><li><a href="/wiki/Dust\_Bowl" title="Dust Bowl">Dust Bowl</a></li><li><a href="/wiki/New\_Deal" title="New Deal">New Deal</a></li></ul></li><li><a href="/wiki/Military\_history\_of\_the\_United\_States\_during\_World\_War\_II" title="Military history of the United States during World War II">World War II</a><ul><li><a href="/wiki/United\_States\_home\_front\_during\_World\_War\_II" title="United States home front during World War II">home front</a></li><li><a href="/wiki/Manhattan\_Project" title="Manhattan Project">Manhattan Project</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1945%E2%80%931964)" title="History of the United States (1945–1964)">1945–1964</a></th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Strike\_wave\_of\_1945%E2%80%931946" class="mw-redirect" title="Strike wave of 1945–1946">Strike wave of 1945–1946</a></li><li><a href="/wiki/Cold\_War\_(1947%E2%80%931948)" title="Cold War (1947–1948)">Start of Cold War</a><ul><li><a href="/wiki/Truman\_Doctrine" title="Truman Doctrine">Truman Doctrine</a></li></ul></li><li><a href="/wiki/Cold\_War\_(1948%E2%80%931953)" title="Cold War (1948–1953)">Early Cold War</a><ul><li><a href="/wiki/North\_Atlantic\_Treaty" title="North Atlantic Treaty">North Atlantic Treaty</a></li><li><a href="/wiki/Korean\_War" title="Korean War">Korean War</a></li><li><a href="/wiki/Ivy\_Mike" title="Ivy Mike">Ivy Mike</a></li><li><a href="/wiki/McCarthyism" title="McCarthyism">McCarthyism</a></li></ul></li><li><a href="/wiki/Post%E2%80%93World\_War\_II\_economic\_expansion" title="Post–World War II economic expansion">Postwar Boom</a></li><li><a href="/wiki/Civil\_rights\_movement" title="Civil rights movement">Civil Rights Movement</a></li><li><a href="/wiki/Cold\_War\_(1953%E2%80%931962)" title="Cold War (1953–1962)">Early-Mid Cold War</a><ul><li><a href="/wiki/Cuban\_Missile\_Crisis" title="Cuban Missile Crisis">Cuban Missile Crisis</a></li></ul></li><li><a class="mw-selflink selflink">Assassination of John F. Kennedy</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1964%E2%80%931980)" title="History of the United States (1964–1980)">1964–1980</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Great\_Society" title="Great Society">Great Society</a></li><li><a href="/wiki/Cold\_War\_(1962%E2%80%931979)" title="Cold War (1962–1979)">Mid Cold War</a><ul><li><a href="/wiki/D%C3%A9tente" title="Détente">Détente</a></li><li><a href="/wiki/Space\_Race" title="Space Race">Space Race</a></li><li><a href="/wiki/Vietnam\_War" title="Vietnam War">Vietnam War</a></li><li><a href="/wiki/Fall\_of\_Saigon" title="Fall of Saigon">Fall of Saigon</a></li></ul></li><li><a href="/wiki/Counterculture\_of\_the\_1960s" title="Counterculture of the 1960s">Counterculture</a></li><li><a href="/wiki/Second-wave\_feminism" title="Second-wave feminism">Second-wave feminism</a></li><li><a href="/wiki/Gay\_liberation" title="Gay liberation">Gay liberation</a><ul><li><a href="/wiki/Stonewall\_riots" title="Stonewall riots">Stonewall riots</a></li></ul></li><li><a href="/wiki/Watergate\_scandal" title="Watergate scandal">Watergate scandal</a></li><li><a href="/wiki/Iran\_hostage\_crisis" title="Iran hostage crisis">Iran hostage crisis</a></li><li><a href="/wiki/Moral\_Majority" title="Moral Majority">Moral Majority</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1980%E2%80%931991)" title="History of the United States (1980–1991)">1980–1991</a></th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Reagan\_era" title="Reagan era">Reagan era</a><ul><li><a href="/wiki/Reganomics" class="mw-redirect" title="Reganomics">Reganomics</a></li><li><a href="/wiki/Iran-Contra\_Scandal" class="mw-redirect" title="Iran-Contra Scandal">Iran-Contra Scandal</a></li></ul></li><li><a href="/wiki/Cold\_War\_(1979%E2%80%931985)" title="Cold War (1979–1985)">Late Cold War</a><ul><li><a href="/wiki/Invasion\_of\_Grenada" class="mw-redirect" title="Invasion of Grenada">Invasion of Grenada</a></li><li><a href="/wiki/Reagan\_Doctrine" title="Reagan Doctrine">Reagan Doctrine</a></li><li><a href="/wiki/Cold\_War\_(1985%E2%80%931991)" title="Cold War (1985–1991)">End of the Cold War</a></li></ul></li><li><a href="/wiki/War\_on\_Drugs" class="mw-redirect" title="War on Drugs">War on Drugs</a><ul><li><a href="/wiki/Invasion\_of\_Panama" class="mw-redirect" title="Invasion of Panama">Invasion of Panama</a></li></ul></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/History\_of\_the\_United\_States\_(1991%E2%80%932008)" title="History of the United States (1991–2008)">1991–2008</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/Gulf\_War" title="Gulf War">Gulf War</a></li><li><a href="/wiki/North\_American\_Free\_Trade\_Agreement" title="North American Free Trade Agreement">NAFTA</a></li><li><a href="/wiki/1992\_Los\_Angeles\_riots" title="1992 Los Angeles riots"> Los Angeles riots</a></li><li><a href="/wiki/Republican\_Revolution" title="Republican Revolution">Republican Revolution</a></li><li><a href="/wiki/1993\_World\_Trade\_Center\_bombing" title="1993 World Trade Center bombing">WTC bombing</a></li><li><a href="/wiki/Oklahoma\_City\_bombing" title="Oklahoma City bombing">Oklahoma City bombing</a></li><li><a href="/wiki/Columbine\_High\_School\_massacre" title="Columbine High School massacre">Columbine</a></li><li><a href="/wiki/September\_11\_attacks" title="September 11 attacks">September 11 attacks</a></li><li><a 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href="/wiki/List\_of\_mass\_shootings\_in\_the\_United\_States" title="List of mass shootings in the United States">Rise in mass shootings</a></li><li><a href="/wiki/Black\_Lives\_Matter" title="Black Lives Matter">Black Lives Matter</a></li><li><i><a href="/wiki/Obergefell\_v.\_Hodges" title="Obergefell v. Hodges">Obergefell v. Hodges</a></i></li><li><a href="/wiki/Unite\_the\_Right\_rally" title="Unite the Right rally">Unite the Right rally</a></li><li><a href="/wiki/COVID-19\_pandemic\_in\_the\_United\_States" title="COVID-19 pandemic in the United States">COVID-19 pandemic</a><ul><li><a href="/wiki/COVID-19\_recession" title="COVID-19 recession">recession</a></li></ul></li><li><a href="/wiki/January\_6\_United\_States\_Capitol\_attack" title="January 6 United States Capitol attack">January 6 Insurrection</a></li><li><a href="/wiki/Withdrawal\_of\_United\_States\_troops\_from\_Afghanistan\_(2020%E2%80%932021)" class="mw-redirect" title="Withdrawal of United States troops from Afghanistan (2020–2021)">Afghanistan withdrawal</a></li><li><i><a href="/wiki/Dobbs\_v.\_Jackson\_Women%27s\_Health\_Organization" title="Dobbs v. Jackson Women&#39;s Health Organization">Dobbs v. Jackson Women's Health Organization</a></i></li><li><a href="/wiki/Foreign\_involvement\_in\_the\_Russian\_invasion\_of\_Ukraine" title="Foreign involvement in the Russian invasion of Ukraine">Support of Ukraine</a></li><li><a href="/wiki/Donald\_Trump#Investigations,\_criminal\_charges,\_civil\_lawsuits" title="Donald Trump">Indictments of Donald Trump</a></li></ul></div></td></tr></tbody></table><div></div></td></tr></tbody></table><div></div></td></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"></div><table class="nowraplinks mw-collapsible mw-collapsed navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="col" class="navbox-title" colspan="2"><div id="Topics" style="font-size:114%;margin:0 4em">Topics</div></th></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><b><a href="/wiki/American\_Century" title="American Century">American 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href="/wiki/History\_of\_immigration\_to\_the\_United\_States" title="History of immigration to the United States">Immigration</a></li></ul></li><li><b><a href="/wiki/Economic\_history\_of\_the\_United\_States" title="Economic history of the United States">Economy</a></b><ul><li><a href="/wiki/History\_of\_banking\_in\_the\_United\_States" title="History of banking in the United States">Banking</a></li></ul></li><li><b><a href="/wiki/History\_of\_education\_in\_the\_United\_States" title="History of education in the United States">Education</a></b><ul><li><a href="/wiki/History\_of\_higher\_education\_in\_the\_United\_States" title="History of higher education in the United States">Higher education</a></li></ul></li><li><b><a href="/wiki/History\_of\_the\_flags\_of\_the\_United\_States" class="mw-redirect" title="History of the flags of the United States">Flag</a></b></li><li><b><a href="/wiki/History\_of\_the\_United\_States\_government" title="History of the United States government">Government</a></b><ul><li><a href="/wiki/History\_of\_abortion\_in\_the\_United\_States" class="mw-redirect" title="History of abortion in the United States">Abortion</a></li><li><a href="/wiki/History\_of\_capital\_punishment\_in\_the\_United\_States" class="mw-redirect" title="History of capital punishment in the United States">Capital punishment</a></li><li><a href="/wiki/History\_of\_civil\_rights\_in\_the\_United\_States" title="History of civil rights in the United States">Civil Rights</a></li><li><a href="/wiki/History\_of\_corruption\_in\_the\_United\_States" class="mw-redirect" title="History of corruption in the United States">Corruption</a></li><li><a href="/wiki/History\_of\_the\_United\_States\_Constitution" title="History of the United States Constitution">The Constitution</a></li><li><a href="/wiki/History\_of\_the\_United\_States\_debt\_ceiling" title="History of the United States debt ceiling">Debt ceiling</a></li><li><a href="/wiki/History\_of\_direct\_democracy\_in\_the\_United\_States" title="History of direct democracy in the United States">Direct democracy</a></li><li><a href="/wiki/History\_of\_United\_States\_foreign\_policy" title="History of United States foreign policy">Foreign policy</a></li><li><a href="/wiki/History\_of\_law\_enforcement\_in\_the\_United\_States" class="mw-redirect" title="History of law enforcement in the United States">Law enforcement</a></li><li><a href="/wiki/Postage\_stamps\_and\_postal\_history\_of\_the\_United\_States" title="Postage stamps and postal history of the United States">Postal service</a></li><li><a href="/wiki/History\_of\_taxation\_in\_the\_United\_States" title="History of taxation in the United States">Taxation</a></li><li><a href="/wiki/Voting\_rights\_in\_the\_United\_States" title="Voting rights in the United States">Voting rights</a></li></ul></li><li><b><a href="/wiki/History\_of\_American\_journalism" title="History of American 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href="/wiki/History\_of\_the\_United\_States\_Coast\_Guard" title="History of the United States Coast Guard">Coast Guard</a></li></ul></li><li><b><a href="/wiki/Political\_eras\_of\_the\_United\_States" title="Political eras of the United States">Party Systems</a></b><ul><li><a href="/wiki/First\_Party\_System" title="First Party System">First</a></li><li><a href="/wiki/Second\_Party\_System" title="Second Party System">Second</a></li><li><a href="/wiki/Third\_Party\_System" title="Third Party System">Third</a></li><li><a href="/wiki/Fourth\_Party\_System" title="Fourth Party System">Fourth</a></li><li><a href="/wiki/Fifth\_Party\_System" title="Fifth Party System">Fifth</a></li><li><a href="/wiki/Sixth\_Party\_System" title="Sixth Party System">Sixth</a></li></ul></li><li><b><a href="/wiki/History\_of\_religion\_in\_the\_United\_States" title="History of religion in the United States">Religion</a></b></li><li><b><a href="/wiki/Slavery\_in\_the\_United\_States" title="Slavery in the United States">Slavery</a></b><ul><li><a href="/wiki/History\_of\_sexual\_slavery\_in\_the\_United\_States" title="History of sexual slavery in the United States">Sexual slavery</a></li></ul></li><li><b><a href="/wiki/Technological\_and\_industrial\_history\_of\_the\_United\_States" title="Technological and industrial history of the United States">Technology and industry</a></b><ul><li><a href="/wiki/History\_of\_agriculture\_in\_the\_United\_States" title="History of agriculture in the United States">Agriculture</a></li><li><a href="/wiki/Labor\_history\_of\_the\_United\_States" title="Labor history of the United States">Labor</a></li><li><a href="/wiki/History\_of\_the\_lumber\_industry\_in\_the\_United\_States" title="History of the lumber industry in the United States">Lumber</a></li><li><a href="/wiki/History\_of\_medicine\_in\_the\_United\_States" title="History of medicine in the United States">Medicine</a></li><li><a href="/wiki/History\_of\_rail\_transportation\_in\_the\_United\_States" title="History of rail transportation in the United States">Railway</a></li></ul></li></ul></div></td></tr></tbody></table><div></div></td></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"></div><table class="nowraplinks mw-collapsible mw-collapsed navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="col" class="navbox-title" colspan="2"><div id="Groups" style="font-size:114%;margin:0 4em">Groups</div></th></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><b><a href="/wiki/African-American\_history" title="African-American history">African American</a></b></li><li><b><a href="/wiki/History\_of\_Asian\_Americans" title="History of Asian Americans">Asian American</a></b><ul><li><a href="/wiki/History\_of\_Chinese\_Americans" title="History of Chinese Americans">Chinese American</a></li><li><a href="/wiki/History\_of\_Filipino\_Americans" title="History of Filipino Americans">Filipino American</a></li><li><a href="/wiki/Indian-American\_history" class="mw-redirect" title="Indian-American history">Indian American</a></li><li><a href="/wiki/History\_of\_Japanese\_Americans" title="History of Japanese Americans">Japanese American</a></li><li><a href="/wiki/History\_of\_Korean\_Americans" class="mw-redirect" title="History of Korean Americans">Korean American</a></li><li><a href="/wiki/History\_of\_Thai\_Americans" class="mw-redirect" title="History of Thai Americans">Thai American</a></li><li><a href="/wiki/History\_of\_Vietnamese\_Americans" class="mw-redirect" title="History of Vietnamese Americans">Vietnamese American</a></li></ul></li><li><b><a href="/wiki/European\_American#History" class="mw-redirect" title="European American">European American</a></b><ul><li><a href="/wiki/History\_of\_Albanian\_Americans" class="mw-redirect" title="History of 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States">Women</a></b></li><li><b><a href="/wiki/LGBT\_history\_in\_the\_United\_States" title="LGBT history in the United States">LGBT</a></b><ul><li><a href="/wiki/History\_of\_gay\_men\_in\_the\_United\_States" title="History of gay men in the United States">Gay men</a></li><li><a href="/wiki/History\_of\_lesbianism\_in\_the\_United\_States" title="History of lesbianism in the United States">Lesbians</a></li><li><a href="/wiki/History\_of\_transgender\_people\_in\_the\_United\_States" title="History of transgender people in the United States">Transgender people</a></li></ul></li></ul></div></td></tr></tbody></table><div></div></td></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"></div><table class="nowraplinks mw-collapsible mw-collapsed navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="col" class="navbox-title" colspan="2"><div id="Places" style="font-size:114%;margin:0 4em">Places</div></th></tr><tr><td colspan="2" class="navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"></div><table class="nowraplinks navbox-subgroup" style="border-spacing:0"><tbody><tr><th scope="row" class="navbox-group" style="width:1%"><a href="/wiki/Territorial\_evolution\_of\_the\_United\_States" title="Territorial evolution of the United States">Territorial evolution</a></th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/List\_of\_U.S.\_states\_by\_date\_of\_admission\_to\_the\_Union" title="List of U.S. states by date of admission to the Union">Admission to the Union</a></li><li><a href="/wiki/Historic\_regions\_of\_the\_United\_States" class="mw-redirect" title="Historic regions of the United States">Historic regions</a></li><li><a href="/wiki/American\_frontier" title="American frontier">American frontier</a></li><li><a href="/wiki/Manifest\_destiny" title="Manifest destiny">Manifest destiny</a></li><li><a href="/wiki/Indian\_removal" title="Indian removal">Indian removal</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Regions</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/History\_of\_New\_England" title="History of New England">New England</a></li><li><a href="/wiki/History\_of\_the\_Southern\_United\_States" title="History of the Southern United States">The South</a></li><li><a href="/wiki/History\_of\_the\_west\_coast\_of\_North\_America" title="History of the west coast of North America">The West Coast</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">States</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/History\_of\_Alabama" title="History of Alabama">Alabama</a></li><li><a href="/wiki/History\_of\_Alaska" title="History of Alaska">Alaska</a></li><li><a href="/wiki/History\_of\_Arizona" title="History of Arizona">Arizona</a></li><li><a href="/wiki/History\_of\_Arkansas" title="History of Arkansas">Arkansas</a></li><li><a href="/wiki/History\_of\_California" title="History of California">California</a></li><li><a href="/wiki/History\_of\_Colorado" title="History of Colorado">Colorado</a></li><li><a href="/wiki/History\_of\_Connecticut" title="History of Connecticut">Connecticut</a></li><li><a href="/wiki/History\_of\_Delaware" title="History of Delaware">Delaware</a></li><li><a href="/wiki/History\_of\_Florida" title="History of Florida">Florida</a></li><li><a href="/wiki/History\_of\_Georgia\_(U.S.\_state)" title="History of Georgia (U.S. state)">Georgia</a></li><li><a href="/wiki/History\_of\_Hawaii" title="History of Hawaii">Hawaii</a></li><li><a href="/wiki/History\_of\_Idaho" title="History of Idaho">Idaho</a></li><li><a href="/wiki/History\_of\_Illinois" title="History of Illinois">Illinois</a></li><li><a href="/wiki/History\_of\_Indiana" title="History of Indiana">Indiana</a></li><li><a href="/wiki/History\_of\_Iowa" title="History of Iowa">Iowa</a></li><li><a href="/wiki/History\_of\_Kansas" title="History of Kansas">Kansas</a></li><li><a href="/wiki/History\_of\_Kentucky" title="History of Kentucky">Kentucky</a></li><li><a href="/wiki/History\_of\_Louisiana" title="History of Louisiana">Louisiana</a></li><li><a href="/wiki/History\_of\_Maine" title="History of Maine">Maine</a></li><li><a href="/wiki/History\_of\_Maryland" title="History of Maryland">Maryland</a></li><li><a href="/wiki/History\_of\_Massachusetts" title="History of Massachusetts">Massachusetts</a></li><li><a href="/wiki/History\_of\_Michigan" title="History of Michigan">Michigan</a></li><li><a href="/wiki/History\_of\_Minnesota" title="History of Minnesota">Minnesota</a></li><li><a href="/wiki/History\_of\_Mississippi" title="History of Mississippi">Mississippi</a></li><li><a href="/wiki/History\_of\_Missouri" title="History of Missouri">Missouri</a></li><li><a href="/wiki/History\_of\_Montana" title="History of Montana">Montana</a></li><li><a href="/wiki/History\_of\_Nebraska" title="History of Nebraska">Nebraska</a></li><li><a href="/wiki/History\_of\_Nevada" title="History of Nevada">Nevada</a></li><li><a href="/wiki/History\_of\_New\_Hampshire" title="History of New Hampshire">New Hampshire</a></li><li><a href="/wiki/History\_of\_New\_Jersey" title="History of New Jersey">New Jersey</a></li><li><a href="/wiki/History\_of\_New\_Mexico" title="History of New Mexico">New Mexico</a></li><li><a href="/wiki/History\_of\_New\_York\_(state)" title="History of New York (state)">New York</a></li><li><a href="/wiki/History\_of\_North\_Carolina" title="History of North Carolina">North Carolina</a></li><li><a href="/wiki/History\_of\_North\_Dakota" title="History of North Dakota">North Dakota</a></li><li><a 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0.25em"><ul><li><a href="/wiki/History\_of\_American\_Samoa" title="History of American Samoa">American Samoa</a></li><li><a href="/wiki/History\_of\_Guam" title="History of Guam">Guam</a></li><li><a href="/wiki/History\_of\_the\_Northern\_Mariana\_Islands" class="mw-redirect" title="History of the Northern Mariana Islands">Northern Mariana Islands</a></li><li><a href="/wiki/History\_of\_Puerto\_Rico" title="History of Puerto Rico">Puerto Rico </a></li><li><a href="/wiki/History\_of\_the\_United\_States\_Virgin\_Islands" title="History of the United States Virgin Islands">U.S. Virgin Islands</a></li></ul></div></td></tr><tr><th scope="row" class="navbox-group" style="width:1%">Outlying islands</th><td class="navbox-list-with-group navbox-list navbox-even" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/History\_of\_Baker\_Island" class="mw-redirect" title="History of Baker Island">Baker Island</a></li><li><a href="/wiki/History\_of\_Howland\_Island" 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style="width:1%">Cities</th><td class="navbox-list-with-group navbox-list navbox-odd" style="width:100%;padding:0"><div style="padding:0 0.25em"><ul><li><a href="/wiki/American\_urban\_history" title="American urban history">Urban history</a></li><li><span class="noviewer" typeof="mw:File"><span title="Category"><img alt="" src="//upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/16px-Symbol\_category\_class.svg.png" decoding="async" width="16" height="16" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/23px-Symbol\_category\_class.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/31px-Symbol\_category\_class.svg.png 2x" data-file-width="180" data-file-height="185" /></span></span> <a href="/wiki/Category:Histories\_of\_cities\_in\_the\_United\_States" title="Category:Histories of cities in the United States">Cities</a></li></ul></div></td></tr></tbody></table><div></div></td></tr></tbody></table><div></div></td></tr><tr><td class="navbox-abovebelow" colspan="2" style="font-weight: bold;"><div><ul><li><a href="/wiki/List\_of\_years\_in\_the\_United\_States" title="List of years in the United States">List of years</a></li><li><a href="/wiki/Historiography\_of\_the\_United\_States" title="Historiography of the United States">Historiography</a></li><li><span class="noviewer" typeof="mw:File"><span title="Category"><img alt="" src="//upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/16px-Symbol\_category\_class.svg.png" decoding="async" width="16" height="16" class="mw-file-element" srcset="//upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/23px-Symbol\_category\_class.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/9/96/Symbol\_category\_class.svg/31px-Symbol\_category\_class.svg.png 2x" data-file-width="180" data-file-height="185" 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falseComplications: [vary‐revision‐sha1, show‐toc]CPU time usage: 1.788 secondsReal time usage: 2.118 secondsPreprocessor visited node count: 16942/1000000Post‐expand include size: 494565/2097152 bytesTemplate argument size: 13201/2097152 bytesHighest expansion depth: 25/100Expensive parser function count: 43/500Unstrip recursion depth: 1/20Unstrip post‐expand size: 429319/5000000 bytesLua time usage: 0.910/10.000 secondsLua memory usage: 12837939/52428800 bytesNumber of Wikibase entities loaded: 1/400--><!--Transclusion expansion time report (%,ms,calls,template)100.00% 1657.406 1 -total 14.94% 247.678 54 Template:Cite\_news 9.87% 163.653 25 Template:Cite\_book 7.31% 121.075 31 Template:Cite\_web 6.77% 112.214 6 Template:Navbox 5.84% 96.736 23 Template:Cite\_report 5.14% 85.152 2 Template:Reflist 4.89% 81.129 2 Template:Infobox 4.54% 75.253 1 Template:Infobox\_civilian\_attack 4.53% 75.157 1 Template:Short\_description--><!-- Saved in parser cache with key 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Kennedy</a></li><li><a href="/wiki/Category:1963\_in\_American\_politics" title="Category:1963 in American politics">1963 in American politics</a></li><li><a href="/wiki/Category:1963\_in\_Texas" title="Category:1963 in Texas">1963 in Texas</a></li><li><a href="/wiki/Category:1963\_murders\_in\_the\_United\_States" title="Category:1963 murders in the United States">1963 murders in the United States</a></li><li><a href="/wiki/Category:1960s\_in\_Dallas" title="Category:1960s in Dallas">1960s in Dallas</a></li><li><a href="/wiki/Category:Assassinations" title="Category:Assassinations">Assassinations</a></li><li><a href="/wiki/Category:Deaths\_by\_firearm\_in\_Texas" title="Category:Deaths by firearm in Texas">Deaths by firearm in Texas</a></li><li><a href="/wiki/Category:Deaths\_by\_person\_in\_Texas" title="Category:Deaths by person in Texas">Deaths by person in Texas</a></li><li><a href="/wiki/Category:Filmed\_assassinations" title="Category:Filmed assassinations">Filmed assassinations</a></li><li><a href="/wiki/Category:Filmed\_deaths\_in\_the\_United\_States" title="Category:Filmed deaths in the United States">Filmed deaths in the United States</a></li><li><a href="/wiki/Category:Murder\_in\_Dallas" title="Category:Murder in Dallas">Murder in Dallas</a></li><li><a href="/wiki/Category:November\_1963\_events\_in\_the\_United\_States" title="Category:November 1963 events in the United States">November 1963 events in the United States</a></li><li><a href="/wiki/Category:Political\_violence" title="Category:Political violence">Political violence</a></li><li><a href="/wiki/Category:Political\_violence\_in\_the\_United\_States" title="Category:Political violence in the United States">Political violence in the United States</a></li></ul></div><div id="mw-hidden-catlinks" class="mw-hidden-catlinks mw-hidden-cats-hidden">Hidden categories: <ul><li><a href="/wiki/Category:Articles\_with\_short\_description" title="Category:Articles with short description">Articles with short description</a></li><li><a href="/wiki/Category:Short\_description\_is\_different\_from\_Wikidata" title="Category:Short description is different from Wikidata">Short description is different from Wikidata</a></li><li><a href="/wiki/Category:Featured\_articles" title="Category:Featured articles">Featured articles</a></li><li><a href="/wiki/Category:Wikipedia\_indefinitely\_semi-protected\_pages" title="Category:Wikipedia indefinitely semi-protected pages">Wikipedia indefinitely semi-protected pages</a></li><li><a href="/wiki/Category:Use\_mdy\_dates\_from\_June\_2012" title="Category:Use mdy dates from June 2012">Use mdy dates from June 2012</a></li><li><a href="/wiki/Category:Pages\_using\_multiple\_image\_with\_auto\_scaled\_images" title="Category:Pages using multiple image with auto scaled images">Pages using multiple image with auto scaled images</a></li><li><a href="/wiki/Category:CS1:\_long\_volume\_value" title="Category:CS1: long volume value">CS1: long volume value</a></li><li><a href="/wiki/Category:Commons\_category\_link\_from\_Wikidata" title="Category:Commons category link from Wikidata">Commons category link from Wikidata</a></li></ul></div></div></div></main></div><div class="mw-footer-container"><footer id="footer" class="mw-footer" role="contentinfo" ><ul id="footer-info"><li id="footer-info-lastmod"> This page was last edited on 22 November 2023, at 03:07<span class="anonymous-show">&#160;(UTC)</span>.</li><li id="footer-info-copyright">Text is available under the <a rel="license" href="//en.wikipedia.org/wiki/Wikipedia:Text\_of\_the\_Creative\_Commons\_Attribution-ShareAlike\_4.0\_International\_License">Creative Commons Attribution-ShareAlike License 4.0</a><a rel="license" href="//en.wikipedia.org/wiki/Wikipedia:Text\_of\_the\_Creative\_Commons\_Attribution-ShareAlike\_4.0\_International\_License" style="display:none;"></a>;additional terms may apply. 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File Path: N/A

Links: #, b, o, d, y, C, o, n, t, e, n, t, ,, , /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, e, n, t, s, ,, , /, w, i, k, i, /, P, o, r, t, a, l, :, C, u, r, r, e, n, t, \_, e, v, e, n, t, s, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, R, a, n, d, o, m, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, A, b, o, u, t, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, a, c, t, \_, u, s, ,, , h, t, t, p, s, :, /, /, d, o, n, a, t, e, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, F, u, n, d, r, a, i, s, e, r, R, e, d, i, r, e, c, t, o, r, ?, u, t, m, \_, s, o, u, r, c, e, =, d, o, n, a, t, e, &, u, t, m, \_, m, e, d, i, u, m, =, s, i, d, e, b, a, r, &, u, t, m, \_, c, a, m, p, a, i, g, n, =, C, 1, 3, \_, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, &, u, s, e, l, a, n, g, =, e, n, ,, , /, w, i, k, i, /, H, e, l, p, :, C, o, n, t, e, n, t, s, ,, , /, w, i, k, i, /, H, e, l, p, :, I, n, t, r, o, d, u, c, t, i, o, n, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, m, m, u, n, i, t, y, \_, p, o, r, t, a, l, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, R, e, c, e, n, t, C, h, a, n, g, e, s, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, F, i, l, e, \_, u, p, l, o, a, d, \_, w, i, z, a, r, d, ,, , /, w, i, k, i, /, M, a, i, n, \_, P, a, g, e, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, S, e, a, r, c, h, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, C, r, e, a, t, e, A, c, c, o, u, n, t, &, r, e, t, u, r, n, t, o, =, A, s, s, a, s, s, i, n, a, t, i, o, n, +, o, f, +, J, o, h, n, +, F, ., +, K, e, n, n, e, d, y, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, U, s, e, r, L, o, g, i, n, &, r, e, t, u, r, n, t, o, =, A, s, s, a, s, s, i, n, a, t, i, o, n, +, o, f, +, J, o, h, n, +, F, ., +, K, e, n, n, 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t, o, \_, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , #, S, h, o, o, t, i, n, g, ,, , #, A, f, t, e, r, m, a, t, h, \_, i, n, \_, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , #, O, s, w, a, l, d, ', s, \_, f, l, i, g, h, t, ,, , \_, k, i, l, l, i, n, g, \_, o, f, \_, J, ., \_, D, ., \_, T, i, p, p, i, t, ,, , \_, a, n, d, \_, a, r, r, e, s, t, ,, , #, K, e, n, n, e, d, y, \_, d, e, c, l, a, r, e, d, \_, d, e, a, d, ;, \_, J, o, h, n, s, o, n, \_, s, w, o, r, n, \_, i, n, ,, , #, I, m, m, e, d, i, a, t, e, \_, a, f, t, e, r, m, a, t, h, ,, , #, A, u, t, o, p, s, y, ,, , #, F, u, n, e, r, a, l, ,, , #, K, i, l, l, i, n, g, \_, o, f, \_, O, s, w, a, l, d, ,, , #, F, i, l, m, s, \_, a, n, d, \_, p, h, o, t, o, g, r, a, p, h, s, \_, o, f, \_, t, h, e, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, ,, , #, O, f, f, i, c, i, a, l, \_, i, n, v, e, s, t, i, g, a, t, i, o, n, s, ,, , #, D, a, l, l, a, s, \_, P, o, l, i, c, e, ,, , #, F, B, I, \_, i, n, v, e, s, t, i, g, a, t, i, o, n, ,, , #, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , #, T, r, i, a, l, \_, o, f, \_, C, l, a, y, \_, S, h, a, w, ,, , #, R, a, m, s, e, y, \_, C, l, a, r, k, \_, P, a, n, e, l, ,, , #, R, o, c, k, e, f, e, l, l, e, r, \_, C, o, m, m, i, s, s, i, o, n, ,, , #, C, h, u, r, c, h, \_, C, o, m, m, i, t, t, e, e, ,, , #, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , #, J, F, K, \_, A, c, t, \_, a, n, d, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, R, e, c, o, r, d, s, \_, R, e, v, i, e, w, \_, B, o, a, r, d, ,, , #, C, o, n, s, p, i, r, a, c, y, \_, t, h, e, o, r, i, e, s, ,, , #, L, e, g, a, c, y, ,, , #, P, o, l, i, t, i, c, a, l, \_, i, m, p, a, c, t, \_, a, n, d, \_, m, e, m, o, r, i, a, l, i, z, a, t, i, o, n, ,, , #, C, u, l, t, u, r, a, l, \_, i, m, p, a, c, t, \_, a, n, d, \_, d, e, p, i, c, t, i, o, n, s, ,, , #, A, r, t, i, f, a, c, t, s, ,, , \_, m, u, s, e, u, m, s, ,, , \_, a, n, d, \_, l, o, c, a, t, i, o, n, s, \_, t, o, d, a, y, ,, , #, N, o, t, e, s, ,, , #, C, i, t, a, t, i, o, n, s, ,, , #, W, o, r, k, s, \_, c, i, t, e, d, ,, , #, B, o, o, k, s, ,, , #, G, o, v, e, r, n, m, e, n, t, \_, a, n, d, \_, i, n, s, t, i, t, u, t, i, o, n, a, l, \_, d, o, c, u, m, e, n, t, s, \_, a, n, d, \_, r, e, p, o, r, t, s, ,, , #, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, \_, d, o, c, u, m, e, n, t, s, ,, , \_, e, x, h, i, b, i, t, s, ,, , \_, a, n, d, \_, t, e, s, t, i, m, o, n, i, e, s, ,, , #, J, o, u, r, n, a, l, \_, a, r, t, i, c, l, e, s, ,, , #, M, a, g, a, z, i, n, e, s, ,, , #, N, e, w, s, \_, p, u, b, l, i, c, a, t, i, o, n, s, \_, a, n, d, \_, w, e, b, s, i, t, e, s, ,, , #, E, x, t, e, r, n, a, l, \_, l, i, n, k, s, ,, , h, t, t, p, s, :, /, /, a, l, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, M, o, r, d, \_, a, n, \_, U, S, -, P, r, %, C, 3, %, A, 4, s, i, d, e, n, t, \_, K, e, n, n, e, d, y, ,, , h, t, t, p, 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h, t, t, p, s, :, /, /, g, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, s, a, s, i, n, a, t, o, \_, d, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, k, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, E, C, %, A, 1, %, B, 4, \_, F, ., \_, %, E, C, %, B, C, %, 8, 0, %, E, B, %, 8, 4, %, A, 4, %, E, B, %, 9, 4, %, 9, 4, \_, %, E, C, %, 9, 5, %, 9, 4, %, E, C, %, 8, 2, %, B, 4, \_, %, E, C, %, 8, 2, %, A, C, %, E, A, %, B, 1, %, B, 4, ,, , h, t, t, p, s, :, /, /, h, y, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, D, 5, %, 8, B, %, D, 5, %, B, 8, %, D, 5, %, B, 6, \_, %, D, 5, %, 9, 4, %, D, 5, %, A, 5, %, D, 5, %, B, 6, %, D, 5, %, A, 5, %, D, 5, %, A, 4, %, D, 5, %, B, 8, %, D, 6, %, 8, 2, \_, %, D, 5, %, B, D, %, D, 5, %, B, A, %, D, 5, %, A, 1, %, D, 5, %, B, 6, %, D, 5, %, B, 8, %, D, 6, %, 8, 2, %, D, 5, %, A, 9, %, D, 5, %, B, 5, %, D, 5, %, B, 8, %, D, 6, %, 8, 2, %, D, 5, %, B, 6, ,, , h, 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\_, D, %, C, 5, %, B, E, o, n, u, \_, K, e, n, e, d, i, j, u, ,, , h, t, t, p, s, :, /, /, h, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, \_, m, e, g, g, y, i, l, k, o, l, %, C, 3, %, A, 1, s, a, ,, , h, t, t, p, s, :, /, /, m, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, D, 0, %, A, 3, %, D, 0, %, B, 1, %, D, 0, %, B, 8, %, D, 1, %, 8, 1, %, D, 1, %, 8, 2, %, D, 0, %, B, 2, %, D, 0, %, B, E, \_, %, D, 0, %, B, D, %, D, 0, %, B, 0, \_, %, D, 0, %, 8, F, %, D, 0, %, B, E, %, D, 0, %, B, D, \_, %, D, 0, %, 9, A, %, D, 0, %, B, 5, %, D, 0, %, B, D, %, D, 0, %, B, 5, %, D, 0, %, B, 4, %, D, 0, %, B, 8, ,, , h, t, t, p, s, :, /, /, m, s, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, P, e, m, b, u, n, u, h, a, n, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, n, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, M, o, o, r, 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\_, F, ., \_, K, e, n, n, e, d, y, %, E, 2, %, 8, 0, %, 9, 9, e, g, o, ,, , h, t, t, p, s, :, /, /, p, t, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, o, \_, d, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, r, o, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, s, a, s, i, n, a, r, e, a, \_, l, u, i, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, r, u, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, D, 0, %, A, 3, %, D, 0, %, B, 1, %, D, 0, %, B, 8, %, D, 0, %, B, 9, %, D, 1, %, 8, 1, %, D, 1, %, 8, 2, %, D, 0, %, B, 2, %, D, 0, %, B, E, \_, %, D, 0, %, 9, 4, %, D, 0, %, B, 6, %, D, 0, %, B, E, %, D, 0, %, B, D, %, D, 0, %, B, 0, \_, %, D, 0, %, 9, A, %, D, 0, %, B, 5, %, D, 0, %, B, D, %, D, 0, %, B, D, %, D, 0, %, B, 5, %, D, 0, %, B, 4, %, D, 0, %, B, 8, ,, , h, t, t, p, s, :, /, /, s, q, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, V, r, a, s, j, a, \_, e, \_, X, h, o, n, \_, F, ., \_, K, e, n, e, d, i, ,, , h, t, t, p, s, :, /, /, s, i, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, E, 0, %, B, 6, %, A, 2, %, E, 0, %, B, 7, %, 9, D, %, E, 0, %, B, 6, %, B, 1, %, E, 0, %, B, 7, %, 8, A, \_, %, E, 0, %, B, 6, %, 9, 1, %, E, 0, %, B, 7, %, 8, 6, %, E, 0, %, B, 7, %, 8, A, ., \_, %, E, 0, %, B, 6, %, 9, A, %, E, 0, %, B, 7, %, 9, 9, %, E, 0, %, B, 6, %, B, 1, %, E, 0, %, B, 6, %, A, 9, %, E, 0, %, B, 7, %, 9, 2, \_, %, E, 0, %, B, 6, %, 9, D, %, E, 0, %, B, 7, %, 8, F, %, E, 0, %, B, 6, %, A, D, %, E, 0, %, B, 6, %, B, 1, %, E, 0, %, B, 6, %, B, A, ,, , h, t, t, p, s, :, /, /, s, i, m, p, l, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, s, k, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, t, e, n, t, %, C, 3, %, A, 1, t, \_, n, a, \_, J, o, h, n, a, \_, F, i, t, z, g, e, r, a, l, d, a, \_, K, e, n, n, e, d, y, h, o, ,, , h, t, t, p, s, :, /, /, s, l, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, t, e, n, t, a, t, \_, n, a, \_, J, o, h, n, a, \_, K, e, n, n, e, d, y, j, a, ,, , h, t, t, p, s, :, /, /, s, r, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, D, 0, %, 9, 0, %, D, 1, %, 8, 2, %, D, 0, %, B, 5, %, D, 0, %, B, D, %, D, 1, %, 8, 2, %, D, 0, %, B, 0, %, D, 1, %, 8, 2, \_, %, D, 0, %, B, D, %, D, 0, %, B, 0, \_, %, D, 0, %, 8, F, %, D, 0, %, B, E, %, D, 0, %, B, D, %, D, 0, %, B, 0, \_, %, D, 0, %, 9, A, %, D, 0, %, B, 5, %, D, 0, %, B, D, %, D, 0, %, B, 5, %, D, 0, %, B, 4, %, D, 0, %, B, 8, %, D, 1, %, 9, 8, %, D, 0, %, B, 0, ,, , h, t, t, p, s, :, /, /, s, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, t, e, n, t, a, t, \_, n, a, \_, J, o, h, n, a, \_, F, ., \_, K, e, n, n, e, d, y, j, a, ,, , h, t, t, p, s, :, /, /, f, i, ., w, i, k, i, p, e, d, i, a, ., o, 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i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, V, %, E, 1, %, B, B, %, A, 5, \_, %, C, 3, %, A, 1, m, \_, s, %, C, 3, %, A, 1, t, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, z, h, -, y, u, e, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, E, 7, %, 9, 4, %, 9, 8, %, E, 8, %, B, F, %, B, A, %, E, 8, %, B, F, %, A, A, %, E, 9, %, 8, 1, %, 8, 7, %, E, 5, %, 8, 8, %, B, A, %, E, 6, %, A, 1, %, 8, 8, ,, , h, t, t, p, s, :, /, /, z, h, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, %, E, 7, %, B, A, %, A, 6, %, E, 7, %, B, F, %, B, 0, %, C, 2, %, B, 7, F, %, C, 2, %, B, 7, %, E, 8, %, 8, 2, %, A, F, %, E, 5, %, B, 0, %, B, C, %, E, 8, %, B, F, %, A, A, %, E, 9, %, 8, 1, %, 8, 7, %, E, 5, %, 8, 8, %, B, A, %, E, 6, %, A, 1, %, 8, 8, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, d, a, t, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, E, n, t, i, t, y, P, a, g, e, /, Q, 1, 9, 3, 4, 8, 4, #, s, i, t, e, l, i, 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e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, o, l, d, i, d, =, 1, 1, 8, 6, 2, 8, 2, 8, 7, 2, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, a, c, t, i, o, n, =, i, n, f, o, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, C, i, t, e, T, h, i, s, P, a, g, e, &, p, a, g, e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, i, d, =, 1, 1, 8, 6, 2, 8, 2, 8, 7, 2, &, w, p, F, o, r, m, I, d, e, n, t, i, f, i, e, r, =, t, i, t, l, e, f, o, r, m, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, U, r, l, S, h, o, r, t, e, n, e, r, &, u, r, l, =, h, t, t, p, s, %, 3, A, %, 2, F, %, 2, F, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, %, 2, F, w, i, k, i, %, 2, F, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, i, k, i, d, a, t, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, E, n, t, i, t, y, P, a, g, e, /, Q, 1, 9, 3, 4, 8, 4, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, S, p, e, c, i, a, l, :, D, o, w, n, l, o, a, d, A, s, P, d, f, &, p, a, g, e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, a, c, t, i, o, n, =, s, h, o, w, -, d, o, w, n, l, o, a, d, -, s, c, r, e, e, n, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, p, r, i, n, t, a, b, l, e, =, y, e, s, ,, , h, t, t, p, s, :, /, /, c, o, m, m, o, n, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, F, e, a, t, u, r, e, d, \_, a, r, t, i, c, l, e, s, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, P, r, o, t, e, c, t, i, o, n, \_, p, o, l, i, c, y, #, s, e, m, i, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, N, o, v, e, m, b, e, r, \_, 1, 9, 6, 3, #, N, o, v, e, m, b, e, r, \_, 2, 2, ,, , \_, 1, 9, 6, 3, \_, (, F, r, i, d, a, y, ), ,, , /, w, i, k, i, /, F, i, l, e, :, J, F, K, \_, l, i, m, o, u, s, i, n, e, ., p, n, g, ,, , /, w, i, k, i, /, J, a, c, q, u, e, l, i, n, e, \_, K, e, n, n, e, d, y, \_, O, n, a, s, s, i, s, ,, , /, w, i, k, i, /, N, e, l, l, i, e, \_, C, o, n, n, a, l, l, y, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, i, a, l, \_, s, t, a, t, e, \_, c, a, r, \_, (, U, n, i, t, e, d, \_, S, t, a, t, e, s, ), #, K, e, n, n, e, d, y, \_, X, -, 1, 0, 0, \_, (, 1, 9, 6, 1, –, 1, 9, 7, 7, ), ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, D, a, l, l, a, s, ,, , /, w, i, k, i, /, C, e, n, t, r, a, l, \_, S, t, a, n, d, a, r, d, \_, T, i, m, e, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, r, i, f, l, e, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, r, i, f, l, e, #, R, e, v, o, l, v, e, r, ,, , /, w, i, k, i, /, J, ., \_, D, ., \_, T, i, p, p, i, t, ,, , /, w, i, k, i, /, J, o, h, n, \_, C, o, n, n, a, l, l, y, ,, , /, w, i, k, i, /, J, a, m, e, s, \_, T, a, g, u, e, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, M, u, r, d, e, r, \_, (, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, l, a, w, ), ,, , /, w, i, k, i, /, M, a, l, i, c, e, \_, (, l, a, w, ), ,, , /, w, i, k, i, /, M, u, r, d, e, r, \_, o, f, \_, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, e, d, ,, , /, w, i, k, i, /, M, o, t, o, r, c, a, d, e, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, D, a, l, l, a, s, ,, , /, w, i, k, i, /, J, a, c, q, u, e, l, i, n, e, \_, K, e, n, n, e, d, y, \_, O, n, a, s, s, i, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, C, o, n, n, a, l, l, y, ,, , /, w, i, k, i, /, N, e, l, l, i, e, \_, C, o, n, n, a, l, l, y, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, S, c, h, o, o, l, \_, B, o, o, k, \_, D, e, p, o, s, i, t, o, r, y, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, P, a, r, k, l, a, n, d, \_, M, e, m, o, r, i, a, l, \_, H, o, s, p, i, t, a, l, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, i, n, a, u, g, u, r, a, t, i, o, n, \_, o, f, \_, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, J, ., \_, D, ., \_, T, i, p, p, i, t, ,, , /, w, i, k, i, /, D, a, l, l, a, s, \_, P, o, l, i, c, e, \_, D, e, p, a, r, t, m, e, n, t, ,, , /, w, i, k, i, /, D, a, l, l, a, s, \_, M, u, n, i, c, i, p, a, l, \_, B, u, i, l, d, i, n, g, ,, , /, w, i, k, i, /, J, a, c, k, \_, R, u, b, y, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, J, i, m, \_, G, a, r, r, i, s, o, n, ,, , /, w, i, k, i, /, T, r, i, a, l, \_, o, f, \_, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, P, r, e, s, i, d, e, n, t, %, 2, 7, s, \_, C, o, m, m, i, s, s, i, o, n, \_, o, n, \_, C, I, A, \_, A, c, t, i, v, i, t, i, e, s, \_, w, i, t, h, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, h, u, r, c, h, \_, C, o, m, m, i, t, t, e, e, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, c, o, n, s, p, i, r, a, c, y, \_, t, h, e, o, r, i, e, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, D, i, c, t, a, b, e, l, t, \_, r, e, c, o, r, d, i, n, g, ,, , /, w, i, k, i, /, U, ., S, ., \_, J, u, s, t, i, c, e, \_, D, e, p, a, r, t, m, e, n, t, ,, , /, w, i, k, i, /, 1, 9, 6, 0, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, M, a, l, c, o, l, m, \_, X, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, M, a, r, t, i, n, \_, L, u, t, h, e, r, \_, K, i, n, g, \_, J, r, ., ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, w, h, o, \_, d, i, e, d, \_, i, n, \_, o, f, f, i, c, e, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, F, i, l, e, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, s, p, e, a, k, s, \_, a, t, \_, R, i, c, e, \_, U, n, i, v, e, r, s, i, t, y, ., j, p, g, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, W, e, \_, c, h, o, o, s, e, \_, t, o, \_, g, o, \_, t, o, \_, t, h, e, \_, M, o, o, n, ,, , /, w, i, k, i, /, R, i, c, e, \_, U, n, i, v, e, r, s, i, t, y, ,, , /, w, i, k, i, /, F, i, l, e, :, F, i, d, e, l, \_, C, a, s, t, r, o, \_, -, \_, M, A, T, S, \_, T, e, r, m, i, n, a, l, \_, W, a, s, h, i, n, g, t, o, n, \_, 1, 9, 5, 9, \_, (, c, r, o, p, p, e, d, ), ., p, n, g, ,, , /, w, i, k, i, /, F, i, d, e, l, \_, C, a, s, t, r, o, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, U, ., S, ., \_, s, e, n, a, t, o, r, ,, , /, w, i, k, i, /, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, l, i, o, s, i, x, i, -, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, ,, , /, w, i, k, i, /, S, o, v, i, e, t, \_, U, n, i, o, n, ,, , /, w, i, k, i, /, C, o, m, m, u, n, i, s, m, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, ,, , /, w, i, k, i, /, F, i, d, e, l, \_, C, a, s, t, r, o, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, ,, , /, w, i, k, i, /, B, a, y, \_, o, f, \_, P, i, g, s, \_, I, n, v, a, s, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, ,, , /, w, i, k, i, /, C, u, b, a, n, \_, M, i, s, s, i, l, e, \_, C, r, i, s, i, s, ,, , /, w, i, k, i, /, N, u, c, l, e, a, r, \_, h, o, l, o, c, a, u, s, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, D, e, m, o, c, r, a, t, i, c, \_, P, a, r, t, y, ,, , /, w, i, k, i, /, R, a, l, p, h, \_, Y, a, r, b, o, r, o, u, g, h, ,, , /, w, i, k, i, /, J, o, h, n, \_, C, o, n, n, a, l, l, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, ,, , /, w, i, k, i, /, E, l, \_, P, a, s, o, ,, , \_, T, e, x, a, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, a, r, r, e, n, C, o, m, m, i, s, s, i, o, n, -, P, a, g, e, 2, 8, -, 1, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 4, 0, -, 1, 3, ,, , /, w, i, k, i, /, 1, 9, 6, 4, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, e, l, e, c, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 4, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, F, i, l, e, :, P, i, z, z, o, \_, E, x, h, \_, B, -, O, s, w, a, l, d, \_, l, e, a, f, l, e, t, s, \_, F, P, F, C, -, W, H, \_, V, o, l, 2, 1, \_, 1, 3, 9, ., j, p, g, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, F, i, d, e, l, \_, C, a, s, t, r, o, ,, , /, w, i, k, i, /, C, u, b, a, n, \_, e, x, i, l, e, s, ,, , /, w, i, k, i, /, F, i, l, e, :, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, \_, w, i, t, h, \_, r, i, f, l, e, ,, , \_, t, a, k, e, n, \_, i, n, \_, O, s, w, a, l, d, %, 2, 7, s, \_, b, a, c, k, \_, y, a, r, d, ,, , \_, N, e, e, l, y, \_, S, t, r, e, e, t, ,, , \_, D, a, l, l, a, s, \_, T, e, x, a, s, ,, , \_, M, a, r, c, h, \_, 1, 9, 6, 3, ,, , \_, C, E, 1, 3, 3, A, ., j, p, g, ,, , /, w, i, k, i, /, G, e, o, r, g, e, \_, d, e, \_, M, o, h, r, e, n, s, c, h, i, l, d, t, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, r, i, f, l, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, M, a, r, i, n, e, \_, C, o, r, p, s, ,, , /, w, i, k, i, /, K, a, r, l, \_, M, a, r, x, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, P, h, i, l, i, p, p, i, n, e, s, -, 2, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, P, h, i, l, i, p, p, i, n, e, s, -, 2, 0, ,, , /, w, i, k, i, /, M, i, l, i, t, a, r, y, \_, d, i, s, c, h, a, r, g, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, ,, , /, w, i, k, i, /, N, e, w, \_, O, r, l, e, a, n, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, ,, , /, w, i, k, i, /, D, e, f, e, c, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, ,, , /, w, i, k, i, /, M, i, n, s, k, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, ,, , /, w, i, k, i, /, M, a, r, i, n, a, \_, O, s, w, a, l, d, \_, P, o, r, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, a, r, r, e, n, \_, 1, 9, 6, 4, ,, , \_, p, ., \_, 7, 1, 2, -, 3, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, a, r, r, e, n, \_, 1, 9, 6, 4, ,, , \_, p, ., \_, 7, 1, 2, -, 3, 1, ,, , /, w, i, k, i, /, D, a, l, l, a, s, %, E, 2, %, 8, 0, %, 9, 3, F, o, r, t, \_, W, o, r, t, h, \_, m, e, t, r, o, p, l, e, x, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, ,, , /, w, i, k, i, /, G, e, o, r, g, e, \_, d, e, \_, M, o, h, r, e, n, s, c, h, i, l, d, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 4, ,, , /, w, i, k, i, /, E, d, w, i, n, \_, W, a, l, k, e, r, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 6, ,, , /, w, i, k, i, /, F, a, i, r, \_, P, l, a, y, \_, f, o, r, \_, C, u, b, a, \_, C, o, m, m, i, t, t, e, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 8, ,, , /, w, i, k, i, /, C, u, b, a, n, \_, e, x, i, l, e, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 2, ,, , /, w, i, k, i, /, M, e, x, i, c, o, \_, C, i, t, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 3, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 7, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, S, c, h, o, o, l, \_, B, o, o, k, \_, D, e, p, o, s, i, t, o, r, y, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, C, R, -, C, 1, -, 4, 8, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, \_, R, o, o, m, i, n, g, \_, H, o, u, s, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, S, a, t, u, r, d, a, y, 2, -, 4, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 4, ,, , /, w, i, k, i, /, T, i, m, e, l, i, n, e, \_, o, f, \_, t, h, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, ,, , /, w, i, k, i, /, F, i, l, e, :, K, e, n, n, e, d, y, s, \_, a, r, r, i, v, e, \_, a, t, \_, D, a, l, l, a, s, \_, 1, 1, -, 2, 2, -, 6, 3, ., J, P, G, ,, , /, w, i, k, i, /, J, a, c, q, u, e, l, i, n, e, \_, K, e, n, n, e, d, y, \_, O, n, a, s, s, i, s, ,, , /, w, i, k, i, /, D, a, l, l, a, s, \_, L, o, v, e, \_, F, i, e, l, d, ,, , /, w, i, k, i, /, F, i, l, e, :, D, e, a, l, e, y, -, p, l, a, z, a, -, a, n, n, o, t, a, t, e, d, ., p, n, g, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, A, i, r, \_, F, o, r, c, e, \_, O, n, e, ,, , /, w, i, k, i, /, D, a, l, l, a, s, \_, L, o, v, e, \_, F, i, e, l, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 5, ,, , /, w, i, k, i, /, S, S, -, 1, 0, 0, -, X, ,, , /, w, i, k, i, /, D, a, l, l, a, s, \_, M, a, r, k, e, t, \_, C, e, n, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, o, d, o, n, n, e, l, l, -, 5, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 4, 0, -, 1, 3, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, S, e, c, r, e, t, \_, S, e, r, v, i, c, e, ,, , /, w, i, k, i, /, W, i, l, l, i, a, m, \_, G, r, e, e, r, ,, , /, w, i, k, i, /, R, o, y, \_, K, e, l, l, e, r, m, a, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 9, ,, , /, w, i, k, i, /, L, a, d, y, \_, B, i, r, d, \_, J, o, h, n, s, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, o, d, o, n, n, e, l, l, -, 5, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 4, 0, -, 1, 3, ,, , /, w, i, k, i, /, M, a, i, n, \_, S, t, r, e, e, t, \_, D, i, s, t, r, i, c, t, ,, , \_, D, a, l, l, a, s, ,, , /, w, i, k, i, /, D, o, w, n, t, o, w, n, \_, D, a, l, l, a, s, ,, , /, w, i, k, i, /, S, t, e, m, m, o, n, s, \_, F, r, e, e, w, a, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 4, 0, -, 1, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 4, 0, -, 1, 3, ,, , /, w, i, k, i, /, A, d, l, a, i, \_, S, t, e, v, e, n, s, o, n, \_, I, I, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 3, ,, , /, w, i, k, i, /, F, i, l, e, :, D, a, l, l, a, s, \_, E, l, m, \_, S, t, r, e, e, t, ., j, p, g, ,, , /, w, i, k, i, /, F, i, l, e, :, D, a, l, l, a, s, \_, E, l, m, \_, S, t, r, e, e, t, ., j, p, g, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, Z, a, p, r, u, d, e, r, \_, f, i, l, m, ,, , /, w, i, k, i, /, G, r, a, s, s, y, \_, K, n, o, l, l, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, S, c, h, o, o, l, \_, B, o, o, k, \_, D, e, p, o, s, i, t, o, r, y, ,, , /, w, i, k, i, /, F, i, l, e, :, R, o, b, e, r, t, \_, C, r, o, f, t, \_, p, h, o, t, o, \_, s, h, o, w, i, n, g, \_, J, F, K, %, 2, 7, s, \_, c, a, r, \_, o, n, \_, E, l, m, \_, S, t, r, e, e, t, ., j, p, g, ,, , /, w, i, k, i, /, F, i, l, e, :, M, o, o, r, m, a, n, \_, p, h, o, t, o, \_, o, f, \_, J, F, K, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, ., j, p, g, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, M, a, r, y, \_, M, o, o, r, m, a, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, l, i, o, s, i, x, i, -, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, E, a, r, w, i, t, n, e, s, s, e, s, -, 6, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 7, ,, , /, w, i, k, i, /, B, a, c, k, -, f, i, r, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 6, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, 1, ,, , /, w, i, k, i, /, F, i, l, e, :, S, b, t, 2, ., j, p, g, ,, , /, w, i, k, i, /, F, i, l, e, :, S, b, t, \_, c, r, i, t, i, c, s, ., j, p, g, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, S, i, n, g, l, e, -, b, u, l, l, e, t, \_, t, h, e, o, r, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, l, i, o, s, i, 3, 9, -, 7, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, j, o, h, n, c, o, n, n, a, l, l, y, -, 7, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, j, o, h, n, c, o, n, n, a, l, l, y, -, 7, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 6, 1, -, 7, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, 6, ,, , /, w, i, k, i, /, L, a, r, y, n, x, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 7, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, j, o, h, n, c, o, n, n, a, l, l, y, -, 7, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, a, a, r, c, l, i, b, r, a, r, y, ., o, r, g, -, 7, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, s, a, b, a, t, o, 2, 1, 6, -, 8, 1, ,, , /, w, i, k, i, /, S, i, n, g, l, e, -, b, u, l, l, e, t, \_, t, h, e, o, r, y, ,, , /, w, i, k, i, /, P, n, e, u, m, o, t, h, o, r, a, x, ,, , /, w, i, k, i, /, R, a, d, i, u, s, \_, (, b, o, n, e, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, p, o, s, n, e, r, b, u, l, l, e, t, -, 8, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, s, a, b, a, t, o, 2, 1, 6, -, 8, 1, ,, , /, w, i, k, i, /, F, i, l, e, :, H, S, C, A, -, J, F, K, -, n, e, c, k, 2, -, 6, -, 4, 3, ., j, p, g, ,, , /, w, i, k, i, /, F, i, l, e, :, H, S, C, A, -, J, F, K, -, h, e, a, d, -, 7, -, 1, 2, 5, ., j, p, g, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, h, a, y, g, o, o, d, -, 8, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 5, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, t, i, o, n, a, r, y, ., o, r, g, /, w, i, k, i, /, o, v, u, l, a, r, ,, , /, w, i, k, i, /, S, i, c, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, 0, ,, , /, w, i, k, i, /, C, l, i, n, t, \_, H, i, l, l, \_, (, S, e, c, r, e, t, \_, S, e, r, v, i, c, e, ), ,, , /, w, i, k, i, /, R, u, n, n, i, n, g, \_, b, o, a, r, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, c, j, h, i, l, l, -, 9, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, j, a, c, q, u, e, l, i, n, e, -, 9, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, c, j, h, i, l, l, -, 9, 2, ,, , /, w, i, k, i, /, P, a, r, k, l, a, n, d, \_, M, e, m, o, r, i, a, l, \_, H, o, s, p, i, t, a, l, ,, , #, c, i, t, e, \_, n, o, t, e, -, j, o, h, n, c, o, n, n, a, l, l, y, -, 7, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, e, l, l, i, e, c, o, n, n, a, l, l, y, -, 9, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, 5, ,, , /, w, i, k, i, /, J, a, m, e, s, \_, T, a, g, u, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, 6, ,, , /, w, i, k, i, /, F, e, d, e, r, a, l, \_, B, u, r, e, a, u, \_, o, f, \_, I, n, v, e, s, t, i, g, a, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, e, w, s, w, e, e, k, \_, 1, 1, 2, 8, 1, 4, -, 9, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, 8, ,, , /, w, i, k, i, /, F, i, l, e, :, N, e, w, m, a, n, \_, F, a, m, i, l, y, ., j, p, g, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, t, r, a, s, k, 7, 6, -, 1, 0, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, h, a, y, g, o, o, d, -, 8, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 5, 2, -, 1, 0, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 5, 2, -, 1, 0, 3, ,, , /, w, i, k, i, /, L, e, e, \_, B, o, w, e, r, s, ,, , /, w, i, k, i, /, S, w, i, t, c, h, \_, t, o, w, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 5, 2, -, 1, 0, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 7, ,, , /, w, i, k, i, /, C, o, l, o, r, e, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 0, -, 1, 0, 8, ,, , /, w, i, k, i, /, H, o, w, a, r, d, \_, B, r, e, n, n, a, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 4, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, r, i, f, l, e, ,, , /, w, i, k, i, /, F, i, l, e, :, H, o, w, a, r, d, B, r, e, n, n, a, n, ., j, p, g, ,, , /, w, i, k, i, /, F, i, l, e, :, V, i, e, w, \_, f, r, o, m, \_, S, n, i, p, e, r, %, 2, 7, s, \_, n, e, s, t, \_, t, o, \_, E, l, m, \_, S, t, r, e, e, t, ,, , \_, C, E, 7, 2, 4, ., j, p, g, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, S, c, h, o, o, l, \_, B, o, o, k, \_, D, e, p, o, s, i, t, o, r, y, ,, , /, w, i, k, i, /, H, o, w, a, r, d, \_, B, r, e, n, n, a, n, ,, , /, w, i, k, i, /, C, a, r, c, a, n, o, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 7, ,, , /, w, i, k, i, /, P, o, s, t, -, o, f, f, i, c, e, \_, b, o, x, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 0, 1, -, 1, 2, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 4, ,, , /, w, i, k, i, /, G, u, r, n, e, y, ,, , /, w, i, k, i, /, B, a, l, l, i, s, t, i, c, \_, f, i, n, g, e, r, p, r, i, n, t, i, n, g, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 6, ,, , /, w, i, k, i, /, J, ., \_, D, ., \_, T, i, p, p, i, t, ,, , /, w, i, k, i, /, O, a, k, \_, C, l, i, f, f, ,, , /, w, i, k, i, /, T, e, m, p, l, e, \_, (, a, n, a, t, o, m, y, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 7, ,, , h, t, t, p, s, :, /, /, w, w, w, ., y, o, u, t, u, b, e, ., c, o, m, /, w, a, t, c, h, ?, v, =, \_, Z, Y, A, I, i, E, r, T, N, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, b, s, n, e, w, s, ., c, o, m, /, v, i, d, e, o, /, o, s, w, a, l, d, -, h, o, l, d, s, -, p, r, e, s, s, -, c, o, n, f, e, r, e, n, c, e, /, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 9, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, T, h, e, a, t, r, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 0, ,, , /, w, i, k, i, /, W, a, r, \_, I, s, \_, H, e, l, l, \_, (, f, i, l, m, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 1, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, t, i, o, n, a, r, y, ., o, r, g, /, w, i, k, i, /, p, a, t, s, y, #, N, o, u, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 2, ,, , /, w, i, k, i, /, F, i, l, e, :, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, \_, t, a, k, i, n, g, \_, t, h, e, \_, o, a, t, h, \_, o, f, \_, o, f, f, i, c, e, ,, , \_, N, o, v, e, m, b, e, r, \_, 1, 9, 6, 3, ., j, p, g, ,, , /, w, i, k, i, /, C, e, c, i, l, \_, S, t, o, u, g, h, t, o, n, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, A, i, r, \_, F, o, r, c, e, \_, O, n, e, ,, , /, w, i, k, i, /, J, a, c, q, u, e, l, i, n, e, \_, K, e, n, n, e, d, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 3, ,, , /, w, i, k, i, /, G, e, o, r, g, e, \_, B, u, r, k, l, e, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, h, u, b, -, 1, 3, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 6, ,, , /, w, i, k, i, /, C, a, r, d, i, o, p, u, l, m, o, n, a, r, y, \_, r, e, s, u, s, c, i, t, a, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, h, u, b, -, 1, 3, 5, ,, , /, w, i, k, i, /, W, a, l, t, e, r, \_, C, r, o, n, k, i, t, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 3, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, o, y, d, -, 1, 3, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 4, 1, ,, , /, w, i, k, i, /, M, c, G, e, o, r, g, e, \_, B, u, n, d, y, ,, , /, w, i, k, i, /, W, a, l, t, e, r, \_, J, e, n, k, i, n, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, E, s, q, u, i, r, e, ;, \_, S, e, p, t, e, m, b, e, r, \_, 1, 6, ,, , \_, 2, 0, 1, 3, -, 1, 4, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, o, y, d, -, 1, 3, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, E, s, q, u, i, r, e, ;, \_, S, e, p, t, e, m, b, e, r, \_, 1, 6, ,, , \_, 2, 0, 1, 3, -, 1, 4, 2, ,, , /, w, i, k, i, /, E, s, q, u, i, r, e, \_, (, m, a, g, a, z, i, n, e, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, E, s, q, u, i, r, e, ;, \_, S, e, p, t, e, m, b, e, r, \_, 1, 6, ,, , \_, 2, 0, 1, 3, -, 1, 4, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, k, u, r, t, z, 2, -, 1, 4, 3, ,, , /, w, i, k, i, /, E, a, r, l, \_, R, o, s, e, \_, (, c, o, r, o, n, e, r, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, M, u, n, s, o, n, -, 1, 4, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, S, t, a, f, f, o, r, d, -, 1, 4, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, M, u, n, s, o, n, -, 1, 4, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, S, t, a, f, f, o, r, d, -, 1, 4, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 1, 1, 0, -, 1, 4, 6, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, i, n, a, u, g, u, r, a, t, i, o, n, \_, o, f, \_, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, S, a, r, a, h, \_, T, i, l, g, h, m, a, n, \_, H, u, g, h, e, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 4, 7, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, u, t, o, p, s, y, ,, , /, w, i, k, i, /, M, i, c, h, a, e, l, \_, B, a, d, e, n, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, \_, p, ., \_, 3, 8, 2, -, 1, 4, 8, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, N, a, v, a, l, \_, M, e, d, i, c, a, l, \_, C, e, n, t, e, r, ,, , /, w, i, k, i, /, M, a, r, y, l, a, n, d, ,, , /, w, i, k, i, /, N, a, v, a, l, \_, o, f, f, i, c, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 4, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 3, ,, , /, w, i, k, i, /, D, e, a, t, h, \_, c, e, r, t, i, f, i, c, a, t, e, ,, , /, w, i, k, i, /, C, a, u, s, e, \_, o, f, \_, d, e, a, t, h, ,, , #, c, i, t, e, \_, n, o, t, e, -, a, m, e, x, -, 1, 5, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 5, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, A, r, c, h, i, v, e, s, \_, a, n, d, \_, R, e, c, o, r, d, s, \_, A, d, m, i, n, i, s, t, r, a, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 1, 5, 7, -, 1, 5, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, r, a, i, n, -, 1, 5, 7, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, #, H, e, a, l, t, h, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, r, a, i, n, -, 1, 5, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, \_, p, ., \_, 3, 8, 2, -, 1, 4, 8, ,, , /, w, i, k, i, /, B, o, d, y, \_, a, x, i, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, 9, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, M, i, l, t, o, n, \_, H, e, l, p, e, r, n, &, a, c, t, i, o, n, =, e, d, i, t, &, r, e, d, l, i, n, k, =, 1, ,, , /, w, i, k, i, /, O, f, f, i, c, e, \_, o, f, \_, C, h, i, e, f, \_, M, e, d, i, c, a, l, \_, E, x, a, m, i, n, e, r, \_, o, f, \_, t, h, e, \_, C, i, t, y, \_, o, f, \_, N, e, w, \_, Y, o, r, k, ,, , /, w, i, k, i, /, N, e, w, \_, Y, o, r, k, \_, P, h, i, l, h, a, r, m, o, n, i, c, ,, , /, w, i, k, i, /, T, c, h, a, i, k, o, v, s, k, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 0, ,, , /, w, i, k, i, /, S, t, a, t, e, \_, f, u, n, e, r, a, l, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, d, i, g, n, i, t, a, r, i, e, s, \_, a, t, \_, t, h, e, \_, s, t, a, t, e, \_, f, u, n, e, r, a, l, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, F, i, l, e, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, L, y, i, n, g, \_, i, n, \_, S, t, a, t, e, \_, N, o, v, e, m, b, e, r, \_, 2, 5, ,, , \_, 1, 9, 6, 3, \_, (, 1, 0, 9, 6, 5, 6, 3, 1, 8, 2, 4, ), ., j, p, g, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, a, p, i, t, o, l, ,, , /, w, i, k, i, /, E, a, s, t, \_, R, o, o, m, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 2, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, P, r, o, c, l, a, m, a, t, i, o, n, \_, 3, 5, 6, 1, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, d, a, y, \_, o, f, \_, m, o, u, r, n, i, n, g, ,, , #, c, i, t, e, \_, n, o, t, e, -, A, s, s, o, c, i, a, t, e, d, P, r, e, s, s, -, P, a, g, e, 4, 0, -, 1, 6, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 5, ,, , /, w, i, k, i, /, B, l, a, c, k, \_, J, a, c, k, \_, (, h, o, r, s, e, ), ,, , /, w, i, k, i, /, L, i, m, b, e, r, s, \_, a, n, d, \_, c, a, i, s, s, o, n, s, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, a, p, i, t, o, l, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, h, i, t, e, P, a, g, e, 1, 6, -, 1, 6, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 7, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, a, p, i, t, o, l, \_, r, o, t, u, n, d, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, h, i, t, e, P, a, g, e, 1, 6, -, 1, 6, 6, ,, , /, w, i, k, i, /, J, ., \_, E, d, g, a, r, \_, H, o, o, v, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, 9, ,, , /, w, i, k, i, /, C, a, t, h, e, d, r, a, l, \_, o, f, \_, S, t, ., \_, M, a, t, t, h, e, w, \_, t, h, e, \_, A, p, o, s, t, l, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, h, i, t, e, P, a, g, e, 1, 7, -, 1, 7, 0, ,, , /, w, i, k, i, /, R, e, q, u, i, e, m, \_, M, a, s, s, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, C, u, s, h, i, n, g, ,, , #, c, i, t, e, \_, n, o, t, e, -, W, h, i, t, e, P, a, g, e, 1, 7, -, 1, 7, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, b, c, 1, 2, 6, -, 1, 7, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 4, ,, , /, w, i, k, i, /, P, h, i, l, i, p, \_, M, ., \_, H, a, n, n, a, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, b, c, 1, 2, 6, -, 1, 7, 2, ,, , /, w, i, k, i, /, A, r, l, i, n, g, t, o, n, \_, N, a, t, i, o, n, a, l, \_, C, e, m, e, t, e, r, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 5, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, E, t, e, r, n, a, l, \_, F, l, a, m, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 6, ,, , /, w, i, k, i, /, F, i, l, e, :, R, u, b, y, \_, s, h, o, o, t, s, \_, O, s, w, a, l, d, ., j, p, g, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, H, ., \_, J, a, c, k, s, o, n, \_, (, p, h, o, t, o, g, r, a, p, h, e, r, ), ,, , /, w, i, k, i, /, J, a, c, k, \_, R, u, b, y, ,, , /, w, i, k, i, /, J, i, m, \_, L, e, a, v, e, l, l, e, ,, , /, w, i, k, i, /, J, a, c, k, \_, R, u, b, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, S, a, t, u, r, d, a, y, 2, -, 4, 9, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, H, ., \_, J, a, c, k, s, o, n, \_, (, p, h, o, t, o, g, r, a, p, h, e, r, ), ,, , /, w, i, k, i, /, D, a, l, l, a, s, \_, T, i, m, e, s, \_, H, e, r, a, l, d, ,, , /, w, i, k, i, /, P, u, l, i, t, z, e, r, \_, P, r, i, z, e, \_, f, o, r, \_, P, h, o, t, o, g, r, a, p, h, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, F, i, s, c, h, e, r, -, 1, 7, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 8, ,, , /, w, i, k, i, /, A, o, r, t, a, ,, , /, w, i, k, i, /, I, n, f, e, r, i, o, r, \_, v, e, n, a, \_, c, a, v, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 7, 9, ,, , /, w, i, k, i, /, D, e, f, i, b, r, i, l, l, a, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, r, u, b, y, W, C, -, 1, 8, 1, ,, , /, w, i, k, i, /, M, e, l, v, i, n, \_, B, e, l, l, i, ,, , /, w, i, k, i, /, T, e, m, p, o, r, a, l, \_, l, o, b, e, \_, e, p, i, l, e, p, s, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 5, 7, -, 1, 8, 2, ,, , /, w, i, k, i, /, R, u, b, e, n, s, t, e, i, n, \_, v, ., \_, S, t, a, t, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, 3, ,, , /, w, i, k, i, /, P, u, l, m, o, n, a, r, y, \_, e, m, b, o, l, i, s, m, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, 4, ,, , /, w, i, k, i, /, A, b, r, a, h, a, m, \_, Z, a, p, r, u, d, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, t, r, a, s, k, 7, 6, -, 1, 0, 1, ,, , /, w, i, k, i, /, F, i, l, e, :, Z, a, p, r, u, d, e, r, c, a, m, e, r, a, ., j, p, g, ,, , /, w, i, k, i, /, B, e, l, l, \_, %, 2, 6, \_, H, o, w, e, l, l, ,, , /, w, i, k, i, /, A, b, r, a, h, a, m, \_, Z, a, p, r, u, d, e, r, ,, , /, w, i, k, i, /, Z, a, p, r, u, d, e, r, \_, f, i, l, m, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, A, r, c, h, i, v, e, s, \_, a, n, d, \_, R, e, c, o, r, d, s, \_, A, d, m, i, n, i, s, t, r, a, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, 5, ,, , /, w, i, k, i, /, A, b, r, a, h, a, m, \_, Z, a, p, r, u, d, e, r, ,, , /, w, i, k, i, /, 8, \_, m, m, \_, f, i, l, m, ,, , /, w, i, k, i, /, Z, a, p, r, u, d, e, r, \_, f, i, l, m, ,, , #, c, i, t, e, \_, n, o, t, e, -, l, i, f, e, z, a, p, -, 1, 8, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, r, e, n, c, h, i, e, s, -, 1, 8, 7, ,, , /, w, i, k, i, /, L, i, f, e, \_, (, m, a, g, a, z, i, n, e, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, l, i, f, e, z, a, p, -, 1, 8, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, 8, ,, , /, w, i, k, i, /, T, r, i, a, l, \_, o, f, \_, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, G, e, r, a, l, d, o, \_, R, i, v, e, r, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 8, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 2, ,, , /, w, i, k, i, /, M, a, r, y, \_, M, o, o, r, m, a, n, ,, , /, w, i, k, i, /, I, n, s, t, a, n, t, \_, c, a, m, e, r, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 8, 5, -, 1, 9, 3, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, C, h, a, r, l, e, s, \_, B, r, o, n, s, o, n, \_, (, p, h, o, t, o, g, r, a, p, h, e, r, ), &, a, c, t, i, o, n, =, e, d, i, t, &, r, e, d, l, i, n, k, =, 1, ,, , /, w, i, k, i, /, M, a, r, i, e, \_, M, u, c, h, m, o, r, e, ,, , /, w, i, k, i, /, O, r, v, i, l, l, e, \_, N, i, x, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 4, 5, 2, -, 1, 9, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 4, 5, 2, -, 1, 9, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, i, x, -, 1, 9, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, i, x, -, 1, 9, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 9, 9, ,, , /, w, i, k, i, /, S, i, n, g, l, e, -, b, u, l, l, e, t, \_, t, h, e, o, r, y, #, L, o, c, a, t, i, o, n, \_, o, f, \_, b, a, c, k, \_, w, o, u, n, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 0, ,, , /, w, i, k, i, /, B, a, b, u, s, h, k, a, \_, L, a, d, y, ,, , /, w, i, k, i, /, H, e, a, d, s, c, a, r, f, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 1, ,, , /, w, i, k, i, /, G, o, r, d, o, n, \_, A, r, n, o, l, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 2, ,, , /, w, i, k, i, /, V, i, n, c, e, n, t, \_, B, u, g, l, i, o, s, i, ,, , /, w, i, k, i, /, R, e, c, l, a, i, m, i, n, g, \_, H, i, s, t, o, r, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 8, 7, -, 2, 0, 3, ,, , /, w, i, k, i, /, F, i, l, e, :, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, \_, 1, 9, 6, 3, ., j, p, g, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, -, 2, 0, 5, ,, , /, w, i, k, i, /, J, ., \_, W, ., \_, F, r, i, t, z, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, r, i, t, z, -, 2, 0, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, r, i, t, z, -, 2, 0, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, -, 2, 0, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 8, ,, , /, w, i, k, i, /, P, a, r, a, f, f, i, n, \_, t, e, s, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, -, 2, 0, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, -, 2, 0, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, k, u, r, t, z, 2, -, 1, 4, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 0, ,, , /, w, i, k, i, /, F, i, l, e, :, P, r, e, s, e, n, t, a, t, i, o, n, \_, o, f, \_, t, h, e, \_, Y, o, u, n, g, \_, A, m, e, r, i, c, a, n, \_, M, e, d, a, l, s, \_, f, o, r, \_, B, r, a, v, e, r, y, ., \_, A, t, t, o, r, n, e, y, \_, G, e, n, e, r, a, l, \_, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , \_, D, i, r, e, c, t, o, r, \_, o, f, \_, F, ., B, ., I, ., \_, J, ., ., ., ., \_, -, \_, N, A, R, A, \_, -, \_, 1, 9, 4, 2, 5, 4, ., j, p, g, ,, , /, w, i, k, i, /, J, ., \_, E, d, g, a, r, \_, H, o, o, v, e, r, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 3, 8, -, 2, 1, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, k, u, r, t, z, 2, -, 1, 4, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, :, 2, -, 2, 1, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 3, 8, -, 2, 1, 1, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, H, a, r, r, i, s, o, n, \_, E, d, w, a, r, d, \_, L, i, v, i, n, g, s, t, o, n, e, &, a, c, t, i, o, n, =, e, d, i, t, &, r, e, d, l, i, n, k, =, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 3, 8, -, 2, 1, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 4, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, F, i, l, e, :, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, \_, p, r, e, s, e, n, t, i, n, g, \_, r, e, p, o, r, t, \_, o, n, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, t, o, \_, L, y, n, d, o, n, \_, J, o, h, n, s, o, n, ., j, p, g, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, J, o, h, n, \_, J, ., \_, M, c, C, l, o, y, ,, , /, w, i, k, i, /, J, ., \_, L, e, e, \_, R, a, n, k, i, n, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, R, u, s, s, e, l, l, ,, , \_, J, r, ., ,, , /, w, i, k, i, /, G, e, r, a, l, d, \_, F, o, r, d, ,, , /, w, i, k, i, /, E, a, r, l, \_, W, a, r, r, e, n, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, A, l, l, e, n, \_, D, u, l, l, e, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, S, h, e, r, m, a, n, \_, C, o, o, p, e, r, ,, , /, w, i, k, i, /, H, a, l, e, \_, B, o, g, g, s, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, E, a, r, l, \_, W, a, r, r, e, n, ,, , /, w, i, k, i, /, U, ., S, ., \_, S, u, p, r, e, m, e, \_, C, o, u, r, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, k, u, r, t, z, 2, -, 1, 4, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 6, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, J, a, c, k, \_, R, u, b, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 8, ,, , /, w, i, k, i, /, M, a, r, x, i, s, m, ,, , /, w, i, k, i, /, A, n, t, i, -, a, u, t, h, o, r, i, t, a, r, i, a, n, i, s, m, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 1, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 3, ,, , /, w, i, k, i, /, A, r, l, e, n, \_, S, p, e, c, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 4, ,, , /, w, i, k, i, /, H, a, l, e, \_, B, o, g, g, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, S, h, e, r, m, a, n, \_, C, o, o, p, e, r, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, R, u, s, s, e, l, l, \_, J, r, ., ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 5, ,, , /, w, i, k, i, /, M, i, c, h, a, e, l, \_, B, a, d, e, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, p, o, s, n, e, r, b, u, l, l, e, t, -, 8, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 6, ,, , /, w, i, k, i, /, R, e, l, m, a, n, \_, M, o, r, i, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 7, ,, , /, w, i, k, i, /, G, e, r, a, l, d, \_, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 2, 9, ,, , /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, D, a, v, i, d, \_, R, o, b, a, r, g, e, &, a, c, t, i, o, n, =, e, d, i, t, &, r, e, d, l, i, n, k, =, 1, ,, , /, w, i, k, i, /, J, o, h, n, \_, A, ., \_, M, c, C, o, n, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 0, ,, , /, w, i, k, i, /, T, r, i, a, l, \_, o, f, \_, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, F, i, l, e, :, C, a, r, t, %, C, 3, %, A, 3, o, \_, d, e, \_, i, m, i, g, r, a, %, C, 3, %, A, 7, %, C, 3, %, A, 3, o, \_, d, e, \_, C, l, a, y, \_, L, a, V, e, r, g, n, e, \_, S, h, a, w, \_, (, f, r, e, n, t, e, ), \_, (, c, r, o, p, p, e, d, ), ., j, p, g, ,, , /, w, i, k, i, /, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, T, r, i, a, l, \_, o, f, \_, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, J, i, m, \_, G, a, r, r, i, s, o, n, ,, , /, w, i, k, i, /, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, D, a, v, i, d, \_, F, e, r, r, i, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 1, 3, 4, 7, -, 2, 3, 1, ,, , /, w, i, k, i, /, F, r, e, n, c, h, \_, Q, u, a, r, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 1, 3, 4, 7, -, 2, 3, 1, ,, , /, w, i, k, i, /, O, s, c, a, r, \_, W, i, l, d, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 2, ,, , /, w, i, k, i, /, L, G, B, T, \_, h, i, s, t, o, r, y, \_, i, n, \_, L, o, u, i, s, i, a, n, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 4, ,, , /, w, i, k, i, /, T, h, e, \_, T, o, n, i, g, h, t, \_, S, h, o, w, \_, S, t, a, r, r, i, n, g, \_, J, o, h, n, n, y, \_, C, a, r, s, o, n, ,, , /, w, i, k, i, /, C, I, A, \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, c, o, n, s, p, i, r, a, c, y, \_, t, h, e, o, r, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, -, 2, 3, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, a, c, k, a, n, d, t, o, t, h, e, l, e, f, t, -, 2, 3, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, -, 2, 3, 6, ,, , /, w, i, k, i, /, M, a, r, k, \_, L, a, n, e, \_, (, a, u, t, h, o, r, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 3, 9, ,, , /, w, i, k, i, /, J, a, m, e, s, \_, K, i, r, k, w, o, o, d, ,, , \_, J, r, ., ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 4, ,, , /, w, i, k, i, /, S, p, a, n, i, s, h, \_, I, n, q, u, i, s, i, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 1, 3, 4, 7, -, 2, 3, 1, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, H, e, l, m, s, ,, , /, w, i, k, i, /, C, I, A, \_, a, c, t, i, v, i, t, i, e, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, #, 1, 9, 5, 1, ,, , /, w, i, k, i, /, M, a, x, \_, H, o, l, l, a, n, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, H, o, l, l, a, n, d, -, 2, 4, 7, ,, , /, w, i, k, i, /, F, r, o, n, t, l, i, n, e, \_, (, U, ., S, ., \_, T, V, \_, s, e, r, i, e, s, ), ,, , /, w, i, k, i, /, C, i, v, i, l, \_, A, i, r, \_, P, a, t, r, o, l, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, r, o, n, t, l, i, n, e, -, 2, 4, 8, ,, , /, w, i, k, i, /, F, i, l, e, :, P, r, e, s, i, d, e, n, t, \_, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, \_, a, n, d, \_, A, t, t, o, r, n, e, y, \_, G, e, n, e, r, a, l, \_, R, a, m, s, e, y, \_, C, l, a, r, k, ., j, p, g, ,, , /, w, i, k, i, /, R, a, m, s, e, y, \_, C, l, a, r, k, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 4, 9, ,, , /, w, i, k, i, /, R, a, m, s, e, y, \_, C, l, a, r, k, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 6, 9, -, 2, 5, 0, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, P, r, e, s, i, d, e, n, t, %, 2, 7, s, \_, C, o, m, m, i, s, s, i, o, n, \_, o, n, \_, C, I, A, \_, A, c, t, i, v, i, t, i, e, s, \_, w, i, t, h, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, G, e, r, a, l, d, \_, F, o, r, d, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, P, r, e, s, i, d, e, n, t, %, 2, 7, s, \_, C, o, m, m, i, s, s, i, o, n, \_, o, n, \_, C, I, A, \_, A, c, t, i, v, i, t, i, e, s, \_, w, i, t, h, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, N, e, l, s, o, n, \_, R, o, c, k, e, f, e, l, l, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, o, r, d, -, 2, 5, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 6, 9, -, 2, 5, 0, ,, , /, w, i, k, i, /, F, i, l, e, :, B, a, c, k, -, a, n, d, -, t, o, -, t, h, e, -, l, e, f, t, -, f, a, i, r, u, s, e, ., p, n, g, ,, , /, w, i, k, i, /, R, o, c, k, e, f, e, l, l, e, r, \_, C, o, m, m, i, s, s, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 6, 9, -, 2, 5, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, a, c, k, a, n, d, t, o, t, h, e, l, e, f, t, -, 2, 3, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, r, e, i, t, z, e, s, -, 2, 5, 4, ,, , /, w, i, k, i, /, N, e, w, t, o, n, %, 2, 7, s, \_, l, a, w, s, \_, o, f, \_, m, o, t, i, o, n, #, T, h, i, r, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, 5, ,, , /, w, i, k, i, /, V, i, n, c, e, n, t, \_, D, i, \_, M, a, i, o, ,, , /, w, i, k, i, /, A, r, n, o, l, d, \_, S, c, h, w, a, r, z, e, n, e, g, g, e, r, \_, f, i, l, m, o, g, r, a, p, h, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, r, e, i, t, z, e, s, -, 2, 5, 4, ,, , /, w, i, k, i, /, E, ., \_, H, o, w, a, r, d, \_, H, u, n, t, ,, , /, w, i, k, i, /, F, r, a, n, k, \_, S, t, u, r, g, i, s, ,, , /, w, i, k, i, /, T, h, r, e, e, \_, t, r, a, m, p, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, o, r, d, -, 2, 5, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, o, r, d, -, 2, 5, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 6, 9, -, 2, 5, 0, ,, , /, w, i, k, i, /, C, h, u, r, c, h, \_, C, o, m, m, i, t, t, e, e, ,, , /, w, i, k, i, /, F, i, l, e, :, C, h, u, r, c, h, \_, C, o, m, m, i, t, t, e, e, \_, r, e, p, o, r, t, \_, (, B, o, o, k, \_, I, I, ), \_, (, p, a, g, e, \_, 1, \_, c, r, o, p, ), ., j, p, g, ,, , /, w, i, k, i, /, W, a, t, e, r, g, a, t, e, \_, s, c, a, n, d, a, l, ,, , /, w, i, k, i, /, S, e, y, m, o, u, r, \_, H, e, r, s, h, ,, , /, w, i, k, i, /, F, a, m, i, l, y, \_, J, e, w, e, l, s, \_, (, C, e, n, t, r, a, l, \_, I, n, t, e, l, l, i, g, e, n, c, e, \_, A, g, e, n, c, y, ), ,, , /, w, i, k, i, /, U, ., S, ., \_, S, e, n, a, t, e, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, S, e, n, a, t, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, t, o, \_, S, t, u, d, y, \_, G, o, v, e, r, n, m, e, n, t, a, l, \_, O, p, e, r, a, t, i, o, n, s, \_, w, i, t, h, \_, R, e, s, p, e, c, t, \_, t, o, \_, I, n, t, e, l, l, i, g, e, n, c, e, \_, A, c, t, i, v, i, t, i, e, s, ,, , /, w, i, k, i, /, F, r, a, n, k, \_, C, h, u, r, c, h, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, 8, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, S, c, h, w, e, i, k, e, r, ,, , /, w, i, k, i, /, G, a, r, y, \_, H, a, r, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 7, 0, -, 2, 5, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 7, 0, -, 2, 5, 9, ,, , /, w, i, k, i, /, C, I, A, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, a, t, t, e, m, p, t, s, \_, o, n, \_, F, i, d, e, l, \_, C, a, s, t, r, o, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 7, 0, -, 2, 5, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, t, h, e, h, o, r, r, o, r, -, 2, 6, 0, ,, , /, w, i, k, i, /, I, t, a, l, i, a, n, -, A, m, e, r, i, c, a, n, \_, M, a, f, i, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 3, 7, 0, -, 2, 5, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, t, h, e, h, o, r, r, o, r, -, 2, 6, 0, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , /, w, i, k, i, /, F, i, l, e, :, H, S, C, A, -, C, o, n, n, a, l, l, y, -, 7, -, 1, 6, 6, ., j, p, g, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, S, i, n, g, l, e, -, b, u, l, l, e, t, \_, t, h, e, o, r, y, ,, , /, w, i, k, i, /, C, y, r, i, l, \_, W, e, c, h, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, t, h, e, h, o, r, r, o, r, -, 2, 6, 0, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, M, a, r, t, i, n, \_, L, u, t, h, e, r, \_, K, i, n, g, ,, , \_, J, r, ., ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, 3, ,, , /, w, i, k, i, /, C, o, n, s, p, i, r, a, c, y, \_, (, c, r, i, m, e, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, x, i, i, -, 2, 6, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, s, t, o, k, e, s, 2, -, 2, 6, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, s, t, o, k, e, s, 2, -, 2, 6, 6, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, D, i, c, t, a, b, e, l, t, \_, r, e, c, o, r, d, i, n, g, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, x, i, i, -, 2, 6, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, C, B, A, R, e, p, o, r, t, -, 2, 6, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, J, u, s, t, i, c, e, D, e, p, t, M, e, m, o, -, 2, 7, 0, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, A, c, a, d, e, m, y, \_, o, f, \_, S, c, i, e, n, c, e, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, C, B, A, R, e, p, o, r, t, -, 2, 6, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, J, u, s, t, i, c, e, D, e, p, t, M, e, m, o, -, 2, 7, 0, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, R, e, c, o, r, d, s, \_, C, o, l, l, e, c, t, i, o, n, \_, A, c, t, \_, o, f, \_, 1, 9, 9, 2, ,, , /, w, i, k, i, /, F, i, l, e, :, O, l, i, v, e, r, \_, S, t, o, n, e, \_, 0, 1, ., j, p, g, ,, , /, w, i, k, i, /, O, l, i, v, e, r, \_, S, t, o, n, e, ,, , /, w, i, k, i, /, J, F, K, \_, (, f, i, l, m, ), ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, R, e, c, o, r, d, s, \_, C, o, l, l, e, c, t, i, o, n, \_, A, c, t, \_, o, f, \_, 1, 9, 9, 2, ,, , /, w, i, k, i, /, O, l, i, v, e, r, \_, S, t, o, n, e, ,, , /, w, i, k, i, /, J, F, K, \_, (, f, i, l, m, ), ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, R, e, c, o, r, d, s, \_, C, o, l, l, e, c, t, i, o, n, \_, A, c, t, \_, o, f, \_, 1, 9, 9, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 1, 7, a, -, 2, 7, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 3, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, R, e, c, o, r, d, s, \_, R, e, v, i, e, w, \_, B, o, a, r, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 7, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, T, r, u, m, p, -, 2, 8, 0, ,, , /, w, i, k, i, /, D, o, n, a, l, d, \_, T, r, u, m, p, ,, , #, c, i, t, e, \_, n, o, t, e, -, T, r, u, m, p, -, 2, 8, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 0, 1, 7, a, -, 2, 7, 2, ,, , /, w, i, k, i, /, J, o, e, \_, B, i, d, e, n, ,, , /, w, i, k, i, /, C, O, V, I, D, -, 1, 9, \_, p, a, n, d, e, m, i, c, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, m, a, t, z, a, -, 2, 8, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, m, a, t, z, a, -, 2, 8, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 5, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, c, o, n, s, p, i, r, a, c, y, \_, t, h, e, o, r, i, e, s, ,, , /, w, i, k, i, /, F, i, l, e, :, G, r, a, s, s, y, \_, K, n, o, l, l, ., j, p, g, ,, , /, w, i, k, i, /, G, r, a, s, s, y, \_, k, n, o, l, l, ,, , /, w, i, k, i, /, F, i, l, e, :, B, a, d, g, e, m, a, n, ., j, p, g, ,, , /, w, i, k, i, /, B, a, d, g, e, \_, M, a, n, ,, , /, w, i, k, i, /, M, a, r, y, \_, M, o, o, r, m, a, n, \_, p, h, o, t, o, g, r, a, p, h, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 8, 5, -, 1, 9, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, G, a, l, l, u, p, ,, , \_, I, n, c, -, 2, 8, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 8, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, A, R, R, B, -, C, 1, -, 2, 9, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, A, R, R, B, -, C, 1, -, 2, 9, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, x, l, i, i, -, 2, 9, 2, ,, , /, w, i, k, i, /, M, i, l, i, t, a, r, y, -, i, n, d, u, s, t, r, i, a, l, \_, c, o, m, p, l, e, x, ,, , #, c, i, t, e, \_, n, o, t, e, -, x, l, i, i, -, 2, 9, 2, ,, , /, w, i, k, i, /, K, G, B, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 5, ,, , /, w, i, k, i, /, T, h, r, e, e, \_, t, r, a, m, p, s, ,, , /, w, i, k, i, /, U, m, b, r, e, l, l, a, \_, m, a, n, \_, (, J, F, K, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, ), ,, , /, w, i, k, i, /, B, a, d, g, e, \_, M, a, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 9, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 0, ,, , /, w, i, k, i, /, L, ., \_, F, l, e, t, c, h, e, r, \_, P, r, o, u, t, y, ,, , /, w, i, k, i, /, J, o, i, n, t, \_, C, h, i, e, f, s, \_, o, f, \_, S, t, a, f, f, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 4, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, \_, J, r, ., ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 5, ,, , /, w, i, k, i, /, N, i, k, i, t, a, \_, K, h, r, u, s, h, c, h, e, v, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 6, ,, , /, w, i, k, i, /, R, ., \_, J, a, m, e, s, \_, W, o, o, l, s, e, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 7, ,, , /, w, i, k, i, /, F, i, l, e, :, U, S, \_, H, a, l, f, \_, D, o, l, l, a, r, \_, O, b, v, e, r, s, e, \_, 2, 0, 1, 5, ., p, n, g, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, h, a, l, f, \_, d, o, l, l, a, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, m, i, n, t, -, 3, 0, 8, ,, , /, w, i, k, i, /, L, e, t, \_, U, s, \_, C, o, n, t, i, n, u, e, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 0, 9, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, i, n, a, u, g, u, r, a, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 0, ,, , /, w, i, k, i, /, C, i, v, i, l, \_, r, i, g, h, t, s, \_, m, o, v, e, m, e, n, t, ,, , /, w, i, k, i, /, C, i, v, i, l, \_, R, i, g, h, t, s, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 1, ,, , /, w, i, k, i, /, T, w, e, n, t, y, -, f, i, f, t, h, \_, A, m, e, n, d, m, e, n, t, \_, t, o, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, o, n, s, t, i, t, u, t, i, o, n, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 2, ,, , /, w, i, k, i, /, C, a, p, e, \_, C, a, n, a, v, e, r, a, l, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 5, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, S, p, a, c, e, \_, C, e, n, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 6, ,, , /, w, i, k, i, /, F, r, a, n, k, l, i, n, \_, h, a, l, f, \_, d, o, l, l, a, r, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, h, a, l, f, \_, d, o, l, l, a, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, m, i, n, t, -, 3, 0, 8, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, C, e, n, t, e, r, \_, f, o, r, \_, t, h, e, \_, P, e, r, f, o, r, m, i, n, g, \_, A, r, t, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 7, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, A, i, r, p, o, r, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 9, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, i, n, \_, p, o, p, u, l, a, r, \_, c, u, l, t, u, r, e, ,, , /, w, i, k, i, /, P, h, i, l, \_, O, c, h, s, ,, , /, w, i, k, i, /, C, r, u, c, i, f, i, x, i, o, n, \_, (, s, o, n, g, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 0, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, M, a, l, c, o, l, m, \_, X, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, r, i, n, k, l, e, y, -, 3, 2, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, r, i, n, k, l, e, y, -, 3, 2, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 4, ,, , /, w, i, k, i, /, F, l, a, s, h, b, u, l, b, \_, m, e, m, o, r, y, ,, , /, w, i, k, i, /, A, t, t, a, c, k, \_, o, n, \_, P, e, a, r, l, \_, H, a, r, b, o, r, ,, , /, w, i, k, i, /, S, e, p, t, e, m, b, e, r, \_, 1, 1, \_, a, t, t, a, c, k, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 6, ,, , /, w, i, k, i, /, D, a, n, \_, R, a, t, h, e, r, ,, , /, w, i, k, i, /, I, l, i, a, d, ,, , /, w, i, k, i, /, H, o, m, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 7, ,, , /, w, i, k, i, /, D, a, l, t, o, n, \_, T, r, u, m, b, o, ,, , /, w, i, k, i, /, E, x, e, c, u, t, i, v, e, \_, A, c, t, i, o, n, \_, (, f, i, l, m, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 8, ,, , /, w, i, k, i, /, C, i, n, %, C, 3, %, A, 9, m, a, \_, v, %, C, 3, %, A, 9, r, i, t, %, C, 3, %, A, 9, ,, , /, w, i, k, i, /, V, i, o, l, e, n, c, e, \_, i, n, \_, a, r, t, #, I, n, \_, f, i, l, m, s, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, c, i, n, e, m, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, f, r, e, n, c, h, i, e, s, -, 1, 8, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 2, 9, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 1, ,, , /, w, i, k, i, /, D, o, n, \_, D, e, L, i, l, l, o, ,, , /, w, i, k, i, /, L, i, b, r, a, \_, (, n, o, v, e, l, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 2, ,, , /, w, i, k, i, /, J, a, m, e, s, \_, E, l, l, r, o, y, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, T, a, b, l, o, i, d, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 3, ,, , /, w, i, k, i, /, S, t, e, p, h, e, n, \_, K, i, n, g, ,, , /, w, i, k, i, /, 1, 1, /, 2, 2, /, 6, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 4, ,, , /, w, i, k, i, /, I, g, o, r, \_, S, t, r, a, v, i, n, s, k, y, ,, , /, w, i, k, i, /, E, l, e, g, y, \_, f, o, r, \_, J, ., F, ., K, ., ,, , /, w, i, k, i, /, P, h, i, l, \_, O, c, h, s, ,, , /, w, i, k, i, /, C, r, u, c, i, f, i, x, i, o, n, \_, (, s, o, n, g, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, g, a, t, e, s, -, 3, 3, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, g, a, t, e, s, -, 3, 3, 6, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 7, ,, , /, w, i, k, i, /, A, b, r, a, h, a, m, ,, , \_, M, a, r, t, i, n, \_, a, n, d, \_, J, o, h, n, ,, , /, w, i, k, i, /, B, o, b, \_, D, y, l, a, n, ,, , /, w, i, k, i, /, M, u, r, d, e, r, \_, M, o, s, t, \_, F, o, u, l, \_, (, s, o, n, g, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 8, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 3, 9, ,, , /, w, i, k, i, /, F, i, l, e, :, X, \_, i, n, \_, R, o, a, d, \_, M, a, r, k, s, \_, W, h, e, r, e, \_, F, a, t, a, l, \_, S, h, o, t, \_, H, i, t, \_, P, r, e, s, i, d, e, n, t, \_, K, e, n, n, e, d, y, \_, -, \_, D, e, a, l, e, y, \_, P, l, a, z, a, \_, -, \_, D, a, l, l, a, s, \_, -, \_, T, e, x, a, s, \_, -, \_, U, S, A, \_, (, 1, 9, 4, 7, 4, 9, 5, 7, 3, 3, 4, ), ., j, p, g, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, d, e, a, l, e, y, -, 3, 4, 0, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, P, a, r, k, \_, S, e, r, v, i, c, e, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, H, i, s, t, o, r, i, c, \_, L, a, n, d, m, a, r, k, \_, D, i, s, t, r, i, c, t, ,, , #, c, i, t, e, \_, n, o, t, e, -, d, e, a, l, e, y, -, 3, 4, 0, ,, , /, w, i, k, i, /, S, i, x, t, h, \_, F, l, o, o, r, \_, M, u, s, e, u, m, \_, a, t, \_, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 4, 1, ,, , /, w, i, k, i, /, V, C, -, 1, 3, 7, C, \_, S, A, M, \_, 2, 6, 0, 0, 0, ,, , /, w, i, k, i, /, N, a, t, i, o, n, a, l, \_, M, u, s, e, u, m, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, A, i, r, \_, F, o, r, c, e, ,, , /, w, i, k, i, /, H, e, n, r, y, \_, F, o, r, d, \_, M, u, s, e, u, m, ,, , #, c, i, t, e, \_, n, o, t, e, -, r, e, l, i, c, s, -, 3, 4, 2, ,, , /, w, i, k, i, /, L, i, n, c, o, l, n, \_, C, a, t, a, f, a, l, q, u, e, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, a, p, i, t, o, l, \_, V, i, s, i, t, o, r, \_, C, e, n, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 4, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, r, e, l, i, c, s, -, 3, 4, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 4, 4, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 4, 5, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 5, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 6, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, ,, , /, w, i, k, i, /, Y, u, r, i, \_, N, o, s, e, n, k, o, ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 5, ,, , /, w, i, k, i, /, M, o, l, e, \_, (, e, s, p, i, o, n, a, g, e, ), ,, , #, c, i, t, e, \_, n, o, t, e, -, 2, 6, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 2, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 1, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 7, ,, , /, w, i, k, i, /, S, i, l, v, i, a, \_, O, d, i, o, ,, , /, w, i, k, i, /, V, i, n, c, e, n, t, \_, B, u, g, l, i, o, s, i, ,, , /, w, i, k, i, /, G, e, r, a, l, d, \_, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 4, 6, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 5, 2, ,, , #, c, i, t, e, \_, r, e, f, -, 7, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, l, i, o, s, i, 3, 9, -, 7, 0, ,, , #, c, i, t, e, \_, r, e, f, -, 9, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 8, 9, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 9, 9, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 7, ,, , /, w, i, k, i, /, B, a, r, r, y, \_, G, o, l, d, w, a, t, e, r, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 0, 6, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 1, 6, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 3, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, b, u, g, 8, 0, 1, -, 1, 2, 0, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 2, 2, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 4, 1, ,, , #, c, i, t, e, \_, n, o, t, e, -, 1, 4, 0, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 7, ,, , #, c, i, t, e, \_, n, o, t, e, -, n, i, x, -, 1, 9, 6, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 5, ,, , /, w, i, k, i, /, R, e, u, b, i, n, \_, A, s, k, e, w, ,, , /, w, i, k, i, /, U, ., S, ., \_, B, o, a, r, d, \_, o, f, \_, G, e, o, g, r, a, p, h, i, c, \_, N, a, m, e, s, ,, , #, c, i, t, e, \_, n, o, t, e, -, 3, 1, 4, ,, , #, c, i, t, e, \_, r, e, f, -, 1, ,, , #, W, h, i, t, e, H, o, u, s, e, ,, , #, c, i, t, e, \_, r, e, f, -, 2, ,, , #, S, e, n, a, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, l, i, o, s, i, x, i, \_, 3, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, l, i, o, s, i, x, i, \_, 3, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 4, ,, , #, E, l, e, c, t, o, r, a, l, ,, , #, c, i, t, e, \_, r, e, f, -, 5, ,, , #, C, o, l, d, ,, , #, c, i, t, e, \_, r, e, f, -, 6, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 7, ,, , #, H, i, n, c, k, l, e, \_, a, n, d, \_, T, u, r, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 8, ,, , #, J, o, n, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, 9, ,, , #, B, o, r, g, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, W, a, r, r, e, n, C, o, m, m, i, s, s, i, o, n, -, P, a, g, e, 2, 8, \_, 1, 2, -, 0, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 4, 0, \_, 1, 3, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 4, 0, \_, 1, 3, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 4, 0, \_, 1, 3, -, 2, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 4, 0, \_, 1, 3, -, 3, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 4, 0, \_, 1, 3, -, 4, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 4, ,, , #, W, h, i, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, ,, , #, P, o, n, t, c, h, a, r, t, r, a, i, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, P, h, i, l, i, p, p, i, n, e, s, \_, 2, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, P, h, i, l, i, p, p, i, n, e, s, \_, 2, 0, -, 1, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, ,, , #, M, c, M, i, l, l, a, n, ,, , #, c, i, t, e, \_, r, e, f, -, W, a, r, r, e, n, \_, 1, 9, 6, 4, ,, , \_, p, ., \_, 7, 1, 2, \_, 3, 1, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, W, a, r, r, e, n, \_, 1, 9, 6, 4, ,, , \_, p, ., \_, 7, 1, 2, \_, 3, 1, -, 1, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 4, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 5, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 6, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 7, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 8, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 9, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 0, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 1, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 3, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 4, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 5, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 4, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, W, C, R, -, C, 1, \_, 4, 8, -, 0, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, S, a, t, u, r, d, a, y, 2, \_, 4, 9, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, S, a, t, u, r, d, a, y, 2, \_, 4, 9, -, 1, ,, , #, B, a, g, d, i, k, i, a, n, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 4, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, o, d, o, n, n, e, l, l, \_, 5, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, o, d, o, n, n, e, l, l, \_, 5, 6, -, 1, ,, , #, O, ', D, o, n, n, e, l, l, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 7, ,, , #, B, l, a, i, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 8, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 5, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 2, ,, , #, D, e, a, t, h, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 4, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, E, a, r, w, i, t, n, e, s, s, e, s, \_, 6, 6, -, 0, ,, , #, M, c, A, d, a, m, s, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 7, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 8, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 6, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, l, i, o, s, i, 3, 9, \_, 7, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, l, i, o, s, i, 3, 9, \_, 7, 0, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 7, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 7, 3, ,, , #, A, p, p, e, n, d, i, x, 1, ,, , #, c, i, t, e, \_, r, e, f, -, j, o, h, n, c, o, n, n, a, l, l, y, \_, 7, 4, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, j, o, h, n, c, o, n, n, a, l, l, y, \_, 7, 4, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, j, o, h, n, c, o, n, n, a, l, l, y, \_, 7, 4, -, 2, ,, , #, c, i, t, e, \_, r, e, f, -, j, o, h, n, c, o, n, n, a, l, l, y, \_, 7, 4, -, 3, ,, , #, G, o, v, C, o, n, n, a, l, l, y, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 6, 1, \_, 7, 5, -, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 7, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 7, 7, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 7, 8, ,, , #, S, t, o, k, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, a, a, r, c, l, i, b, r, a, r, y, ., o, r, g, \_, 7, 9, -, 0, ,, , #, S, h, a, w, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, s, a, b, a, t, o, 2, 1, 6, \_, 8, 1, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, s, a, b, a, t, o, 2, 1, 6, \_, 8, 1, -, 1, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, p, o, s, n, e, r, b, u, l, l, e, t, \_, 8, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, p, o, s, n, e, r, b, u, l, l, e, t, \_, 8, 2, -, 1, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 3, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, h, a, y, g, o, o, d, \_, 8, 4, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, h, a, y, g, o, o, d, \_, 8, 4, -, 1, ,, , #, H, a, y, g, o, o, d, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 6, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 7, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 8, ,, , #, H, a, r, g, i, s, ,, , #, c, i, t, e, \_, r, e, f, -, 8, 9, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, 9, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, c, j, h, i, l, l, \_, 9, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, c, j, h, i, l, l, \_, 9, 2, -, 1, ,, , #, C, J, H, i, l, l, ,, , #, c, i, t, e, \_, r, e, f, -, j, a, c, q, u, e, l, i, n, e, \_, 9, 3, -, 0, ,, , #, J, a, c, k, i, e, ,, , #, c, i, t, e, \_, r, e, f, -, n, e, l, l, i, e, c, o, n, n, a, l, l, y, \_, 9, 4, -, 0, ,, , #, M, s, C, o, n, n, a, l, l, y, ,, , #, c, i, t, e, \_, r, e, f, -, 9, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 9, 6, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, n, e, w, s, w, e, e, k, \_, 1, 1, 2, 8, 1, 4, \_, 9, 7, -, 0, ,, , #, b, e, h, i, n, d, ,, , #, c, i, t, e, \_, r, e, f, -, 9, 8, ,, , #, T, a, g, u, e, ,, , #, c, i, t, e, \_, r, e, f, -, 9, 9, ,, , #, T, r, a, s, k, ,, , #, c, i, t, e, \_, r, e, f, -, t, r, a, s, k, 7, 6, \_, 1, 0, 1, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, t, r, a, s, k, 7, 6, \_, 1, 0, 1, -, 1, ,, , #, T, r, a, s, k, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 2, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 5, 2, \_, 1, 0, 3, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 5, 2, \_, 1, 0, 3, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 5, 2, \_, 1, 0, 3, -, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 4, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 0, \_, 1, 0, 8, -, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 0, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 0, ,, , #, B, r, e, n, n, a, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 2, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 4, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 5, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 8, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 1, 9, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 0, 1, \_, 1, 2, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 0, 1, \_, 1, 2, 0, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 4, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 5, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 7, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 8, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 2, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 4, ,, , #, A, r, l, i, n, g, t, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, h, u, b, \_, 1, 3, 5, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, h, u, b, \_, 1, 3, 5, -, 1, ,, , #, H, u, b, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 6, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 7, ,, , #, C, r, o, n, k, i, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 3, 8, ,, , #, D, a, n, i, e, l, ,, , #, c, i, t, e, \_, r, e, f, -, b, o, y, d, \_, 1, 3, 9, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, o, y, d, \_, 1, 3, 9, -, 1, ,, , #, B, o, y, d, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 4, 0, ,, , #, B, a, l, l, ,, , #, c, i, t, e, \_, r, e, f, -, E, s, q, u, i, r, e, ;, \_, S, e, p, t, e, m, b, e, r, \_, 1, 6, ,, , \_, 2, 0, 1, 3, \_, 1, 4, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, E, s, q, u, i, r, e, ;, \_, S, e, p, t, e, m, b, e, r, \_, 1, 6, ,, , \_, 2, 0, 1, 3, \_, 1, 4, 2, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, E, s, q, u, i, r, e, ;, \_, S, e, p, t, e, m, b, e, r, \_, 1, 6, ,, , \_, 2, 0, 1, 3, \_, 1, 4, 2, -, 2, ,, , #, J, o, n, e, s, e, s, q, ,, , #, c, i, t, e, \_, r, e, f, -, k, u, r, t, z, 2, \_, 1, 4, 3, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, k, u, r, t, z, 2, \_, 1, 4, 3, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, k, u, r, t, z, 2, \_, 1, 4, 3, -, 2, ,, , #, c, i, t, e, \_, r, e, f, -, k, u, r, t, z, 2, \_, 1, 4, 3, -, 3, ,, , #, K, u, r, t, z, ,, , #, c, i, t, e, \_, r, e, f, -, M, u, n, s, o, n, \_, 1, 4, 4, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, M, u, n, s, o, n, \_, 1, 4, 4, -, 1, ,, , #, M, u, n, s, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, S, t, a, f, f, o, r, d, \_, 1, 4, 5, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, S, t, a, f, f, o, r, d, \_, 1, 4, 5, -, 1, ,, , #, S, t, a, f, f, o, r, d, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 1, 1, 0, \_, 1, 4, 6, -, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 4, 7, ,, , #, O, a, t, h, ,, , #, c, i, t, e, \_, r, e, f, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, \_, p, ., \_, 3, 8, 2, \_, 1, 4, 8, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, \_, p, ., \_, 3, 8, 2, \_, 1, 4, 8, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 4, 9, ,, , #, a, s, s, o, c, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 0, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 2, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, a, m, e, x, \_, 1, 5, 4, -, 0, ,, , #, A, m, e, x, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 5, ,, , #, B, u, r, k, l, e, y, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 1, 5, 7, \_, 1, 5, 6, -, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, r, a, i, n, \_, 1, 5, 7, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, r, a, i, n, \_, 1, 5, 7, -, 1, ,, , #, S, a, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 8, ,, , #, K, u, r, t, z, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 5, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 1, ,, , #, a, s, s, o, c, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 2, ,, , #, n, y, c, ,, , #, c, i, t, e, \_, r, e, f, -, A, s, s, o, c, i, a, t, e, d, P, r, e, s, s, -, P, a, g, e, 4, 0, \_, 1, 6, 3, -, 0, ,, , #, a, s, s, o, c, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 4, ,, , #, H, e, r, i, t, a, g, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 5, ,, , #, C, l, o, s, e, d, ,, , #, c, i, t, e, \_, r, e, f, -, W, h, i, t, e, P, a, g, e, 1, 6, \_, 1, 6, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, W, h, i, t, e, P, a, g, e, 1, 6, \_, 1, 6, 6, -, 1, ,, , #, W, h, i, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 7, ,, , #, N, B, C, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 8, ,, , #, N, e, u, m, a, n, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 6, 9, ,, , #, R, u, s, s, k, i, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, W, h, i, t, e, P, a, g, e, 1, 7, \_, 1, 7, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, W, h, i, t, e, P, a, g, e, 1, 7, \_, 1, 7, 0, -, 1, ,, , #, W, h, i, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 1, ,, , #, a, s, s, o, c, ,, , #, c, i, t, e, \_, r, e, f, -, n, b, c, 1, 2, 6, \_, 1, 7, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, n, b, c, 1, 2, 6, \_, 1, 7, 2, -, 1, ,, , #, N, B, C, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 3, ,, , #, a, s, s, o, c, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 4, ,, , #, S, p, i, v, a, k, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 5, ,, , #, W, h, i, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 6, ,, , #, A, N, C, ,, , #, c, i, t, e, \_, r, e, f, -, F, i, s, c, h, e, r, \_, 1, 7, 7, -, 0, ,, , #, F, i, s, c, h, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 8, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 7, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, r, u, b, y, W, C, \_, 1, 8, 1, -, 0, ,, , #, R, u, b, y, W, C, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 5, 7, \_, 1, 8, 2, -, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, 4, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, 5, ,, , #, T, r, a, s, k, ,, , #, c, i, t, e, \_, r, e, f, -, l, i, f, e, z, a, p, \_, 1, 8, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, l, i, f, e, z, a, p, \_, 1, 8, 6, -, 1, ,, , #, C, o, s, g, r, o, v, e, ,, , #, c, i, t, e, \_, r, e, f, -, f, r, e, n, c, h, i, e, s, \_, 1, 8, 7, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, f, r, e, n, c, h, i, e, s, \_, 1, 8, 7, -, 1, ,, , #, H, o, l, l, y, w, o, o, d, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, 8, ,, , #, P, a, s, t, e, r, n, a, c, k, 1, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 8, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 0, ,, , #, I, n, v, e, r, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 1, ,, , #, P, a, s, t, e, r, n, a, c, k, 2, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 8, 5, \_, 1, 9, 3, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 8, 5, \_, 1, 9, 3, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 4, ,, , #, F, r, i, e, d, m, a, n, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 4, 5, 2, \_, 1, 9, 5, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 4, 5, 2, \_, 1, 9, 5, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, n, i, x, \_, 1, 9, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, n, i, x, \_, 1, 9, 6, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, n, i, x, \_, 1, 9, 6, -, 2, ,, , #, R, o, s, e, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 8, ,, , #, J, e, f, f, r, i, e, s, 1, ,, , #, c, i, t, e, \_, r, e, f, -, 1, 9, 9, ,, , #, J, e, f, f, r, i, e, s, 2, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 0, ,, , #, M, a, c, A, s, k, i, l, l, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 8, 8, 7, \_, 2, 0, 3, -, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 4, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, \_, 2, 0, 5, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, \_, 2, 0, 5, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, \_, 2, 0, 5, -, 2, ,, , #, c, i, t, e, \_, r, e, f, -, w, a, r, r, e, n, 1, 8, 0, 1, 9, 5, \_, 2, 0, 5, -, 3, ,, , #, W, a, r, r, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, f, r, i, t, z, \_, 2, 0, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, f, r, i, t, z, \_, 2, 0, 6, -, 1, ,, , #, F, r, i, t, z, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 7, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 8, ,, , #, F, B, I, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 0, ,, , #, P, a, p, p, a, l, a, r, d, o, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 3, 8, \_, 2, 1, 1, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 3, 8, \_, 2, 1, 1, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 3, 8, \_, 2, 1, 1, -, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, :, 2, \_, 2, 1, 2, -, 0, ,, , #, a, s, s, o, c, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 4, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 5, ,, , #, B, a, l, u, c, h, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 6, ,, , #, R, o, b, e, r, t, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 7, ,, , #, L, e, w, i, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 8, ,, , #, P, o, m, f, r, e, t, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 1, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 1, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 3, ,, , #, S, p, e, c, t, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 4, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 6, ,, , #, B, a, k, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 7, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 8, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 2, 9, ,, , #, C, B, S, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 0, ,, , #, S, h, e, n, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 1, 3, 4, 7, \_, 2, 3, 1, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 1, 3, 4, 7, \_, 2, 3, 1, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 1, 3, 4, 7, \_, 2, 3, 1, -, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 4, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, \_, 2, 3, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, B, u, g, l, i, o, s, i, \_, 2, 0, 0, 7, \_, 2, 3, 6, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, a, c, k, a, n, d, t, o, t, h, e, l, e, f, t, \_, 2, 3, 7, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, a, c, k, a, n, d, t, o, t, h, e, l, e, f, t, \_, 2, 3, 7, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 8, ,, , #, L, a, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 3, 9, ,, , #, D, a, v, y, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 0, ,, , #, K, i, r, k, w, o, o, d, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 1, ,, , #, S, h, a, w, e, s, q, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 2, ,, , #, K, i, r, k, w, o, o, d, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 3, ,, , #, K, i, r, k, w, o, o, d, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 4, ,, , #, O, g, g, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 5, ,, , #, O, g, g, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 6, ,, , #, E, v, i, c, a, ,, , #, c, i, t, e, \_, r, e, f, -, H, o, l, l, a, n, d, \_, 2, 4, 7, -, 0, ,, , #, H, o, l, l, a, n, d, ,, , #, c, i, t, e, \_, r, e, f, -, f, r, o, n, t, l, i, n, e, \_, 2, 4, 8, -, 0, ,, , #, F, r, o, n, t, l, i, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 4, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 6, 9, \_, 2, 5, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 6, 9, \_, 2, 5, 0, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 6, 9, \_, 2, 5, 0, -, 2, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 6, 9, \_, 2, 5, 0, -, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, f, o, r, d, \_, 2, 5, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, f, o, r, d, \_, 2, 5, 2, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, f, o, r, d, \_, 2, 5, 2, -, 2, ,, , #, F, o, r, d, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, r, e, i, t, z, e, s, \_, 2, 5, 4, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, r, e, i, t, z, e, s, \_, 2, 5, 4, -, 1, ,, , #, R, e, i, t, z, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, 6, ,, , #, j, e, w, e, l, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, 7, ,, , #, x, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 5, 8, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 7, 0, \_, 2, 5, 9, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 7, 0, \_, 2, 5, 9, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 7, 0, \_, 2, 5, 9, -, 2, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, 3, 7, 0, \_, 2, 5, 9, -, 3, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, t, h, e, h, o, r, r, o, r, \_, 2, 6, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, t, h, e, h, o, r, r, o, r, \_, 2, 6, 0, -, 1, ,, , #, c, i, t, e, \_, r, e, f, -, t, h, e, h, o, r, r, o, r, \_, 2, 6, 0, -, 2, ,, , #, K, u, r, t, z, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, 1, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, 3, ,, , #, S, t, o, k, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, 4, ,, , #, S, t, o, k, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, x, i, i, \_, 2, 6, 5, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, u, g, x, i, i, \_, 2, 6, 5, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, s, t, o, k, e, s, 2, \_, 2, 6, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, s, t, o, k, e, s, 2, \_, 2, 6, 6, -, 1, ,, , #, S, t, o, k, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, 7, ,, , #, S, t, o, k, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 6, 8, ,, , #, S, t, o, k, e, s, ,, , #, c, i, t, e, \_, r, e, f, -, C, B, A, R, e, p, o, r, t, \_, 2, 6, 9, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, C, B, A, R, e, p, o, r, t, \_, 2, 6, 9, -, 1, ,, , #, N, R, C, ,, , #, c, i, t, e, \_, r, e, f, -, J, u, s, t, i, c, e, D, e, p, t, M, e, m, o, \_, 2, 7, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, J, u, s, t, i, c, e, D, e, p, t, M, e, m, o, \_, 2, 7, 0, -, 1, ,, , #, W, e, l, d, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 1, ,, , #, A, A, R, B, R, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 1, 7, a, \_, 2, 7, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 0, 1, 7, a, \_, 2, 7, 2, -, 1, ,, , #, 2, 0, 1, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 3, ,, , #, H, o, r, n, a, d, a, y, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 4, ,, , #, A, A, R, B, R, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 5, ,, , #, U, n, l, o, c, k, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 6, ,, , #, L, a, r, d, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 7, ,, , #, S, t, o, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 8, ,, , #, S, c, i, e, n, t, i, s, t, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 7, 9, ,, , #, B, e, n, d, e, r, 1, ,, , #, c, i, t, e, \_, r, e, f, -, T, r, u, m, p, \_, 2, 8, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, T, r, u, m, p, \_, 2, 8, 0, -, 1, ,, , #, T, r, u, m, p, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 1, ,, , #, S, h, a, p, i, r, a, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 2, ,, , #, B, e, n, d, e, r, 1, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 3, ,, , #, B, i, d, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, m, a, t, z, a, \_, 2, 8, 4, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, m, a, t, z, a, \_, 2, 8, 4, -, 1, ,, , #, M, a, t, z, a, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 5, ,, , #, J, u, n, e, 2, 0, 2, 3, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 6, ,, , #, B, r, o, d, e, r, i, c, k, ,, , #, c, i, t, e, \_, r, e, f, -, G, a, l, l, u, p, ,, , \_, I, n, c, \_, 2, 8, 7, -, 0, ,, , #, G, a, l, l, u, p, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 8, ,, , #, C, h, i, n, n, i, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 8, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 0, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, A, R, R, B, -, C, 1, \_, 2, 9, 1, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, A, R, R, B, -, C, 1, \_, 2, 9, 1, -, 1, ,, , #, A, R, R, B, ,, , #, c, i, t, e, \_, r, e, f, -, x, l, i, i, \_, 2, 9, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, x, l, i, i, \_, 2, 9, 2, -, 1, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 3, ,, , #, S, u, m, m, e, r, s, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 4, ,, , #, P, a, t, t, e, r, s, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 5, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 6, ,, , #, n, y, m, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 7, ,, , #, M, i, c, h, a, u, d, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 8, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 2, 9, 9, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 0, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 8, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 1, ,, , #, C, a, r, l, s, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 2, ,, , #, O, g, g, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 3, ,, , #, P, o, s, n, e, r, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 4, ,, , #, O, g, g, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 5, ,, , #, S, h, e, n, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 6, ,, , #, S, a, b, a, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 7, ,, , #, R, u, s, s, o, ,, , #, c, i, t, e, \_, r, e, f, -, m, i, n, t, \_, 3, 0, 8, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, m, i, n, t, \_, 3, 0, 8, -, 1, ,, , #, N, A, S, A, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 0, 9, ,, , #, W, i, t, h, e, r, s, p, o, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 0, ,, , #, W, i, t, h, e, r, s, p, o, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 1, ,, , #, W, i, t, h, e, r, s, p, o, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 2, ,, , #, B, o, m, b, o, y, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 3, ,, , #, F, a, n, t, o, v, a, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 4, ,, , #, C, a, n, a, v, e, r, a, l, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 6, ,, , #, N, A, S, A, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 7, ,, , #, R, o, b, e, r, t, s, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 8, ,, , #, n, y, c, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 1, 9, ,, , #, N, a, y, l, o, r, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 0, ,, , #, T, r, a, s, k, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 1, ,, , #, S, h, a, h, i, d, u, l, l, a, h, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 2, ,, , #, B, a, l, l, ,, , #, c, i, t, e, \_, r, e, f, -, b, r, i, n, k, l, e, y, \_, 3, 2, 3, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, b, r, i, n, k, l, e, y, \_, 3, 2, 3, -, 1, ,, , #, B, r, i, n, k, l, e, y, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 4, ,, , #, D, u, g, a, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 5, ,, , #, B, e, a, t, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 6, ,, , #, W, h, i, t, e, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 7, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 8, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 2, 9, ,, , #, W, r, o, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 0, ,, , #, S, c, o, t, t, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 1, ,, , #, C, i, l, e, n, t, o, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 2, ,, , #, B, u, g, l, i, o, s, i, 2, 0, 0, 7, ,, , #, L, a, w, s, o, n, ,, , #, T, h, o, m, a, s, 1, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 3, ,, , #, G, o, l, d, s, t, e, i, n, ,, , #, V, o, l, l, m, a, n, ,, , #, J, o, r, d, i, s, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 4, ,, , #, L, a, w, s, o, n, 2, 0, 1, 1, ,, , #, M, a, s, l, i, n, ,, , #, M, o, r, r, i, s, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 5, ,, , #, S, t, r, a, v, i, n, s, k, y, ,, , #, L, e, n, g, e, l, ,, , #, P, a, y, n, e, ,, , #, c, i, t, e, \_, r, e, f, -, g, a, t, e, s, \_, 3, 3, 6, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, g, a, t, e, s, \_, 3, 3, 6, -, 1, ,, , #, G, a, t, e, s, 1, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 7, ,, , #, N, e, w, f, i, e, l, d, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 8, ,, , #, A, J, C, ,, , #, M, a, r, g, o, l, i, c, k, ,, , #, P, a, u, l, s, o, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 3, 9, ,, , #, D, e, t, t, m, a, r, ,, , #, H, o, g, a, n, ,, , #, P, e, t, r, i, d, i, s, ,, , #, c, i, t, e, \_, r, e, f, -, d, e, a, l, e, y, \_, 3, 4, 0, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, d, e, a, l, e, y, \_, 3, 4, 0, -, 1, ,, , #, n, p, s, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 4, 1, ,, , #, q, ,, , #, c, i, t, e, \_, r, e, f, -, r, e, l, i, c, s, \_, 3, 4, 2, -, 0, ,, , #, c, i, t, e, \_, r, e, f, -, r, e, l, i, c, s, \_, 3, 4, 2, -, 1, ,, , #, K, e, e, n, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 4, 3, ,, , #, C, a, t, a, f, a, l, q, u, e, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 4, 4, ,, , #, R, u, b, y, t, u, e, s, d, a, y, ,, , #, c, i, t, e, \_, r, e, f, -, 3, 4, 5, ,, , #, L, a, n, c, e, r, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 1, 4, 6, 7, 1, 3, 4, 0, 0, 2, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, P, r, e, s, s, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, H, e, r, i, t, a, g, e, \_, (, m, a, g, a, z, i, n, e, ), ,, , /, w, i, k, i, /, O, C, L, C, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, o, r, l, d, c, a, t, ., o, r, g, /, o, c, l, c, /, 9, 2, 3, 3, 2, 3, 1, 2, 7, ,, , /, w, i, k, i, /, D, a, v, i, d, \_, B, r, i, n, k, l, e, y, ,, , h, t, t, p, s, :, /, /, a, r, c, h, i, v, e, ., o, r, g, /, d, e, t, a, i, l, s, /, b, r, i, n, k, l, e, y, s, b, e, a, t, p, e, o, 0, 0, b, r, i, n, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 3, 7, 5, 4, 0, 6, 4, 4, 7, ,, , /, w, i, k, i, /, V, i, n, c, e, n, t, \_, B, u, g, l, i, o, s, i, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 3, 9, 3, 3, 3, 2, 1, 5, 5, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 3, 9, 3, 0, 4, 5, 2, 5, 3, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 3, 0, 3, 0, 0, 6, 4, 8, 9, 1, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 2, 9, 2, 7, 1, 4, 7, 7, 9, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 3, 1, 1, 0, 9, 3, 9, 1, 2, 5, ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, H, i, n, c, k, l, e, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 0, 6, 0, 3, 8, 0, 0, 3, 8, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 1, 9, 5, 1, 7, 3, 8, 3, 3, ,, , /, w, i, k, i, /, T, h, e, \_, N, e, w, \_, Y, o, r, k, \_, T, i, m, e, s, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, B, ., \_, S, e, m, p, l, e, \_, J, r, ., ,, , /, w, i, k, i, /, O, C, L, C, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, o, r, l, d, c, a, t, ., o, r, g, /, o, c, l, c, /, 1, 1, 4, 9, 1, 6, 2, 2, 8, 5, ,, , /, w, i, k, i, /, N, B, C, \_, N, e, w, s, ,, , /, w, i, k, i, /, A, S, I, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , h, t, t, p, s, :, /, /, w, w, w, ., a, m, a, z, o, n, ., c, o, m, /, d, p, /, B, 0, 0, 0, G, O, F, C, 9, O, ,, , /, w, i, k, i, /, O, C, L, C, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, o, r, l, d, c, a, t, ., o, r, g, /, o, c, l, c, /, 1, 3, 5, 5, 4, 9, 4, 8, ,, , /, w, i, k, i, /, J, a, c, k, \_, N, e, w, f, i, e, l, d, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 0, 3, 1, 2, 2, 6, 9, 0, 0, 5, ,, , /, w, i, k, i, /, G, e, r, a, l, d, \_, P, o, s, n, e, r, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 6, 7, 9, 4, 1, 8, 2, 5, 2, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 0, 7, 6, 1, 8, 6, 6, 5, 8, 9, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 1, 6, 2, 0, 4, 0, 2, 8, 0, 1, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, /, 9, 7, 8, 1, 4, 8, 0, 4, 3, 5, 4, 8, 3, ,, , /, w, i, k, i, /, I, S, B, N, \_, (, i, d, e, n, t, i, f, i, e, r, ), ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, B, o, o, k, S, o, u, r, c, e, s, 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u, i, r, e, ., c, o, m, /, a, r, t, i, c, l, e, /, 1, 9, 6, 8, /, 1, 2, /, 1, /, s, o, -, h, e, r, e, -, y, o, u, -, a, r, e, -, c, l, a, y, -, s, h, a, w, -, t, w, e, n, t, y, -, m, o, n, t, h, s, -, a, n, d, -, t, h, o, u, s, a, n, d, s, -, o, f, -, d, o, l, l, a, r, s, -, a, f, t, e, r, -, b, e, i, n, g, -, c, h, a, r, g, e, d, -, w, i, t, h, -, c, o, n, s, p, i, r, a, c, y, ,, , h, t, t, p, s, :, /, /, w, w, w, ., n, y, t, i, m, e, s, ., c, o, m, /, 2, 0, 2, 3, /, 0, 9, /, 0, 9, /, u, s, /, p, o, l, i, t, i, c, s, /, j, f, k, -, a, s, s, a, s, s, i, n, a, t, i, o, n, -, w, i, t, n, e, s, s, -, p, a, u, l, -, l, a, n, d, i, s, ., h, t, m, l, ?, s, m, i, d, =, e, m, -, s, h, a, r, e, ,, , h, t, t, p, s, :, /, /, w, e, b, ., a, r, c, h, i, v, e, ., o, r, g, /, w, e, b, /, 2, 0, 2, 3, 0, 9, 1, 0, 0, 3, 2, 6, 5, 5, /, h, t, t, p, s, :, /, /, w, w, w, ., n, y, t, i, m, e, s, ., c, o, m, /, 2, 0, 2, 3, /, 0, 9, /, 0, 9, /, u, s, /, p, o, l, i, t, i, c, s, /, j, f, k, -, a, s, s, a, s, s, 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1, 5, 0, 2, 1, /, h, t, t, p, s, :, /, /, w, w, w, ., t, h, e, g, u, a, r, d, i, a, n, ., c, o, m, /, w, o, r, l, d, /, s, h, o, r, t, c, u, t, s, /, 2, 0, 1, 3, /, o, c, t, /, 2, 1, /, p, r, e, s, i, d, e, n, t, s, -, b, r, a, i, n, -, m, i, s, s, i, n, g, -, m, i, s, l, a, i, d, -, b, o, d, y, -, p, a, r, t, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., n, y, t, i, m, e, s, ., c, o, m, /, 2, 0, 0, 7, /, 0, 6, /, 2, 6, /, w, a, s, h, i, n, g, t, o, n, /, 2, 6, c, i, a, -, t, i, m, e, l, i, n, e, ., h, t, m, l, ,, , h, t, t, p, s, :, /, /, w, w, w, ., t, h, e, d, a, i, l, y, b, e, a, s, t, ., c, o, m, /, e, x, -, c, i, a, -, c, h, i, e, f, -, g, i, v, e, s, -, j, f, k, -, a, s, s, a, s, s, i, n, a, t, i, o, n, -, s, o, m, e, -, q, a, n, o, n, -, s, t, y, l, e, -, s, p, i, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., n, y, t, i, m, e, s, ., c, o, m, /, 2, 0, 1, 3, /, 1, 1, /, 1, 7, /, m, o, v, i, e, s, /, a, b, r, a, h, a, m, -, z, a, p, r, u, d, e, r, -, a, n, d, -, t, h, e, -, e, v, o, 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s, :, /, /, w, e, b, ., a, r, c, h, i, v, e, ., o, r, g, /, w, e, b, /, 2, 0, 2, 0, 0, 7, 1, 2, 1, 0, 5, 5, 3, 8, /, h, t, t, p, s, :, /, /, w, w, w, ., t, h, e, g, u, a, r, d, i, a, n, ., c, o, m, /, n, e, w, s, /, 2, 0, 0, 1, /, j, u, n, /, 2, 2, /, g, u, a, r, d, i, a, n, o, b, i, t, u, a, r, i, e, s, ,, , h, t, t, p, s, :, /, /, w, e, b, ., a, r, c, h, i, v, e, ., o, r, g, /, w, e, b, /, 2, 0, 1, 2, 1, 1, 1, 7, 1, 5, 0, 8, 4, 5, /, h, t, t, p, :, /, /, w, w, w, ., j, f, k, ., o, r, g, /, g, o, /, a, b, o, u, t, /, f, a, q, s, #, f, a, q, -, c, a, t, -, f, 0, 1, -, g, e, n, e, r, a, l, ,, , h, t, t, p, :, /, /, w, w, w, ., j, f, k, ., o, r, g, /, g, o, /, a, b, o, u, t, /, f, a, q, s, #, f, a, q, -, c, a, t, -, f, 0, 1, -, g, e, n, e, r, a, l, ,, , h, t, t, p, s, :, /, /, w, w, w, ., n, y, t, i, m, e, s, ., c, o, m, /, 1, 9, 7, 1, /, 0, 9, /, 0, 7, /, a, r, c, h, i, v, e, s, /, a, t, -, l, a, s, t, -, t, h, e, -, p, e, r, f, o, r, m, a, n, c, e, s, -, b, e, g, i, n, ., h, t, m, l, 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i, n, -, H, i, s, t, o, r, y, /, N, o, v, e, m, b, e, r, -, 2, 2, -, 1, 9, 6, 3, -, D, e, a, t, h, -, o, f, -, t, h, e, -, P, r, e, s, i, d, e, n, t, ., a, s, p, x, ,, , h, t, t, p, s, :, /, /, a, r, c, h, i, v, e, ., o, r, g, /, d, e, t, a, i, l, s, /, n, a, t, i, o, n, a, l, s, e, c, u, r, i, t, y, a, r, c, h, i, v, e, -, w, e, i, s, b, e, r, g, ,, , h, t, t, p, s, :, /, /, b, o, o, k, s, ., g, o, o, g, l, e, ., c, o, m, /, b, o, o, k, s, ?, i, d, =, D, F, M, E, A, A, A, A, M, B, A, J, &, p, g, =, P, A, 3, 8, ,, , h, t, t, p, :, /, /, l, e, g, a, c, y, ., l, i, b, ., u, t, e, x, a, s, ., e, d, u, /, t, a, r, o, /, u, t, a, r, l, /, 0, 2, 3, 0, 7, /, a, r, l, -, 0, 2, 3, 0, 7, ., h, t, m, l, ,, , /, w, i, k, i, /, F, i, n, d, i, n, g, \_, a, i, d, ,, , /, w, i, k, i, /, U, n, i, v, e, r, s, i, t, y, \_, o, f, \_, T, e, x, a, s, \_, a, t, \_, A, r, l, i, n, g, t, o, n, #, L, i, b, r, a, r, i, e, s, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, A, s, s, a, s, s, i, n, a, t, i, o, n, 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/, w, i, k, i, /, N, e, l, l, i, e, \_, C, o, n, n, a, l, l, y, ,, , /, w, i, k, i, /, J, a, c, q, u, e, l, i, n, e, \_, K, e, n, n, e, d, y, \_, O, n, a, s, s, i, s, ,, , /, w, i, k, i, /, P, i, n, k, \_, C, h, a, n, e, l, \_, s, u, i, t, \_, o, f, \_, J, a, c, q, u, e, l, i, n, e, \_, B, o, u, v, i, e, r, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, a, m, e, s, \_, T, a, g, u, e, ,, , /, w, i, k, i, /, W, i, l, l, i, a, m, \_, G, r, e, e, r, ,, , /, w, i, k, i, /, R, o, y, \_, K, e, l, l, e, r, m, a, n, ,, , /, w, i, k, i, /, C, l, i, n, t, \_, H, i, l, l, \_, (, S, e, c, r, e, t, \_, S, e, r, v, i, c, e, ), ,, , /, w, i, k, i, /, Z, a, p, r, u, d, e, r, \_, f, i, l, m, ,, , /, w, i, k, i, /, A, b, r, a, h, a, m, \_, Z, a, p, r, u, d, e, r, ,, , /, w, i, k, i, /, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, T, e, x, a, s, \_, S, c, h, o, o, l, \_, B, o, o, k, \_, D, e, p, o, s, i, t, o, r, y, ,, , /, w, i, k, i, /, S, i, x, t, h, \_, F, l, o, o, r, \_, M, u, s, e, u, m, \_, a, t, \_, D, e, a, l, e, y, \_, P, l, a, z, a, ,, , /, w, i, k, i, /, S, S, -, 1, 0, 0, -, X, ,, , /, w, i, k, i, /, P, a, r, k, l, a, n, d, \_, M, e, m, o, r, i, a, l, \_, H, o, s, p, i, t, a, l, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, W, i, t, n, e, s, s, e, s, \_, t, o, \_, t, h, e, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, M, a, r, i, e, \_, M, u, c, h, m, o, r, e, ,, , /, w, i, k, i, /, O, r, v, i, l, l, e, \_, N, i, x, ,, , /, w, i, k, i, /, T, h, r, e, e, \_, t, r, a, m, p, s, ,, , /, w, i, k, i, /, S, p, a, n, i, s, h, \_, L, a, d, y, ,, , /, w, i, k, i, /, B, a, d, g, e, \_, M, a, n, ,, , /, w, i, k, i, /, U, m, b, r, e, l, l, a, \_, m, a, n, \_, (, J, F, K, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, ), ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, u, t, o, p, s, y, ,, , /, w, i, k, i, /, R, e, a, c, t, i, o, n, s, \_, t, o, \_, t, h, e, 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e, s, i, d, e, n, t, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, R, e, c, o, r, d, s, \_, C, o, l, l, e, c, t, i, o, n, \_, A, c, t, \_, o, f, \_, 1, 9, 9, 2, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, i, n, \_, p, o, p, u, l, a, r, \_, c, u, l, t, u, r, e, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, N, ., \_, M, c, C, l, e, l, l, a, n, d, ,, , /, w, i, k, i, /, C, h, a, r, l, e, s, \_, R, ., \_, B, a, x, t, e, r, ,, , /, w, i, k, i, /, M, a, l, c, o, l, m, \_, P, e, r, r, y, \_, (, p, h, y, s, i, c, i, a, n, ), ,, , /, w, i, k, i, /, E, a, r, l, \_, R, o, s, e, \_, (, c, o, r, o, n, e, r, ), ,, , /, w, i, k, i, /, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, ,, , /, w, i, k, i, /, S, t, a, t, e, \_, f, u, n, e, r, a, l, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, d, i, g, n, i, t, a, r, i, e, s, \_, a, t, \_, t, h, e, \_, s, t, a, t, e, \_, f, u, n, e, r, a, l, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, E, t, e, r, n, a, l, \_, F, l, a, m, e, ,, , /, w, i, k, i, /, B, l, a, c, k, \_, J, a, c, k, \_, (, h, o, r, s, e, ), ,, , /, w, i, k, i, /, W, a, r, r, e, n, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, T, r, i, a, l, \_, o, f, \_, C, l, a, y, \_, S, h, a, w, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, S, e, l, e, c, t, \_, C, o, m, m, i, t, t, e, e, \_, o, n, \_, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, R, e, s, e, a, r, c, h, e, r, s, \_, o, f, \_, t, h, e, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, \_, t, a, l, k, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, E, d, i, t, P, a, g, e, /, T, e, m, p, l, a, t, e, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, s, e, n, a, t, o, r, s, \_, f, r, o, m, \_, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, r, e, p, r, e, s, e, n, t, a, t, i, v, e, s, \_, f, r, o, m, \_, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, M, a, s, s, a, c, h, u, s, e, t, t, s, %, 2, 7, s, \_, 1, 1, t, h, \_, c, o, n, g, r, e, s, s, i, o, n, a, l, \_, d, i, s, t, r, i, c, t, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, c, y, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, T, i, m, e, l, i, n, e, \_, o, f, \_, t, h, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, p, r, e, s, i, d, e, n, c, y, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, i, a, l, \_, t, r, a, n, s, i, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, I, n, a, u, g, u, r, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, #, A, d, m, i, n, i, s, t, r, a, t, i, o, n, ,, , \_, C, a, b, i, n, e, t, ,, , \_, a, n, d, \_, j, u, d, i, c, i, a, l, \_, a, p, p, o, i, n, t, m, e, n, t, s, \_, 1, 9, 6, 1, –, 6, 3, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, f, e, d, e, r, a, l, \_, j, u, d, g, e, s, \_, a, p, p, o, i, n, t, e, d, \_, b, y, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, S, u, p, r, e, m, e, \_, C, o, u, r, t, \_, c, a, n, d, i, d, a, t, e, s, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, A, u, t, h, o, r, :, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, /, E, x, e, c, u, t, i, v, e, \_, o, r, d, e, r, s, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, s, o, u, r, c, e, ., o, r, g, /, w, i, k, i, /, A, u, t, h, o, r, :, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, /, P, r, e, s, i, d, e, n, t, i, a, l, \_, P, r, o, c, l, a, m, a, t, i, o, n, s, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, p, e, o, p, l, e, \_, p, a, r, d, o, n, e, d, \_, o, r, \_, g, r, a, n, t, e, d, \_, c, l, e, m, e, n, c, y, \_, b, y, \_, t, h, e, \_, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, #, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, C, l, e, a, n, \_, A, i, r, \_, A, c, t, \_, (, U, n, i, t, e, d, \_, S, t, a, t, e, s, ), ,, , /, w, i, k, i, /, C, o, m, m, u, n, i, c, a, t, i, o, n, s, \_, S, a, t, e, l, l, i, t, e, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 2, ,, , /, w, i, k, i, /, C, o, m, m, u, n, i, t, y, \_, M, e, n, t, a, l, \_, H, e, a, l, t, h, \_, A, c, t, ,, , /, w, i, k, i, /, E, q, u, a, l, \_, P, a, y, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 3, ,, , /, w, i, k, i, /, E, x, e, c, u, t, i, v, e, \_, O, r, d, e, r, \_, 1, 0, 9, 2, 5, ,, , /, w, i, k, i, /, E, x, e, c, u, t, i, v, e, \_, O, r, d, e, r, \_, 1, 1, 0, 6, 3, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, m, a, r, c, h, ,, , /, w, i, k, i, /, F, o, o, d, \_, f, o, r, \_, P, e, a, c, e, ,, , /, w, i, k, i, /, N, e, w, \_, F, r, o, n, t, i, e, r, ,, , /, w, i, k, i, /, S, u, p, p, l, e, m, e, n, t, a, l, \_, N, u, t, r, i, t, i, o, n, \_, A, s, s, i, s, t, a, n, c, e, \_, P, r, o, g, r, a, m, #, P, i, l, o, t, \_, F, o, o, d, \_, S, t, a, m, p, \_, P, r, o, g, r, a, m, \_, (, 1, 9, 6, 1, –, 1, 9, 6, 4, ), ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, i, a, l, \_, M, e, d, a, l, \_, o, f, \_, F, r, e, e, d, o, m, ,, , /, w, i, k, i, /, S, p, a, c, e, \_, p, o, l, i, c, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, #, K, e, n, n, e, d, y, \_, a, d, m, i, n, i, s, t, r, a, t, i, o, n, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, i, a, l, \_, C, o, m, m, i, s, s, i, o, n, \_, o, n, \_, t, h, e, \_, S, t, a, t, u, s, \_, o, f, \_, W, o, m, e, n, ,, , /, w, i, k, i, /, S, t, a, n, d, \_, i, n, \_, t, h, e, \_, S, c, h, o, o, l, h, o, u, s, e, \_, D, o, o, r, ,, , /, w, i, k, i, /, V, o, t, e, r, \_, E, d, u, c, a, t, i, o, n, \_, P, r, o, j, e, c, t, ,, , /, w, i, k, i, /, A, l, l, -, C, h, a, n, n, e, l, \_, R, e, c, e, i, v, e, r, \_, A, c, t, ,, , /, w, i, k, i, /, O, i, l, \_, P, o, l, l, u, t, i, o, n, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 1, ,, , /, w, i, k, i, /, R, e, v, e, n, u, e, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 2, ,, , /, w, i, k, i, /, C, o, n, s, o, l, i, d, a, t, e, d, \_, F, a, r, m, \_, a, n, d, \_, R, u, r, a, l, \_, D, e, v, e, l, o, p, m, e, n, t, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 1, ,, , /, w, i, k, i, /, F, o, r, e, i, g, n, \_, p, o, l, i, c, y, \_, o, f, \_, t, h, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, d, m, i, n, i, s, t, r, a, t, i, o, n, ,, , /, w, i, k, i, /, A, l, l, i, a, n, c, e, \_, f, o, r, \_, P, r, o, g, r, e, s, s, ,, , /, w, i, k, i, /, A, r, m, s, \_, C, o, n, t, r, o, l, \_, a, n, d, \_, D, i, s, a, r, m, a, m, e, n, t, \_, A, g, e, n, c, y, ,, , /, w, i, k, i, /, P, a, r, t, i, a, l, \_, N, u, c, l, e, a, r, \_, T, e, s, t, \_, B, a, n, \_, T, r, e, a, t, y, ,, , /, w, i, k, i, /, F, l, e, x, i, b, l, e, \_, r, e, s, p, o, n, s, e, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, D, o, c, t, r, i, n, e, ,, , /, w, i, k, i, /, P, e, a, c, e, \_, C, o, r, p, s, ,, , /, w, i, k, i, /, T, r, a, d, e, \_, E, x, p, a, n, s, i, o, n, \_, A, c, t, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, A, g, e, n, c, y, \_, f, o, r, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, D, e, v, e, l, o, p, m, e, n, t, ,, , /, w, i, k, i, /, V, i, e, t, n, a, m, \_, W, a, r, #, T, h, e, \_, K, e, n, n, e, d, y, \_, y, e, a, r, s, ,, , \_, 1, 9, 6, 1, –, 6, 3, ,, , /, w, i, k, i, /, B, a, y, \_, o, f, \_, P, i, g, s, \_, I, n, v, a, s, i, o, n, ,, , /, w, i, k, i, /, C, u, b, a, n, \_, P, r, o, j, e, c, t, ,, , /, w, i, k, i, /, C, u, b, a, n, \_, M, i, s, s, i, l, e, \_, C, r, i, s, i, s, ,, , /, w, i, k, i, /, E, X, C, O, M, M, ,, , /, w, i, k, i, /, B, e, r, l, i, n, \_, C, r, i, s, i, s, \_, o, f, \_, 1, 9, 6, 1, ,, , /, w, i, k, i, /, M, o, s, c, o, w, %, E, 2, %, 8, 0, %, 9, 3, W, a, s, h, i, n, g, t, o, n, \_, h, o, t, l, i, n, e, ,, , /, w, i, k, i, /, V, i, e, n, n, a, \_, s, u, m, m, i, t, ,, , /, w, i, k, i, /, S, S, -, 1, 0, 0, -, X, ,, , /, w, i, k, i, /, S, /, Y, \_, M, a, n, i, t, o, u, ,, , /, w, i, k, i, /, R, e, s, o, l, u, t, e, \_, d, e, s, k, ,, , /, w, i, k, i, /, S, i, t, u, a, t, i, o, n, \_, R, o, o, m, ,, , /, w, i, k, i, /, F, i, l, e, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , \_, W, h, i, t, e, \_, H, o, u, s, e, \_, c, o, l, o, r, \_, p, h, o, t, o, \_, p, o, r, t, r, a, i, t, ., j, p, g, ,, , /, w, i, k, i, /, F, i, l, e, :, S, e, a, l, \_, o, f, \_, t, h, e, \_, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ., s, v, g, ,, , /, w, i, k, i, /, I, n, a, u, g, u, r, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, #, T, h, e, \_, i, n, a, u, g, u, r, a, l, \_, a, d, d, r, e, s, s, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, U, n, i, v, e, r, s, i, t, y, \_, s, p, e, e, c, h, ,, , /, w, i, k, i, /, W, e, \_, c, h, o, o, s, e, \_, t, o, \_, g, o, \_, t, o, \_, t, h, e, \_, M, o, o, n, ,, , /, w, i, k, i, /, R, e, p, o, r, t, \_, t, o, \_, t, h, e, \_, A, m, e, r, i, c, a, n, \_, P, e, o, p, l, e, \_, o, n, \_, C, i, v, i, l, \_, R, i, g, h, t, s, ,, , /, w, i, k, i, /, I, c, h, \_, b, i, n, \_, e, i, n, \_, B, e, r, l, i, n, e, r, ,, , /, w, i, k, i, /, A, \_, r, i, s, i, n, g, \_, t, i, d, e, \_, l, i, f, t, s, \_, a, l, l, \_, b, o, a, t, s, ,, , /, w, i, k, i, /, R, e, m, a, r, k, s, \_, a, t, \_, A, m, h, e, r, s, t, \_, C, o, l, l, e, g, e, \_, o, n, \_, t, h, e, \_, A, r, t, s, ,, , /, w, i, k, i, /, E, l, e, c, t, o, r, a, l, \_, h, i, s, t, o, r, y, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, 1, 9, 4, 6, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, o, f, \_, R, e, p, r, e, s, e, n, t, a, t, i, v, e, s, \_, e, l, e, c, t, i, o, n, s, ,, , /, w, i, k, i, /, 1, 9, 4, 8, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, o, f, \_, R, e, p, r, e, s, e, n, t, a, t, i, v, e, s, \_, e, l, e, c, t, i, o, n, s, ,, , /, w, i, k, i, /, 1, 9, 5, 0, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, H, o, u, s, e, \_, o, f, \_, R, e, p, r, e, s, e, n, t, a, t, i, v, e, s, \_, e, l, e, c, t, i, o, n, s, ,, , /, w, i, k, i, /, 1, 9, 5, 2, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, S, e, n, a, t, e, \_, e, l, e, c, t, i, o, n, \_, i, n, \_, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, 1, 9, 5, 8, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, S, e, n, a, t, e, \_, e, l, e, c, t, i, o, n, \_, i, n, \_, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, 1, 9, 6, 0, \_, D, e, m, o, c, r, a, t, i, c, \_, P, a, r, t, y, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, p, r, i, m, a, r, i, e, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, 1, 9, 6, 0, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, c, a, m, p, a, i, g, n, ,, , /, w, i, k, i, /, 1, 9, 5, 6, \_, D, e, m, o, c, r, a, t, i, c, \_, N, a, t, i, o, n, a, l, \_, C, o, n, v, e, n, t, i, o, n, ,, , /, w, i, k, i, /, 1, 9, 6, 0, \_, D, e, m, o, c, r, a, t, i, c, \_, N, a, t, i, o, n, a, l, \_, C, o, n, v, e, n, t, i, o, n, ,, , /, w, i, k, i, /, 1, 9, 6, 0, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, e, l, e, c, t, i, o, n, ,, , /, w, i, k, i, /, 1, 9, 6, 0, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, d, e, b, a, t, e, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, \_, N, a, t, i, o, n, a, l, \_, H, i, s, t, o, r, i, c, \_, S, i, t, e, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, C, o, m, p, o, u, n, d, ,, , /, w, i, k, i, /, H, i, c, k, o, r, y, \_, H, i, l, l, \_, (, M, c, L, e, a, n, ,, , \_, V, i, r, g, i, n, i, a, ), ,, , /, w, i, k, i, /, W, e, x, f, o, r, d, \_, (, M, a, r, s, h, a, l, l, ,, , \_, V, i, r, g, i, n, i, a, ), ,, , /, w, i, k, i, /, P, a, t, r, o, l, \_, t, o, r, p, e, d, o, \_, b, o, a, t, \_, P, T, -, 1, 0, 9, ,, , /, w, i, k, i, /, B, i, u, k, u, \_, G, a, s, a, \_, a, n, d, \_, E, r, o, n, i, \_, K, u, m, a, n, a, ,, , /, w, i, k, i, /, A, r, t, h, u, r, \_, R, e, g, i, n, a, l, d, \_, E, v, a, n, s, ,, , /, w, i, k, i, /, P, a, t, r, o, l, \_, t, o, r, p, e, d, o, \_, b, o, a, t, \_, P, T, -, 5, 9, ,, , /, w, i, k, i, /, C, a, s, t, l, e, \_, H, o, t, \_, S, p, r, i, n, g, s, \_, (, A, r, i, z, o, n, a, ), ,, , /, w, i, k, i, /, H, a, m, m, e, r, s, m, i, t, h, \_, F, a, r, m, ,, , /, w, i, k, i, /, C, o, r, e, t, t, a, \_, S, c, o, t, t, \_, K, i, n, g, #, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, p, h, o, n, e, \_, c, a, l, l, ,, , /, w, i, k, i, /, R, o, c, k, i, n, g, \_, c, h, a, i, r, #, T, h, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, R, o, c, k, i, n, g, \_, C, h, a, i, r, ,, , /, w, i, k, i, /, H, a, p, p, y, \_, B, i, r, t, h, d, a, y, ,, , \_, M, r, ., \_, P, r, e, s, i, d, e, n, t, ,, , /, w, i, k, i, /, W, h, y, \_, E, n, g, l, a, n, d, \_, S, l, e, p, t, ,, , /, w, i, k, i, /, P, r, o, f, i, l, e, s, \_, i, n, \_, C, o, u, r, a, g, e, ,, , /, w, i, k, i, /, A, \_, N, a, t, i, o, n, \_, o, f, \_, I, m, m, i, g, r, a, n, t, s, ,, , /, w, i, k, i, /, T, i, m, e, l, i, n, e, \_, o, f, \_, t, h, e, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, ,, , /, w, i, k, i, /, R, e, a, c, t, i, o, n, s, \_, t, o, \_, t, h, e, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, i, n, \_, p, o, p, u, l, a, r, \_, c, u, l, t, u, r, e, ,, , /, w, i, k, i, /, S, t, a, t, e, \_, f, u, n, e, r, a, l, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, B, l, a, c, k, \_, J, a, c, k, \_, (, h, o, r, s, e, ), ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, d, i, g, n, i, t, a, r, i, e, s, \_, a, t, \_, t, h, e, \_, s, t, a, t, e, \_, f, u, n, e, r, a, l, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, E, t, e, r, n, a, l, \_, F, l, a, m, e, ,, , /, w, i, k, i, /, B, i, b, l, i, o, g, r, a, p, h, y, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, P, r, e, s, i, d, e, n, t, i, a, l, \_, L, i, b, r, a, r, y, \_, a, n, d, \_, M, u, s, e, u, m, ,, , /, w, i, k, i, /, P, r, o, f, i, l, e, \_, i, n, \_, C, o, u, r, a, g, e, \_, A, w, a, r, d, ,, , /, w, i, k, i, /, T, w, e, n, t, y, -, f, o, u, r, t, h, \_, A, m, e, n, d, m, e, n, t, \_, t, o, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, o, n, s, t, i, t, u, t, i, o, n, ,, , /, w, i, k, i, /, C, i, v, i, l, \_, R, i, g, h, t, s, \_, A, c, t, \_, o, f, \_, 1, 9, 6, 4, ,, , /, w, i, k, i, /, A, p, o, l, l, o, \_, 1, 1, ,, , /, w, i, k, i, /, E, q, u, a, l, \_, E, m, p, l, o, y, m, e, n, t, \_, O, p, p, o, r, t, u, n, i, t, y, \_, C, o, m, m, i, s, s, i, o, n, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, S, p, a, c, e, \_, C, e, n, t, e, r, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, R, o, u, n, d, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, D, e, p, a, r, t, m, e, n, t, \_, o, f, \_, H, o, u, s, i, n, g, \_, a, n, d, \_, U, r, b, a, n, \_, D, e, v, e, l, o, p, m, e, n, t, ,, , /, w, i, k, i, /, A, m, e, r, i, C, o, r, p, s, \_, V, I, S, T, A, ,, , /, w, i, k, i, /, C, u, l, t, u, r, a, l, \_, d, e, p, i, c, t, i, o, n, s, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, F, i, l, m, s, \_, a, b, o, u, t, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, h, a, l, f, \_, d, o, l, l, a, r, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, o, n, \_, U, ., S, ., \_, p, o, s, t, a, g, e, \_, s, t, a, m, p, s, #, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, F, i, v, e, \_, c, e, n, t, s, \_, J, o, h, n, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, L, i, n, c, o, l, n, %, E, 2, %, 8, 0, %, 9, 3, K, e, n, n, e, d, y, \_, c, o, i, n, c, i, d, e, n, c, e, s, \_, u, r, b, a, n, \_, l, e, g, e, n, d, ,, , /, w, i, k, i, /, O, p, e, r, a, t, i, o, n, \_, S, a, i, l, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, t, h, i, n, g, s, \_, n, a, m, e, d, \_, a, f, t, e, r, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, H, a, r, v, a, r, d, \_, K, e, n, n, e, d, y, \_, S, c, h, o, o, l, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, C, e, n, t, e, r, \_, f, o, r, \_, t, h, e, \_, P, e, r, f, o, r, m, i, n, g, \_, A, r, t, s, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, F, e, d, e, r, a, l, \_, B, u, i, l, d, i, n, g, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, A, i, r, p, o, r, t, ,, , /, w, i, k, i, /, S, t, a, t, u, e, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, (, B, o, s, t, o, n, ), ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, \_, (, B, r, o, o, k, l, y, n, ), ,, , /, w, i, k, i, /, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, \_, (, H, y, a, n, n, i, s, ,, , \_, M, a, s, s, a, c, h, u, s, e, t, t, s, ), ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, ,, , \_, L, o, n, d, o, n, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, i, t, z, g, e, r, a, l, d, \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, \_, (, P, o, r, t, l, a, n, d, ,, , \_, O, r, e, g, o, n, ), ,, , /, w, i, k, i, /, R, u, n, n, y, m, e, d, e, #, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, A, r, b, o, r, e, t, u, m, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, M, e, m, o, r, i, a, l, \_, B, r, i, d, g, e, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, S, p, e, c, i, a, l, \_, W, a, r, f, a, r, e, \_, C, e, n, t, e, r, \_, a, n, d, \_, S, c, h, o, o, l, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, U, n, i, v, e, r, s, i, t, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, S, t, a, d, i, u, m, \_, (, P, h, i, l, a, d, e, l, p, h, i, a, ), ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, E, x, p, r, e, s, s, w, a, y, ,, , /, w, i, k, i, /, M, o, u, n, t, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, M, V, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, U, S, S, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, (, C, V, -, 6, 7, ), ,, , /, w, i, k, i, /, U, S, S, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, (, C, V, N, -, 7, 9, ), ,, , /, w, i, k, i, /, Y, a, d, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, K, e, n, n, e, d, y, \_, f, a, m, i, l, y, ,, , /, w, i, k, i, /, J, a, c, q, u, e, l, i, n, e, \_, K, e, n, n, e, d, y, \_, O, n, a, s, s, i, s, ,, , /, w, i, k, i, /, C, a, r, o, l, i, n, e, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, J, r, ., ,, , /, w, i, k, i, /, P, a, t, r, i, c, k, \_, B, o, u, v, i, e, r, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, R, o, s, e, \_, S, c, h, l, o, s, s, b, e, r, g, ,, , /, w, i, k, i, /, T, a, t, i, a, n, a, \_, S, c, h, l, o, s, s, b, e, r, g, ,, , /, w, i, k, i, /, J, a, c, k, \_, S, c, h, l, o, s, s, b, e, r, g, ,, , /, w, i, k, i, /, J, o, s, e, p, h, \_, P, ., \_, K, e, n, n, e, d, y, \_, S, r, ., ,, , /, w, i, k, i, /, R, o, s, e, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, s, e, p, h, \_, P, ., \_, K, e, n, n, e, d, y, \_, J, r, ., ,, , /, w, i, k, i, /, R, o, s, e, m, a, r, y, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, K, a, t, h, l, e, e, n, \_, C, a, v, e, n, d, i, s, h, ,, , \_, M, a, r, c, h, i, o, n, e, s, s, \_, o, f, \_, H, a, r, t, i, n, g, t, o, n, ,, , /, w, i, k, i, /, E, u, n, i, c, e, \_, K, e, n, n, e, d, y, \_, S, h, r, i, v, e, r, ,, , /, w, i, k, i, /, P, a, t, r, i, c, i, a, \_, K, e, n, n, e, d, y, \_, L, a, w, f, o, r, d, ,, , /, w, i, k, i, /, R, o, b, e, r, t, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, e, a, n, \_, K, e, n, n, e, d, y, \_, S, m, i, t, h, ,, , /, w, i, k, i, /, T, e, d, \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, P, ., \_, J, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, J, o, h, n, \_, F, ., \_, F, i, t, z, g, e, r, a, l, d, ,, , /, w, i, k, i, /, P, u, s, h, i, n, k, a, ,, , /, w, i, k, i, /, D, w, i, g, h, t, \_, D, ., \_, E, i, s, e, n, h, o, w, e, r, ,, , /, w, i, k, i, /, L, y, n, d, o, n, \_, B, ., \_, J, o, h, n, s, o, n, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, a, t, t, e, m, p, t, s, \_, o, n, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, \_, t, a, l, k, :, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, a, t, t, e, m, p, t, s, \_, o, n, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, E, d, i, t, P, a, g, e, /, T, e, m, p, l, a, t, e, :, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, a, t, t, e, m, p, t, s, \_, o, n, \_, p, r, e, s, i, d, e, n, t, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, P, r, e, s, i, d, e, n, t, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, A, b, r, a, h, a, m, \_, L, i, n, c, o, l, n, ,, , /, w, i, k, i, /, J, o, h, n, \_, W, i, l, k, e, s, \_, B, o, o, t, h, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, a, m, e, s, \_, A, ., \_, G, a, r, f, i, e, l, d, ,, , /, w, i, k, i, /, C, h, a, r, l, e, s, \_, J, ., \_, G, u, i, t, e, a, u, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, W, i, l, l, i, a, m, \_, M, c, K, i, n, l, e, y, ,, , /, w, i, k, i, /, L, e, o, n, \_, C, z, o, l, g, o, s, z, ,, , /, w, i, k, i, /, L, e, e, \_, H, a, r, v, e, y, \_, O, s, w, a, l, d, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, L, a, w, r, e, n, c, e, \_, (, f, a, i, l, e, d, \_, a, s, s, a, s, s, i, n, ), ,, , /, w, i, k, i, /, B, a, l, t, i, m, o, r, e, \_, P, l, o, t, ,, , /, w, i, k, i, /, A, t, t, e, m, p, t, e, d, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, T, h, e, o, d, o, r, e, \_, R, o, o, s, e, v, e, l, t, ,, , /, w, i, k, i, /, G, i, u, s, e, p, p, e, \_, Z, a, n, g, a, r, a, ,, , /, w, i, k, i, /, A, t, t, e, m, p, t, e, d, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, H, a, r, r, y, \_, S, ., \_, T, r, u, m, a, n, ,, , /, w, i, k, i, /, R, i, c, h, a, r, d, \_, P, a, u, l, \_, P, a, v, l, i, c, k, ,, , /, w, i, k, i, /, S, a, m, u, e, l, \_, B, y, c, k, ,, , /, w, i, k, i, /, A, t, t, e, m, p, t, e, d, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, G, e, r, a, l, d, \_, F, o, r, d, \_, i, n, \_, S, a, c, r, a, m, e, n, t, o, ,, , /, w, i, k, i, /, A, t, t, e, m, p, t, e, d, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, G, e, r, a, l, d, \_, F, o, r, d, \_, i, n, \_, S, a, n, \_, F, r, a, n, c, i, s, c, o, ,, , /, w, i, k, i, /, A, t, t, e, m, p, t, e, d, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, R, o, n, a, l, d, \_, R, e, a, g, a, n, ,, , /, w, i, k, i, /, F, r, a, n, c, i, s, c, o, \_, M, a, r, t, i, n, \_, D, u, r, a, n, ,, , /, w, i, k, i, /, S, e, c, u, r, i, t, y, \_, i, n, c, i, d, e, n, t, s, \_, i, n, v, o, l, v, i, n, g, \_, G, e, o, r, g, e, \_, W, ., \_, B, u, s, h, ,, , /, w, i, k, i, /, S, e, c, u, r, i, t, y, \_, i, n, c, i, d, e, n, t, s, \_, i, n, v, o, l, v, i, n, g, \_, B, a, r, a, c, k, \_, O, b, a, m, a, ,, , /, w, i, k, i, /, S, e, c, u, r, i, t, y, \_, i, n, c, i, d, e, n, t, s, \_, i, n, v, o, l, v, i, n, g, \_, D, o, n, a, l, d, \_, T, r, u, m, p, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, \_, a, t, t, e, m, p, t, s, \_, a, n, d, \_, p, l, o, t, s, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, :, U, S, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, T, e, m, p, l, a, t, e, \_, t, a, l, k, :, U, S, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, S, p, e, c, i, a, l, :, E, d, i, t, P, a, g, e, /, T, e, m, p, l, a, t, e, :, U, S, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, T, i, m, e, l, i, n, e, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, O, u, t, l, i, n, e, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, G, e, o, l, o, g, i, c, a, l, \_, h, i, s, t, o, r, y, \_, o, f, \_, N, o, r, t, h, \_, A, m, e, r, i, c, a, ,, , /, w, i, k, i, /, P, r, e, -, C, o, l, u, m, b, i, a, n, \_, e, r, a, ,, , /, w, i, k, i, /, C, o, l, o, n, i, a, l, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, E, x, p, l, o, r, a, t, i, o, n, \_, o, f, \_, N, o, r, t, h, \_, A, m, e, r, i, c, a, ,, , /, w, i, k, i, /, E, u, r, o, p, e, a, n, \_, c, o, l, o, n, i, z, a, t, i, o, n, \_, o, f, \_, t, h, e, \_, A, m, e, r, i, c, a, s, ,, , /, w, i, k, i, /, N, a, t, i, v, e, \_, A, m, e, r, i, c, a, n, \_, d, i, s, e, a, s, e, \_, a, n, d, \_, e, p, i, d, e, m, i, c, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, J, a, m, e, s, t, o, w, n, ,, , \_, V, i, r, g, i, n, i, a, \_, (, 1, 6, 0, 7, %, E, 2, %, 8, 0, %, 9, 3, 1, 6, 9, 9, ), ,, , /, w, i, k, i, /, T, h, i, r, t, e, e, n, \_, C, o, l, o, n, i, e, s, ,, , /, w, i, k, i, /, A, t, l, a, n, t, i, c, \_, s, l, a, v, e, \_, t, r, a, d, e, ,, , /, w, i, k, i, /, K, i, n, g, \_, W, i, l, l, i, a, m, %, 2, 7, s, \_, W, a, r, ,, , /, w, i, k, i, /, Q, u, e, e, n, \_, A, n, n, e, %, 2, 7, s, \_, W, a, r, ,, , /, w, i, k, i, /, D, u, m, m, e, r, %, 2, 7, s, \_, W, a, r, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, G, r, e, a, t, \_, A, w, a, k, e, n, i, n, g, ,, , /, w, i, k, i, /, W, a, r, \_, o, f, \_, J, e, n, k, i, n, s, %, 2, 7, \_, E, a, r, ,, , /, w, i, k, i, /, K, i, n, g, \_, G, e, o, r, g, e, %, 2, 7, s, \_, W, a, r, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, R, e, v, o, l, u, t, i, o, n, #, O, r, i, g, i, n, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, E, n, l, i, g, h, t, e, n, m, e, n, t, ,, , /, w, i, k, i, /, F, r, e, n, c, h, \_, a, n, d, \_, I, n, d, i, a, n, \_, W, a, r, ,, , /, w, i, k, i, /, R, o, y, a, l, \_, P, r, o, c, l, a, m, a, t, i, o, n, \_, o, f, \_, 1, 7, 6, 3, ,, , /, w, i, k, i, /, S, u, g, a, r, \_, A, c, t, ,, , /, w, i, k, i, /, S, t, a, m, p, \_, A, c, t, \_, C, o, n, g, r, e, s, s, ,, , /, w, i, k, i, /, S, o, n, s, \_, o, f, \_, L, i, b, e, r, t, y, ,, , /, w, i, k, i, /, B, o, s, t, o, n, \_, M, a, s, s, a, c, r, e, ,, , /, w, i, k, i, /, B, o, s, t, o, n, \_, T, e, a, \_, P, a, r, t, y, ,, , /, w, i, k, i, /, I, n, t, o, l, e, r, a, b, l, e, \_, A, c, t, s, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, C, o, n, t, i, n, e, n, t, a, l, \_, C, o, n, g, r, e, s, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 7, 7, 6, %, E, 2, %, 8, 0, %, 9, 3, 1, 7, 8, 9, ), ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, R, e, v, o, l, u, t, i, o, n, ,, , /, w, i, k, i, /, W, a, r, ,, , /, w, i, k, i, /, S, e, c, o, n, d, \_, C, o, n, t, i, n, e, n, t, a, l, \_, C, o, n, g, r, e, s, s, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, D, e, c, l, a, r, a, t, i, o, n, \_, o, f, \_, I, n, d, e, p, e, n, d, e, n, c, e, ,, , /, w, i, k, i, /, T, r, e, a, t, y, \_, o, f, \_, P, a, r, i, s, \_, (, 1, 7, 8, 3, ), ,, , /, w, i, k, i, /, C, o, n, f, e, d, e, r, a, t, i, o, n, \_, P, e, r, i, o, d, ,, , /, w, i, k, i, /, P, h, i, l, a, d, e, l, p, h, i, a, \_, M, u, t, i, n, y, ,, , /, w, i, k, i, /, S, h, a, y, s, %, 2, 7, \_, R, e, b, e, l, l, i, o, n, ,, , /, w, i, k, i, /, N, o, r, t, h, w, e, s, t, \_, O, r, d, i, n, a, n, c, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, o, n, s, t, i, t, u, t, i, o, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 7, 8, 9, %, E, 2, %, 8, 0, %, 9, 3, 1, 8, 4, 9, ), ,, , /, w, i, k, i, /, F, e, d, e, r, a, l, i, s, t, \_, E, r, a, ,, , /, w, i, k, i, /, W, h, i, s, k, e, y, \_, R, e, b, e, l, l, i, o, n, ,, , /, w, i, k, i, /, Q, u, a, s, i, -, W, a, r, ,, , /, w, i, k, i, /, J, e, f, f, e, r, s, o, n, i, a, n, \_, D, e, m, o, c, r, a, c, y, ,, , /, w, i, k, i, /, L, o, u, i, s, i, a, n, a, \_, P, u, r, c, h, a, s, e, ,, , /, w, i, k, i, /, W, a, r, \_, o, f, \_, 1, 8, 1, 2, ,, , /, w, i, k, i, /, E, r, a, \_, o, f, \_, G, o, o, d, \_, F, e, e, l, i, n, g, s, ,, , /, w, i, k, i, /, M, i, s, s, o, u, r, i, \_, C, o, m, p, r, o, m, i, s, e, ,, , /, w, i, k, i, /, M, o, n, r, o, e, \_, D, o, c, t, r, i, n, e, ,, , /, w, i, k, i, /, J, a, c, k, s, o, n, i, a, n, \_, D, e, m, o, c, r, a, c, y, ,, , /, w, i, k, i, /, T, r, a, i, l, \_, o, f, \_, T, e, a, r, s, ,, , /, w, i, k, i, /, N, a, t, \_, T, u, r, n, e, r, %, 2, 7, s, \_, R, e, b, e, l, l, i, o, n, ,, , /, w, i, k, i, /, N, u, l, l, i, f, i, c, a, t, i, o, n, \_, C, r, i, s, i, s, ,, , /, w, i, k, i, /, M, a, n, i, f, e, s, t, \_, d, e, s, t, i, n, y, ,, , /, w, i, k, i, /, M, e, x, i, c, a, n, -, A, m, e, r, i, c, a, n, \_, W, a, r, ,, , /, w, i, k, i, /, S, e, n, e, c, a, \_, F, a, l, l, s, \_, C, o, n, v, e, n, t, i, o, n, ,, , /, w, i, k, i, /, I, n, d, u, s, t, r, i, a, l, \_, R, e, v, o, l, u, t, i, o, n, #, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, S, e, c, o, n, d, \_, G, r, e, a, t, \_, A, w, a, k, e, n, i, n, g, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 8, 4, 9, %, E, 2, %, 8, 0, %, 9, 3, 1, 8, 6, 5, ), ,, , /, w, i, k, i, /, A, n, t, e, b, e, l, l, u, m, \_, S, o, u, t, h, ,, , /, w, i, k, i, /, C, a, l, i, f, o, r, n, i, a, \_, G, o, l, d, \_, R, u, s, h, ,, , /, w, i, k, i, /, O, r, i, g, i, n, s, \_, o, f, \_, t, h, e, \_, A, m, e, r, i, c, a, n, \_, C, i, v, i, l, \_, W, a, r, ,, , /, w, i, k, i, /, C, o, m, p, r, o, m, i, s, e, \_, o, f, \_, 1, 8, 5, 0, ,, , /, w, i, k, i, /, F, u, g, i, t, i, v, e, \_, S, l, a, v, e, \_, A, c, t, \_, o, f, \_, 1, 8, 5, 0, ,, , /, w, i, k, i, /, K, a, n, s, a, s, -, N, e, b, r, a, s, k, a, \_, A, c, t, ,, , /, w, i, k, i, /, B, l, e, e, d, i, n, g, \_, K, a, n, s, a, s, ,, , /, w, i, k, i, /, D, r, e, d, \_, S, c, o, t, t, \_, D, e, c, i, s, i, o, n, ,, , /, w, i, k, i, /, 1, 8, 6, 0, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, p, r, e, s, i, d, e, n, t, i, a, l, \_, e, l, e, c, t, i, o, n, ,, , /, w, i, k, i, /, C, o, n, f, e, d, e, r, a, t, e, \_, S, t, a, t, e, s, \_, o, f, \_, A, m, e, r, i, c, a, #, S, e, c, e, s, s, i, o, n, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, C, i, v, i, l, \_, W, a, r, ,, , /, w, i, k, i, /, E, m, a, n, c, i, p, a, t, i, o, n, \_, P, r, o, c, l, a, m, a, t, i, o, n, ,, , /, w, i, k, i, /, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, A, b, r, a, h, a, m, \_, L, i, n, c, o, l, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 8, 6, 5, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 1, 8, ), ,, , /, w, i, k, i, /, R, e, c, o, n, s, t, r, u, c, t, i, o, n, \_, e, r, a, ,, , /, w, i, k, i, /, R, e, c, o, n, s, t, r, u, c, t, i, o, n, \_, A, m, e, n, d, m, e, n, t, s, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, t, r, a, n, s, c, o, n, t, i, n, e, n, t, a, l, \_, r, a, i, l, r, o, a, d, ,, , /, w, i, k, i, /, K, u, \_, K, l, u, x, \_, K, l, a, n, ,, , /, w, i, k, i, /, E, n, f, o, r, c, e, m, e, n, t, \_, A, c, t, s, ,, , /, w, i, k, i, /, C, o, m, p, r, o, m, i, s, e, \_, o, f, \_, 1, 8, 7, 7, ,, , /, w, i, k, i, /, S, e, c, o, n, d, \_, I, n, d, u, s, t, r, i, a, l, \_, R, e, v, o, l, u, t, i, o, n, #, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, G, i, l, d, e, d, \_, A, g, e, ,, , /, w, i, k, i, /, G, o, s, p, e, l, \_, o, f, \_, W, e, a, l, t, h, ,, , /, w, i, k, i, /, C, h, i, n, e, s, e, \_, E, x, c, l, u, s, i, o, n, \_, A, c, t, ,, , /, w, i, k, i, /, P, e, n, d, l, e, t, o, n, \_, A, c, t, ,, , /, w, i, k, i, /, H, a, y, m, a, r, k, e, t, \_, r, i, o, t, ,, , /, w, i, k, i, /, S, h, e, r, m, a, n, \_, A, n, t, i, t, r, u, s, t, \_, A, c, t, ,, , /, w, i, k, i, /, P, r, o, g, r, e, s, s, i, v, e, \_, E, r, a, ,, , /, w, i, k, i, /, S, p, a, n, i, s, h, %, E, 2, %, 8, 0, %, 9, 3, A, m, e, r, i, c, a, n, \_, W, a, r, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, i, m, p, e, r, i, a, l, i, s, m, ,, , /, w, i, k, i, /, S, q, u, a, r, e, \_, D, e, a, l, ,, , /, w, i, k, i, /, N, a, d, i, r, \_, o, f, \_, A, m, e, r, i, c, a, n, \_, r, a, c, e, \_, r, e, l, a, t, i, o, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 9, 1, 7, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 4, 5, ), ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, i, n, \_, W, o, r, l, d, \_, W, a, r, \_, I, ,, , /, w, i, k, i, /, P, a, r, i, s, \_, P, e, a, c, e, \_, C, o, n, f, e, r, e, n, c, e, \_, (, 1, 9, 1, 9, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 2, 0, ), #, A, m, e, r, i, c, a, n, \_, a, p, p, r, o, a, c, h, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, R, e, d, \_, S, c, a, r, e, ,, , /, w, i, k, i, /, R, o, a, r, i, n, g, \_, T, w, e, n, t, i, e, s, ,, , /, w, i, k, i, /, P, r, o, h, i, b, i, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, W, o, m, e, n, %, 2, 7, s, \_, s, u, f, f, r, a, g, e, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, T, u, l, s, a, \_, r, a, c, e, \_, m, a, s, s, a, c, r, e, ,, , /, w, i, k, i, /, K, u, \_, K, l, u, x, \_, K, l, a, n, #, S, e, c, o, n, d, \_, K, l, a, n, :, \_, 1, 9, 1, 5, –, 1, 9, 4, 4, ,, , /, w, i, k, i, /, H, a, r, l, e, m, \_, R, e, n, a, i, s, s, a, n, c, e, ,, , /, w, i, k, i, /, G, r, e, a, t, \_, D, e, p, r, e, s, s, i, o, n, ,, , /, w, i, k, i, /, G, r, e, a, t, \_, C, r, a, s, h, ,, , /, w, i, k, i, /, D, u, s, t, \_, B, o, w, l, ,, , /, w, i, k, i, /, N, e, w, \_, D, e, a, l, ,, , /, w, i, k, i, /, M, i, l, i, t, a, r, y, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, d, u, r, i, n, g, \_, W, o, r, l, d, \_, W, a, r, \_, I, I, ,, , /, w, i, k, i, /, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, h, o, m, e, \_, f, r, o, n, t, \_, d, u, r, i, n, g, \_, W, o, r, l, d, \_, W, a, r, \_, I, I, ,, , /, w, i, k, i, /, M, a, n, h, a, t, t, a, n, \_, P, r, o, j, e, c, t, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 9, 4, 5, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 6, 4, ), ,, , /, w, i, k, i, /, S, t, r, i, k, e, \_, w, a, v, e, \_, o, f, \_, 1, 9, 4, 5, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 4, 6, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, \_, (, 1, 9, 4, 7, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 4, 8, ), ,, , /, w, i, k, i, /, T, r, u, m, a, n, \_, D, o, c, t, r, i, n, e, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, \_, (, 1, 9, 4, 8, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 5, 3, ), ,, , /, w, i, k, i, /, N, o, r, t, h, \_, A, t, l, a, n, t, i, c, \_, T, r, e, a, t, y, ,, , /, w, i, k, i, /, K, o, r, e, a, n, \_, W, a, r, ,, , /, w, i, k, i, /, I, v, y, \_, M, i, k, e, ,, , /, w, i, k, i, /, M, c, C, a, r, t, h, y, i, s, m, ,, , /, w, i, k, i, /, P, o, s, t, %, E, 2, %, 8, 0, %, 9, 3, W, o, r, l, d, \_, W, a, r, \_, I, I, \_, e, c, o, n, o, m, i, c, \_, e, x, p, a, n, s, i, o, n, ,, , /, w, i, k, i, /, C, i, v, i, l, \_, r, i, g, h, t, s, \_, m, o, v, e, m, e, n, t, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, \_, (, 1, 9, 5, 3, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 6, 2, ), ,, , /, w, i, k, i, /, C, u, b, a, n, \_, M, i, s, s, i, l, e, \_, C, r, i, s, i, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 9, 6, 4, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 8, 0, ), ,, , /, w, i, k, i, /, G, r, e, a, t, \_, S, o, c, i, e, t, y, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, \_, (, 1, 9, 6, 2, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 7, 9, ), ,, , /, w, i, k, i, /, D, %, C, 3, %, A, 9, t, e, n, t, e, ,, , /, w, i, k, i, /, S, p, a, c, e, \_, R, a, c, e, ,, , /, w, i, k, i, /, V, i, e, t, n, a, m, \_, W, a, r, ,, , /, w, i, k, i, /, F, a, l, l, \_, o, f, \_, S, a, i, g, o, n, ,, , /, w, i, k, i, /, C, o, u, n, t, e, r, c, u, l, t, u, r, e, \_, o, f, \_, t, h, e, \_, 1, 9, 6, 0, s, ,, , /, w, i, k, i, /, S, e, c, o, n, d, -, w, a, v, e, \_, f, e, m, i, n, i, s, m, ,, , /, w, i, k, i, /, G, a, y, \_, l, i, b, e, r, a, t, i, o, n, ,, , /, w, i, k, i, /, S, t, o, n, e, w, a, l, l, \_, r, i, o, t, s, ,, , /, w, i, k, i, /, W, a, t, e, r, g, a, t, e, \_, s, c, a, n, d, a, l, ,, , /, w, i, k, i, /, I, r, a, n, \_, h, o, s, t, a, g, e, \_, c, r, i, s, i, s, ,, , /, w, i, k, i, /, M, o, r, a, l, \_, M, a, j, o, r, i, t, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 9, 8, 0, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 9, 1, ), ,, , /, w, i, k, i, /, R, e, a, g, a, n, \_, e, r, a, ,, , /, w, i, k, i, /, R, e, g, a, n, o, m, i, c, s, ,, , /, w, i, k, i, /, I, r, a, n, -, C, o, n, t, r, a, \_, S, c, a, n, d, a, l, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, \_, (, 1, 9, 7, 9, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 8, 5, ), ,, , /, w, i, k, i, /, I, n, v, a, s, i, o, n, \_, o, f, \_, G, r, e, n, a, d, a, ,, , /, w, i, k, i, /, R, e, a, g, a, n, \_, D, o, c, t, r, i, n, e, ,, , /, w, i, k, i, /, C, o, l, d, \_, W, a, r, \_, (, 1, 9, 8, 5, %, E, 2, %, 8, 0, %, 9, 3, 1, 9, 9, 1, ), ,, , /, w, i, k, i, /, W, a, r, \_, o, n, \_, D, r, u, g, s, ,, , /, w, i, k, i, /, I, n, v, a, s, i, o, n, \_, o, f, \_, P, a, n, a, m, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 1, 9, 9, 1, %, E, 2, %, 8, 0, %, 9, 3, 2, 0, 0, 8, ), ,, , /, w, i, k, i, /, G, u, l, f, \_, W, a, r, ,, , /, w, i, k, i, /, N, o, r, t, h, \_, A, m, e, r, i, c, a, n, \_, F, r, e, e, \_, T, r, a, d, e, \_, A, g, r, e, e, m, e, n, t, ,, , /, w, i, k, i, /, 1, 9, 9, 2, \_, L, o, s, \_, A, n, g, e, l, e, s, \_, r, i, o, t, s, ,, , /, w, i, k, i, /, R, e, p, u, b, l, i, c, a, n, \_, R, e, v, o, l, u, t, i, o, n, ,, , /, w, i, k, i, /, 1, 9, 9, 3, \_, W, o, r, l, d, \_, T, r, a, d, e, \_, C, e, n, t, e, r, \_, b, o, m, b, i, n, g, ,, , /, w, i, k, i, /, O, k, l, a, h, o, m, a, \_, C, i, t, y, \_, b, o, m, b, i, n, g, ,, , /, w, i, k, i, /, C, o, l, u, m, b, i, n, e, \_, H, i, g, h, \_, S, c, h, o, o, l, \_, m, a, s, s, a, c, r, e, ,, , /, w, i, k, i, /, S, e, p, t, e, m, b, e, r, \_, 1, 1, \_, a, t, t, a, c, k, s, ,, , /, w, i, k, i, /, W, a, r, \_, o, n, \_, T, e, r, r, o, r, ,, , /, w, i, k, i, /, W, a, r, \_, i, n, \_, A, f, g, h, a, n, i, s, t, a, n, \_, (, 2, 0, 0, 1, %, E, 2, %, 8, 0, %, 9, 3, 2, 0, 2, 1, ), ,, , /, w, i, k, i, /, I, r, a, q, \_, W, a, r, ,, , /, w, i, k, i, /, H, u, r, r, i, c, a, n, e, \_, K, a, t, r, i, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, (, 2, 0, 0, 8, %, E, 2, %, 8, 0, %, 9, 3, p, r, e, s, e, n, t, ), ,, , /, w, i, k, i, /, G, r, e, a, t, \_, R, e, c, e, s, s, i, o, n, ,, , /, w, i, k, i, /, K, i, l, l, i, n, g, \_, o, f, \_, O, s, a, m, a, \_, b, i, n, \_, L, a, d, e, n, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, m, a, s, s, \_, s, h, o, o, t, i, n, g, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, B, l, a, c, k, \_, L, i, v, e, s, \_, M, a, t, t, e, r, ,, , /, w, i, k, i, /, O, b, e, r, g, e, f, e, l, l, \_, v, ., \_, H, o, d, g, e, s, ,, , /, w, i, k, i, /, U, n, i, t, e, \_, t, h, e, \_, R, i, g, h, t, \_, r, a, l, l, y, ,, , /, w, i, k, i, /, C, O, V, I, D, -, 1, 9, \_, p, a, n, d, e, m, i, c, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, O, V, I, D, -, 1, 9, \_, r, e, c, e, s, s, i, o, n, ,, , /, w, i, k, i, /, J, a, n, u, a, r, y, \_, 6, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, a, p, i, t, o, l, \_, a, t, t, a, c, k, ,, , /, w, i, k, i, /, W, i, t, h, d, r, a, w, a, l, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, t, r, o, o, p, s, \_, f, r, o, m, \_, A, f, g, h, a, n, i, s, t, a, n, \_, (, 2, 0, 2, 0, %, E, 2, %, 8, 0, %, 9, 3, 2, 0, 2, 1, ), ,, , /, w, i, k, i, /, D, o, b, b, s, \_, v, ., \_, J, a, c, k, s, o, n, \_, W, o, m, e, n, %, 2, 7, s, \_, H, e, a, l, t, h, \_, O, r, g, a, n, i, z, a, t, i, o, n, ,, , /, w, i, k, i, /, F, o, r, e, i, g, n, \_, i, n, v, o, l, v, e, m, e, n, t, \_, i, n, \_, t, h, e, \_, R, u, s, s, i, a, n, \_, i, n, v, a, s, i, o, n, \_, o, f, \_, U, k, r, a, i, n, e, ,, , /, w, i, k, i, /, D, o, n, a, l, d, \_, T, r, u, m, p, #, I, n, v, e, s, t, i, g, a, t, i, o, n, s, ,, , \_, c, r, i, m, i, n, a, l, \_, c, h, a, r, g, e, s, ,, , \_, c, i, v, i, l, \_, l, a, w, s, u, i, t, s, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, C, e, n, t, u, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, a, n, t, i, s, e, m, i, t, i, s, m, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, u, l, t, u, r, a, l, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, c, i, n, e, m, a, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, M, u, s, i, c, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, m, e, r, i, c, a, n, \_, n, e, w, s, p, a, p, e, r, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, s, p, o, r, t, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, D, e, m, o, g, r, a, p, h, i, c, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, i, m, m, i, g, r, a, t, i, o, n, \_, t, o, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, E, c, o, n, o, m, i, c, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, b, a, n, k, i, n, g, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, e, d, u, c, a, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, h, i, g, h, e, r, \_, e, d, u, c, a, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, f, l, a, g, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, g, o, v, e, r, n, m, e, n, t, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, a, b, o, r, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, c, a, p, i, t, a, l, \_, p, u, n, i, s, h, m, e, n, t, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, c, i, v, i, l, \_, r, i, g, h, t, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, c, o, r, r, u, p, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, o, n, s, t, i, t, u, t, i, o, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, d, e, b, t, \_, c, e, i, l, i, n, g, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, d, i, r, e, c, t, \_, d, e, m, o, c, r, a, c, y, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, f, o, r, e, i, g, n, \_, p, o, l, i, c, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, l, a, w, \_, e, n, f, o, r, c, e, m, e, n, t, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, P, o, s, t, a, g, e, \_, s, t, a, m, p, s, \_, a, n, d, \_, p, o, s, t, a, l, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, a, x, a, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, V, o, t, i, n, g, \_, r, i, g, h, t, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, m, e, r, i, c, a, n, \_, j, o, u, r, n, a, l, i, s, m, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, M, e, r, c, h, a, n, t, \_, M, a, r, i, n, e, ,, , /, w, i, k, i, /, M, i, l, i, t, a, r, y, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, A, r, m, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, M, a, r, i, n, e, \_, C, o, r, p, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, N, a, v, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, A, i, r, \_, F, o, r, c, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, S, p, a, c, e, \_, F, o, r, c, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, C, o, a, s, t, \_, G, u, a, r, d, ,, , /, w, i, k, i, /, P, o, l, i, t, i, c, a, l, \_, e, r, a, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, F, i, r, s, t, \_, P, a, r, t, y, \_, S, y, s, t, e, m, ,, , /, w, i, k, i, /, S, e, c, o, n, d, \_, P, a, r, t, y, \_, S, y, s, t, e, m, ,, , /, w, i, k, i, /, T, h, i, r, d, \_, P, a, r, t, y, \_, S, y, s, t, e, m, ,, , /, w, i, k, i, /, F, o, u, r, t, h, \_, P, a, r, t, y, \_, S, y, s, t, e, m, ,, , /, w, i, k, i, /, F, i, f, t, h, \_, P, a, r, t, y, \_, S, y, s, t, e, m, ,, , /, w, i, k, i, /, S, i, x, t, h, \_, P, a, r, t, y, \_, S, y, s, t, e, m, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, r, e, l, i, g, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, S, l, a, v, e, r, y, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, s, e, x, u, a, l, \_, s, l, a, v, e, r, y, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, T, e, c, h, n, o, l, o, g, i, c, a, l, \_, a, n, d, \_, i, n, d, u, s, t, r, i, a, l, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, a, g, r, i, c, u, l, t, u, r, e, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, L, a, b, o, r, \_, h, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, l, u, m, b, e, r, \_, i, n, d, u, s, t, r, y, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, m, e, d, i, c, i, n, e, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, r, a, i, l, \_, t, r, a, n, s, p, o, r, t, a, t, i, o, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, A, f, r, i, c, a, n, -, A, m, e, r, i, c, a, n, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, s, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, C, h, i, n, e, s, e, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, F, i, l, i, p, i, n, o, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, I, n, d, i, a, n, -, A, m, e, r, i, c, a, n, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, J, a, p, a, n, e, s, e, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, K, o, r, e, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, T, h, a, i, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, V, i, e, t, n, a, m, e, s, e, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, E, u, r, o, p, e, a, n, \_, A, m, e, r, i, c, a, n, #, H, i, s, t, o, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, l, b, a, n, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, E, n, g, l, i, s, h, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, E, s, t, o, n, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, F, i, n, n, i, s, h, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, I, r, i, s, h, \_, A, m, e, r, i, c, a, n, s, #, H, i, s, t, o, r, y, ,, , /, w, i, k, i, /, I, t, a, l, i, a, n, \_, A, m, e, r, i, c, a, n, #, H, i, s, t, o, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, L, i, t, h, u, a, n, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, P, o, l, e, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, S, e, r, b, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, H, i, s, p, a, n, i, c, \_, a, n, d, \_, L, a, t, i, n, o, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, e, x, i, c, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, J, e, w, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, i, d, d, l, e, \_, E, a, s, t, e, r, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, E, g, y, p, t, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, I, r, a, n, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, I, r, a, q, i, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, L, e, b, a, n, e, s, e, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, P, a, l, e, s, t, i, n, i, a, n, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, S, a, u, d, i, \_, A, m, e, r, i, c, a, n, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, a, t, i, v, e, \_, A, m, e, r, i, c, a, n, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, h, e, r, o, k, e, e, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, C, o, m, a, n, c, h, e, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, w, o, m, e, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, L, G, B, T, \_, h, i, s, t, o, r, y, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, g, a, y, \_, m, e, n, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, l, e, s, b, i, a, n, i, s, m, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, r, a, n, s, g, e, n, d, e, r, \_, p, e, o, p, l, e, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, T, e, r, r, i, t, o, r, i, a, l, \_, e, v, o, l, u, t, i, o, n, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, U, ., S, ., \_, s, t, a, t, e, s, \_, b, y, \_, d, a, t, e, \_, o, f, \_, a, d, m, i, s, s, i, o, n, \_, t, o, \_, t, h, e, \_, U, n, i, o, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, i, c, \_, r, e, g, i, o, n, s, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, f, r, o, n, t, i, e, r, ,, , /, w, i, k, i, /, M, a, n, i, f, e, s, t, \_, d, e, s, t, i, n, y, ,, , /, w, i, k, i, /, I, n, d, i, a, n, \_, r, e, m, o, v, a, l, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, w, \_, E, n, g, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, S, o, u, t, h, e, r, n, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, w, e, s, t, \_, c, o, a, s, t, \_, o, f, \_, N, o, r, t, h, \_, A, m, e, r, i, c, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, l, a, b, a, m, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, l, a, s, k, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, r, i, z, o, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, r, k, a, n, s, a, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, C, a, l, i, f, o, r, n, i, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, C, o, l, o, r, a, d, o, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, C, o, n, n, e, c, t, i, c, u, t, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, D, e, l, a, w, a, r, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, F, l, o, r, i, d, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, G, e, o, r, g, i, a, \_, (, U, ., S, ., \_, s, t, a, t, e, ), ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, H, a, w, a, i, i, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, I, d, a, h, o, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, I, l, l, i, n, o, i, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, I, n, d, i, a, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, I, o, w, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, K, a, n, s, a, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, K, e, n, t, u, c, k, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, L, o, u, i, s, i, a, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, a, i, n, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, a, r, y, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, a, s, s, a, c, h, u, s, e, t, t, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, i, c, h, i, g, a, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, i, n, n, e, s, o, t, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, i, s, s, i, s, s, i, p, p, i, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, i, s, s, o, u, r, i, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, o, n, t, a, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, b, r, a, s, k, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, v, a, d, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, w, \_, H, a, m, p, s, h, i, r, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, w, \_, J, e, r, s, e, y, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, w, \_, M, e, x, i, c, o, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, e, w, \_, Y, o, r, k, \_, (, s, t, a, t, e, ), ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, o, r, t, h, \_, C, a, r, o, l, i, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, o, r, t, h, \_, D, a, k, o, t, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, O, h, i, o, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, O, k, l, a, h, o, m, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, O, r, e, g, o, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, P, e, n, n, s, y, l, v, a, n, i, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, R, h, o, d, e, \_, I, s, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, S, o, u, t, h, \_, C, a, r, o, l, i, n, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, S, o, u, t, h, \_, D, a, k, o, t, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, T, e, n, n, e, s, s, e, e, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, T, e, x, a, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, U, t, a, h, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, V, e, r, m, o, n, t, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, V, i, r, g, i, n, i, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, W, a, s, h, i, n, g, t, o, n, \_, (, s, t, a, t, e, ), ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, W, e, s, t, \_, V, i, r, g, i, n, i, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, W, i, s, c, o, n, s, i, n, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, W, y, o, m, i, n, g, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, W, a, s, h, i, n, g, t, o, n, ,, , \_, D, ., C, ., ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, A, m, e, r, i, c, a, n, \_, S, a, m, o, a, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, G, u, a, m, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, N, o, r, t, h, e, r, n, \_, M, a, r, i, a, n, a, \_, I, s, l, a, n, d, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, P, u, e, r, t, o, \_, R, i, c, o, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, \_, V, i, r, g, i, n, \_, I, s, l, a, n, d, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, B, a, k, e, r, \_, I, s, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, H, o, w, l, a, n, d, \_, I, s, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, J, a, r, v, i, s, \_, I, s, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, J, o, h, n, s, t, o, n, \_, A, t, o, l, l, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, K, i, n, g, m, a, n, \_, R, e, e, f, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, M, i, d, w, a, y, \_, A, t, o, l, l, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, N, a, v, a, s, s, a, \_, I, s, l, a, n, d, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, P, a, l, m, y, r, a, \_, A, t, o, l, l, ,, , /, w, i, k, i, /, H, i, s, t, o, r, y, \_, o, f, \_, W, a, k, e, \_, I, s, l, a, n, d, ,, , /, w, i, k, i, /, A, m, e, r, i, c, a, n, \_, u, r, b, a, n, \_, h, i, s, t, o, r, y, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, H, i, s, t, o, r, i, e, s, \_, o, f, \_, c, i, t, i, e, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, L, i, s, t, \_, o, f, \_, y, e, a, r, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, H, i, s, t, o, r, i, o, g, r, a, p, h, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, H, i, s, t, o, r, y, \_, o, f, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, F, i, l, e, :, S, y, m, b, o, l, \_, p, o, r, t, a, l, \_, c, l, a, s, s, ., s, v, g, ,, , /, w, i, k, i, /, P, o, r, t, a, l, :, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , h, t, t, p, s, :, /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, o, l, d, i, d, =, 1, 1, 8, 6, 2, 8, 2, 8, 7, 2, ,, , /, w, i, k, i, /, H, e, l, p, :, C, a, t, e, g, o, r, y, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, 1, 9, 6, 3, \_, i, n, \_, A, m, e, r, i, c, a, n, \_, p, o, l, i, t, i, c, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, 1, 9, 6, 3, \_, i, n, \_, T, e, x, a, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, 1, 9, 6, 3, \_, m, u, r, d, e, r, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, 1, 9, 6, 0, s, \_, i, n, \_, D, a, l, l, a, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, A, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, D, e, a, t, h, s, \_, b, y, \_, f, i, r, e, a, r, m, \_, i, n, \_, T, e, x, a, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, D, e, a, t, h, s, \_, b, y, \_, p, e, r, s, o, n, \_, i, n, \_, T, e, x, a, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, F, i, l, m, e, d, \_, a, s, s, a, s, s, i, n, a, t, i, o, n, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, F, i, l, m, e, d, \_, d, e, a, t, h, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, M, u, r, d, e, r, \_, i, n, \_, D, a, l, l, a, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, N, o, v, e, m, b, e, r, \_, 1, 9, 6, 3, \_, e, v, e, n, t, s, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, P, o, l, i, t, i, c, a, l, \_, v, i, o, l, e, n, c, e, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, P, o, l, i, t, i, c, a, l, \_, v, i, o, l, e, n, c, e, \_, i, n, \_, t, h, e, \_, U, n, i, t, e, d, \_, S, t, a, t, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, A, r, t, i, c, l, e, s, \_, w, i, t, h, \_, s, h, o, r, t, \_, d, e, s, c, r, i, p, t, i, o, n, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, S, h, o, r, t, \_, d, e, s, c, r, i, p, t, i, o, n, \_, i, s, \_, d, i, f, f, e, r, e, n, t, \_, f, r, o, m, \_, W, i, k, i, d, a, t, a, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, F, e, a, t, u, r, e, d, \_, a, r, t, i, c, l, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, W, i, k, i, p, e, d, i, a, \_, i, n, d, e, f, i, n, i, t, e, l, y, \_, s, e, m, i, -, p, r, o, t, e, c, t, e, d, \_, p, a, g, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, U, s, e, \_, m, d, y, \_, d, a, t, e, s, \_, f, r, o, m, \_, J, u, n, e, \_, 2, 0, 1, 2, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, P, a, g, e, s, \_, u, s, i, n, g, \_, m, u, l, t, i, p, l, e, \_, i, m, a, g, e, \_, w, i, t, h, \_, a, u, t, o, \_, s, c, a, l, e, d, \_, i, m, a, g, e, s, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, C, S, 1, :, \_, l, o, n, g, \_, v, o, l, u, m, e, \_, v, a, l, u, e, ,, , /, w, i, k, i, /, C, a, t, e, g, o, r, y, :, C, o, m, m, o, n, s, \_, c, a, t, e, g, o, r, y, \_, l, i, n, k, \_, f, r, o, m, \_, W, i, k, i, d, a, t, a, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, x, t, \_, o, f, \_, t, h, e, \_, C, r, e, a, t, i, v, e, \_, C, o, m, m, o, n, s, \_, A, t, t, r, i, b, u, t, i, o, n, -, S, h, a, r, e, A, l, i, k, e, \_, 4, ., 0, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, L, i, c, e, n, s, e, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, T, e, x, t, \_, o, f, \_, t, h, e, \_, C, r, e, a, t, i, v, e, \_, C, o, m, m, o, n, s, \_, A, t, t, r, i, b, u, t, i, o, n, -, S, h, a, r, e, A, l, i, k, e, \_, 4, ., 0, \_, I, n, t, e, r, n, a, t, i, o, n, a, l, \_, L, i, c, e, n, s, e, ,, , /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, T, e, r, m, s, \_, o, f, \_, U, s, e, ,, , /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, P, r, i, v, a, c, y, \_, p, o, l, i, c, y, ,, , /, /, w, w, w, ., w, i, k, i, m, e, d, i, a, f, o, u, n, d, a, t, i, o, n, ., o, r, g, /, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, L, a, n, g, u, a, g, e, /, P, o, l, i, c, y, :, P, r, i, v, a, c, y, \_, p, o, l, i, c, y, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, A, b, o, u, t, ,, , /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, G, e, n, e, r, a, l, \_, d, i, s, c, l, a, i, m, e, r, ,, , /, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, i, k, i, /, W, i, k, i, p, e, d, i, a, :, C, o, n, t, a, c, t, \_, u, s, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, L, a, n, g, u, a, g, e, /, P, o, l, i, c, y, :, U, n, i, v, e, r, s, a, l, \_, C, o, d, e, \_, o, f, \_, C, o, n, d, u, c, t, ,, , h, t, t, p, s, :, /, /, d, e, v, e, l, o, p, e, r, ., w, i, k, i, m, e, d, i, a, ., o, r, g, ,, , h, t, t, p, s, :, /, /, s, t, a, t, s, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, #, /, e, n, ., w, i, k, i, p, e, d, i, a, ., o, r, g, ,, , h, t, t, p, s, :, /, /, f, o, u, n, d, a, t, i, o, n, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, /, S, p, e, c, i, a, l, :, M, y, L, a, n, g, u, a, g, e, /, P, o, l, i, c, y, :, C, o, o, k, i, e, \_, s, t, a, t, e, m, e, n, t, ,, , /, /, e, n, ., m, ., w, i, k, i, p, e, d, i, a, ., o, r, g, /, w, /, i, n, d, e, x, ., p, h, p, ?, t, i, t, l, e, =, A, s, s, a, s, s, i, n, a, t, i, o, n, \_, o, f, \_, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, &, m, o, b, i, l, e, a, c, t, i, o, n, =, t, o, g, g, l, e, \_, v, i, e, w, \_, m, o, b, i, l, e, ,, , h, t, t, p, s, :, /, /, w, i, k, i, m, e, d, i, a, f, o, u, n, d, a, t, i, o, n, ., o, r, g, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., m, e, d, i, a, w, i, k, i, ., o, r, g, /, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, i, c, o, n, s, /, w, i, k, i, p, e, d, i, a, ., p, n, g, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, m, o, b, i, l, e, /, c, o, p, y, r, i, g, h, t, /, w, i, k, i, p, e, d, i, a, -, w, o, r, d, m, a, r, k, -, e, n, ., s, v, g, ,, , /, s, t, a, t, i, c, /, i, m, a, g, e, s, /, m, o, b, i, l, e, /, c, o, p, y, r, i, g, h, t, /, w, i, k, i, p, e, d, i, a, -, t, a, g, l, i, n, e, -, e, n, ., s, v, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, e, n, /, t, h, u, m, b, /, e, /, e, 7, /, C, s, c, r, -, f, e, a, t, u, r, e, d, ., s, v, g, /, 2, 0, p, x, -, C, s, c, r, -, f, e, a, t, u, r, e, d, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, e, n, /, t, h, u, m, b, /, 1, /, 1, b, /, S, e, m, i, -, p, r, o, t, e, c, t, i, o, n, -, s, h, a, c, k, l, e, ., s, v, g, /, 2, 0, p, x, -, S, e, m, i, -, p, r, o, t, e, c, t, i, o, n, -, s, h, a, c, k, l, e, ., s, v, g, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 5, /, 5, c, /, J, F, K, \_, l, i, m, o, u, s, i, n, e, ., p, n, g, /, 2, 2, 0, p, x, -, J, F, K, \_, l, i, m, o, u, s, i, n, e, ., p, n, g, ,, , /, /, u, p, l, o, a, d, ., w, i, k, i, m, e, d, i, a, ., o, r, g, /, w, i, k, i, p, e, d, i, a, /, c, o, m, m, o, n, s, /, t, h, u, m, b, /, 5, /, 5, 6, /, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, s, p, e, a, k, s, \_, a, t, \_, R, i, c, e, \_, U, n, i, v, e, r, s, i, t, y, ., j, p, g, /, 1, 3, 3, p, x, -, J, o, h, n, \_, F, ., \_, K, e, n, n, e, d, y, \_, s, p, e, a, k, s, \_, a, t, \_, R, i, c, e, \_, U, n, i, v, e, r, s, i, t, y, ., j, p, g, ,, , /, /, u, p, l, o, a, d, ., w, i, 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href="../\_static/changelog.css" type="text/css" /> <link rel="stylesheet" href="../\_static/sphinx\_paramlinks.css" type="text/css" /> <!-- end iterate through sphinx environment local css\_files --> <link rel="stylesheet" type="text/css" media="all" href="//www.sqlalchemy.org/css/bootstrap.min.css"/> <link rel="stylesheet" type="text/css" media="all" href="//www.sqlalchemy.org/css/site.css"/> <link rel="stylesheet" type="text/css" media="all" href="//www.sqlalchemy.org/css/sidebar\_extra.css"/> <link rel="stylesheet" type="text/css" media="print" href="//www.sqlalchemy.org/css/print.css"/> <!-- begin iterate through sphinx environment remote css\_files --> <!-- end iterate through sphinx environment remote css\_files --> <link rel="canonical" href="http://docs.sqlalchemy.org/en/latest/core/sqlelement.html" /> <script type="text/javascript"> var doc\_version = "latest"; var doc\_slug = "sqlalchemy"; var static\_root = "../\_static" // copied from: // https://github.com/rtfd/readthedocs.org/commit/edbbb4c753454cf20c128d4eb2fef60d740debaa#diff-2f70e8d9361202bfe3f378d2ff2c510bR8 var READTHEDOCS\_DATA = { project: "sqlalchemy", version: "latest", page: "core/sqlelement", theme: "" }; </script> <!-- end RTD <head> via SQLAlchemy adapter --> <!-- begin layout.mako headers --> <link rel="index" title="Index" href="../genindex.html" /> <link rel="search" title="Search" href="../search.html" /> <link rel="copyright" title="Copyright" href="../copyright.html" /> <link rel="top" title="SQLAlchemy 2.0 Documentation" href="../index.html" /> <link rel="up" title="SQL Statements and Expressions API" href="expression\_api.html" /> <link rel="next" title="Operator Reference" href="operators.html" /> <link rel="prev" title="SQL Statements and Expressions API" href="expression\_api.html" /> <!-- end layout.mako headers --> <!-- sqlalchemy.org docs base head --> <link rel="shortcut icon" href="//www.sqlalchemy.org/favicon.ico" type="image/x-icon"/><link href='//fonts.googleapis.com/css?family=Source+Sans+Pro:400,600,400italic' rel='stylesheet' type='text/css'/><script type="text/javascript">var site\_base='//www.sqlalchemy.org';var docs\_base='//docs.sqlalchemy.org';</script> <!-- end sqlalchemy.org docs base head --></head><body><div id="wrap" class="container-xxl wrap px-0"><nav class="navbar navbar-light logo"> <div class="container-fluid"> <a class="navbar-brand" href="//www.sqlalchemy.org/"> <img src="//www.sqlalchemy.org/img/sqla\_logo.png" width="240" alt="SQLAlchemy"> </a> <div class="navbar-brand align-self-end dbtoolkit"> <img src="//www.sqlalchemy.org/img/dbtoolkit6.gif" width="180" height="12" alt="The Database Toolkit for Python"> </div> </div></nav><nav class="navbar navbar-expand-md navbar-dark bg-sa-green py-0 navigation"> <div class="container-fluid"> <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarNavigation" aria-controls="navbarNavigation" aria-expanded="false" aria-label="Toggle navigation"> <span class="navbar-toggler-icon"></span> </button> <span class="navbar-brand d-md-block d-md-none" href="#">The Database Toolkit for Python</span> <div class="collapse navbar-collapse" id="navbarNavigation"> <ul class="navbar-nav me-auto"> <li class="nav-item"> <a class="nav-link " href="//www.sqlalchemy.org/">home</a> </li> <li class="nav-item dropdown"> <a class="nav-link dropdown-toggle " href="#" id="feature-dropdown" role="button" data-bs-toggle="dropdown" aria-expanded="false"> features </a> <ul class="dropdown-menu dropdown-menu-dark bg-sa-green" aria-labelledby="feature-dropdown"> <li><a class="dropdown-item" href="//www.sqlalchemy.org/philosophy.html">Philosophy Statement</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/features.html">Feature Overview</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/quotes.html">Testimonials</a></li> </ul> </li> <li class="nav-item"> <a class="nav-link " href="//www.sqlalchemy.org/blog/">news</a> </li> <li class="nav-item dropdown"> <a class="nav-link dropdown-toggle active" aria-current="page" href="#" id="docs-dropdown" role="button" data-bs-toggle="dropdown" aria-expanded="false"> documentation </a> <ul class="dropdown-menu dropdown-menu-dark bg-sa-green" aria-labelledby="docs-dropdown"> <li><a class="dropdown-item" href="//docs.sqlalchemy.org">Current Documentation (version 2.0)</a></li> <li><hr class="dropdown-divider"></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/library.html#reference">Documentation by Version</a></li> <li> <a class="dropdown-item" href="//docs.sqlalchemy.org/en/21/"> <span class="ps-2">Version 2.1 (development)</span> </a> </li> <li> <a class="dropdown-item" href="//docs.sqlalchemy.org/en/20/"> <span class="ps-2">Version 2.0</span> </a> </li> <li> <a class="dropdown-item" href="//docs.sqlalchemy.org/en/14/"> <span class="ps-2">Version 1.4</span> </a> </li> <li> <a class="dropdown-item" href="//docs.sqlalchemy.org/en/13/"> <span class="ps-2">Version 1.3</span> </a> </li> <li><hr class="dropdown-divider"></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/library.html#talks">Talks and Tutorials</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/library.html">Published content overview</a></li> </ul> </li> <li class="nav-item dropdown"> <a class="nav-link dropdown-toggle " href="#" id="community-dropdown" role="button" data-bs-toggle="dropdown" aria-expanded="false"> community </a> <ul class="dropdown-menu dropdown-menu-dark bg-sa-green" aria-labelledby="community-dropdown"> <li><a class="dropdown-item" href="//www.sqlalchemy.org/support.html">Get Support</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/participate.html">Participate</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/develop.html">Develop</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/codeofconduct.html">Code of Conduct</a></li> <li><a class="dropdown-item" href="https://github.com/sqlalchemy/sqlalchemy">Github</a></li> </ul> </li> <li class="nav-item dropdown"> <a class="nav-link dropdown-toggle " href="#" id="download-dropdown" role="button" data-bs-toggle="dropdown" aria-expanded="false"> download </a> <ul class="dropdown-menu dropdown-menu-dark bg-sa-green" aria-labelledby="download-dropdown"> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html">Download</a> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html#current">Current Release Series (2.0)</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html#maintenance">Maintenance Release (1.4)</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html#development">Development Access</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html#license">License</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html#versions">Version Numbering</a></li> <li><a class="dropdown-item" href="//www.sqlalchemy.org/download.html#relstatus">Release Status</a></li> </ul> </li> </ul> </div> </div></nav><div id="main-body" class="docs main-body row m-0"><main id="docs" class="docs"><div id="docs-container"><div id="docs-top-navigation-container" class="body-background"><div id="docs-header"> <div id="docs-version-header"> Release: <span class="version-num">2.0.23</span> <span id="sidebar-current">current release</span> | Release Date: November 2, 2023 </div> <h1><a href="../index.html">SQLAlchemy 2.0 Documentation</a></h1></div></div><div id="docs-body-container"> <div id="fixed-sidebar" class="withsidebar"> <div id="docs-sidebar-popout"> <h3><a href="../index.html">SQLAlchemy 2.0 Documentation</a></h3> <p id="sidebar-current">current release</p> <p id="sidebar-topnav"> <a href="../index.html">Home</a> | <a href="//docs.sqlalchemy.org/20/sqlalchemy\_20.zip">Download this Documentation</a> </p> <div id="sidebar-search"> <form class="search" action="../search.html" method="get"> <label> Search terms: <input type="text" placeholder="search..." name="q" size="12" /> </label> <input type="hidden" name="check\_keywords" value="yes" /> <input type="hidden" name="area" value="default" /> </form> </div> </div> <div id="docs-sidebar"> <div id="sidebar-banner"> <script async type="text/javascript" id="\_carbonads\_js"></script><script async type="text/javascript" id="\_eaads\_js"></script><div data-ea-publisher="sqlalchemyorg" data-ea-type="image" class="flat horizontal"></div><script type="text/javascript">var ea = "https://media.ethicalads.io/media/client/ethicalads.min.js";var carbon = "//cdn.carbonads.com/carbon.js?serve=CKYILK7Y&placement=sqlalchemyorg";if (Math.floor(Math.random() \* 10) <= 5) { ea\_script = document.getElementById("\_eaads\_js"); ea\_script.setAttribute('src', ea);}else { carbon\_script = document.getElementById("\_carbonads\_js"); carbon\_script.setAttribute('src', carbon);}</script> </div> <div id="docs-sidebar-inner"> <h3> <a href="index.html" title="SQLAlchemy Core">SQLAlchemy Core</a> </h3> <ul><li><span class="link-container"><a class="reference external" href="expression\_api.html">SQL Statements and Expressions API</a></span><ul><li class="selected"><span class="link-container"><strong>Column Elements and Expressions</strong><a class="paramlink headerlink reference internal" href="#">¶</a></span><ul><li><span class="link-container"><a class="reference external" href="#column-element-foundational-constructors">Column Element Foundational Constructors</a></span><ul><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.and\_"><code class="docutils literal notranslate"><span class="pre">and\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.bindparam"><code class="docutils literal notranslate"><span class="pre">bindparam()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.bitwise\_not"><code class="docutils literal notranslate"><span class="pre">bitwise\_not()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.case"><code class="docutils literal notranslate"><span class="pre">case()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.cast"><code class="docutils literal notranslate"><span class="pre">cast()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.column"><code class="docutils literal notranslate"><span class="pre">column()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.custom\_op"><code class="docutils 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href="#column-element-modifier-constructors">Column Element Modifier Constructors</a></span><ul><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.all\_"><code class="docutils literal notranslate"><span class="pre">all\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.any\_"><code class="docutils literal notranslate"><span class="pre">any\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.asc"><code class="docutils literal notranslate"><span class="pre">asc()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.between"><code class="docutils literal notranslate"><span class="pre">between()</span></code></a></span></li><li><span class="link-container"><a class="reference external" 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class="pre">ColumnElement.expression</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.foreign\_keys"><code class="docutils literal notranslate"><span class="pre">ColumnElement.foreign\_keys</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.get\_children"><code class="docutils literal notranslate"><span class="pre">ColumnElement.get\_children()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.icontains"><code class="docutils literal notranslate"><span class="pre">ColumnElement.icontains()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.iendswith"><code class="docutils literal notranslate"><span 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class="pre">ColumnElement.isnot\_distinct\_from()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.istartswith"><code class="docutils literal notranslate"><span class="pre">ColumnElement.istartswith()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.key"><code class="docutils literal notranslate"><span class="pre">ColumnElement.key</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.label"><code class="docutils literal notranslate"><span class="pre">ColumnElement.label()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.like"><code class="docutils literal notranslate"><span class="pre">ColumnElement.like()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.match"><code class="docutils literal notranslate"><span class="pre">ColumnElement.match()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.negation\_clause"><code class="docutils literal notranslate"><span class="pre">ColumnElement.negation\_clause</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.not\_ilike"><code class="docutils literal notranslate"><span class="pre">ColumnElement.not\_ilike()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.not\_in"><code class="docutils literal notranslate"><span 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class="pre">ColumnElement.primary\_key</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.proxy\_set"><code class="docutils literal notranslate"><span class="pre">ColumnElement.proxy\_set</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_match"><code class="docutils literal notranslate"><span class="pre">ColumnElement.regexp\_match()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace"><code class="docutils literal notranslate"><span class="pre">ColumnElement.regexp\_replace()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.reverse\_operate"><code class="docutils literal notranslate"><span class="pre">ColumnElement.reverse\_operate()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.self\_group"><code class="docutils literal notranslate"><span class="pre">ColumnElement.self\_group()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.shares\_lineage"><code class="docutils literal notranslate"><span class="pre">ColumnElement.shares\_lineage()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.startswith"><code class="docutils literal notranslate"><span class="pre">ColumnElement.startswith()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.stringify\_dialect"><code class="docutils literal notranslate"><span class="pre">ColumnElement.stringify\_dialect</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.supports\_execution"><code class="docutils literal notranslate"><span class="pre">ColumnElement.supports\_execution</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.timetuple"><code class="docutils literal notranslate"><span class="pre">ColumnElement.timetuple</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.type"><code class="docutils literal notranslate"><span class="pre">ColumnElement.type</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnElement.unique\_params"><code class="docutils literal notranslate"><span 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class="pre">ColumnOperators.\_\_ge\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_getitem\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_getitem\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_gt\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_gt\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_hash\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_hash\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_invert\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_invert\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_le\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_le\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_lshift\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_lshift\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_lt\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_lt\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mod\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_mod\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mul\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_mul\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ne\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_ne\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_neg\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_neg\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_or\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_or\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_radd\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_radd\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rfloordiv\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_rfloordiv\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rmod\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_rmod\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rmul\_\_"><code class="docutils literal notranslate"><span 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notranslate"><span class="pre">ColumnOperators.\_\_sa\_operate\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_sub\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_truediv\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.all\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.all\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.any\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.any\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.asc"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.asc()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.between"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.between()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_and"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_and()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_lshift()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_not"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_not()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_or"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_or()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_rshift()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_xor()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.bool\_op"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bool\_op()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.collate"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.collate()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.concat"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.concat()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.contains"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.desc"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.desc()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.distinct"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.distinct()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.icontains()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.iendswith()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_distinct\_from()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_not()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_not\_distinct\_from()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.isnot"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.isnot()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.isnot\_distinct\_from()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.istartswith()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.like"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.match"><code class="docutils literal notranslate"><span 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class="pre">ColumnOperators.notilike()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.notin\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.notin\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.notlike"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.notlike()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_first"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.nulls\_first()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_last"><code class="docutils literal notranslate"><span 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external" href="#sqlalchemy.sql.expression.FunctionFilter.filter"><code class="docutils literal notranslate"><span class="pre">FunctionFilter.filter()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.FunctionFilter.over"><code class="docutils literal notranslate"><span class="pre">FunctionFilter.over()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.FunctionFilter.self\_group"><code class="docutils literal notranslate"><span class="pre">FunctionFilter.self\_group()</span></code></a></span></li></ul></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.Label"><code class="docutils literal notranslate"><span class="pre">Label</span></code></a></span><ul><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.Label.foreign\_keys"><code class="docutils 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class="reference external" href="#sqlalchemy.sql.expression.Operators.\_\_and\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_and\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.Operators.\_\_invert\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_invert\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.Operators.\_\_or\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_or\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_sa\_operate\_\_()</span></code></a></span></li><li><span class="link-container"><a class="reference external" 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class="reference external" href="#sqlalchemy.sql.expression.TextClause.columns"><code class="docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.TextClause.self\_group"><code class="docutils literal notranslate"><span class="pre">TextClause.self\_group()</span></code></a></span></li></ul></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.TryCast"><code class="docutils literal notranslate"><span class="pre">TryCast</span></code></a></span><ul><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.TryCast.inherit\_cache"><code class="docutils literal notranslate"><span class="pre">TryCast.inherit\_cache</span></code></a></span></li></ul></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.sql.expression.Tuple"><code 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href="#sqlalchemy.sql.expression.UnaryExpression.self\_group"><code class="docutils literal notranslate"><span class="pre">UnaryExpression.self\_group()</span></code></a></span></li></ul></li></ul></li><li><span class="link-container"><a class="reference external" href="#column-element-typing-utilities">Column Element Typing Utilities</a></span><ul><li><span class="link-container"><a class="reference external" href="#sqlalchemy.NotNullable"><code class="docutils literal notranslate"><span class="pre">NotNullable()</span></code></a></span></li><li><span class="link-container"><a class="reference external" href="#sqlalchemy.Nullable"><code class="docutils literal notranslate"><span class="pre">Nullable()</span></code></a></span></li></ul></li></ul></li><li><span class="link-container"><a class="reference external" href="operators.html">Operator Reference</a></span></li><li><span class="link-container"><a class="reference external" href="selectable.html">SELECT and Related 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<li><b>Previous:</b> <a href="expression\_api.html" title="previous chapter">SQL Statements and Expressions API</a></li> <li><b>Next:</b> <a href="operators.html" title="next chapter">Operator Reference</a></li> <li><b>Up:</b> <a href="../index.html">Home</a></li> <ul><li><a href="index.html" title="SQLAlchemy Core">SQLAlchemy Core</a></li> <ul><li><a href="expression\_api.html" title="SQL Statements and Expressions API">SQL Statements and Expressions API</a></li> </ul> </ul> <li><b>On this page:</b></li> <ul><li><a class="reference internal" href="#column-elements-and-expressions">Column Elements and Expressions</a><ul><li><a class="reference internal" href="#column-element-foundational-constructors">Column Element Foundational Constructors</a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.and\_"><code class="docutils literal notranslate"><span class="pre">and\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.bindparam"><code class="docutils literal notranslate"><span class="pre">bindparam()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.bitwise\_not"><code class="docutils literal notranslate"><span class="pre">bitwise\_not()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.case"><code class="docutils literal notranslate"><span class="pre">case()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.cast"><code class="docutils literal notranslate"><span class="pre">cast()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.column"><code class="docutils literal notranslate"><span class="pre">column()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.custom\_op"><code class="docutils literal notranslate"><span class="pre">custom\_op</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.distinct"><code class="docutils literal notranslate"><span class="pre">distinct()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.extract"><code class="docutils literal notranslate"><span class="pre">extract()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.false"><code class="docutils literal notranslate"><span class="pre">false()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.func"><code class="docutils literal notranslate"><span class="pre">func</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt"><code class="docutils literal notranslate"><span class="pre">lambda\_stmt()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.literal"><code class="docutils literal notranslate"><span 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href="#sqlalchemy.sql.expression.quoted\_name.quote"><code class="docutils literal notranslate"><span class="pre">quoted\_name.quote</span></code></a></li></ul></li></ul></li><li><a class="reference internal" href="#column-element-modifier-constructors">Column Element Modifier Constructors</a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.all\_"><code class="docutils literal notranslate"><span class="pre">all\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.any\_"><code class="docutils literal notranslate"><span class="pre">any\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.asc"><code class="docutils literal notranslate"><span class="pre">asc()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.between"><code class="docutils literal notranslate"><span class="pre">between()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.collate"><code class="docutils literal notranslate"><span class="pre">collate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.desc"><code class="docutils literal notranslate"><span class="pre">desc()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.funcfilter"><code class="docutils literal notranslate"><span class="pre">funcfilter()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.label"><code class="docutils literal notranslate"><span class="pre">label()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first"><code class="docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.nullsfirst"><code class="docutils literal notranslate"><span class="pre">nullsfirst()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last"><code class="docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.nullslast"><code class="docutils literal notranslate"><span class="pre">nullslast()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.over"><code class="docutils literal notranslate"><span class="pre">over()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.within\_group"><code class="docutils literal notranslate"><span class="pre">within\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#column-element-class-documentation">Column Element Class Documentation</a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression"><code class="docutils literal notranslate"><span class="pre">BinaryExpression</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter"><code class="docutils literal notranslate"><span class="pre">BindParameter</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.effective\_value"><code class="docutils literal notranslate"><span class="pre">BindParameter.effective\_value</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.inherit\_cache"><code class="docutils literal notranslate"><span class="pre">BindParameter.inherit\_cache</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.render\_literal\_execute"><code class="docutils literal notranslate"><span class="pre">BindParameter.render\_literal\_execute()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Case"><code class="docutils literal notranslate"><span class="pre">Case</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Cast"><code class="docutils literal notranslate"><span class="pre">Cast</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList"><code class="docutils literal notranslate"><span class="pre">ClauseList</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList.self\_group"><code class="docutils literal notranslate"><span class="pre">ClauseList.self\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause"><code class="docutils literal notranslate"><span class="pre">ColumnClause</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause.get\_children"><code class="docutils literal notranslate"><span class="pre">ColumnClause.get\_children()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.add"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.add()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.as\_readonly"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.as\_readonly()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.clear"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.clear()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.compare"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.compare()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.contains\_column"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.contains\_column()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.corresponding\_column"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.corresponding\_column()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.get"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.get()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.items"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.items()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.keys"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.keys()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.update"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.update()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.values"><code class="docutils literal notranslate"><span class="pre">ColumnCollection.values()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">ColumnElement</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_eq\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.\_\_eq\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_le\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.\_\_le\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_lt\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.\_\_lt\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_ne\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.\_\_ne\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.all\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.all\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.allows\_lambda"><code class="docutils literal notranslate"><span class="pre">ColumnElement.allows\_lambda</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.anon\_key\_label"><code class="docutils literal 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href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_rshift"><code class="docutils literal notranslate"><span class="pre">ColumnElement.bitwise\_rshift()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_xor"><code class="docutils literal notranslate"><span class="pre">ColumnElement.bitwise\_xor()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bool\_op"><code class="docutils literal notranslate"><span class="pre">ColumnElement.bool\_op()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.cast"><code class="docutils literal notranslate"><span class="pre">ColumnElement.cast()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.collate"><code class="docutils literal notranslate"><span class="pre">ColumnElement.collate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.comparator"><code class="docutils literal notranslate"><span class="pre">ColumnElement.comparator</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compare"><code class="docutils literal notranslate"><span class="pre">ColumnElement.compare()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compile"><code class="docutils literal notranslate"><span class="pre">ColumnElement.compile()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.concat"><code class="docutils literal notranslate"><span class="pre">ColumnElement.concat()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.contains"><code class="docutils literal notranslate"><span class="pre">ColumnElement.contains()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.desc"><code class="docutils literal notranslate"><span class="pre">ColumnElement.desc()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.description"><code class="docutils literal notranslate"><span class="pre">ColumnElement.description</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.distinct"><code class="docutils literal notranslate"><span class="pre">ColumnElement.distinct()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.endswith"><code class="docutils literal notranslate"><span class="pre">ColumnElement.endswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.entity\_namespace"><code class="docutils literal notranslate"><span class="pre">ColumnElement.entity\_namespace</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.expression"><code class="docutils literal notranslate"><span class="pre">ColumnElement.expression</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.foreign\_keys"><code class="docutils literal notranslate"><span class="pre">ColumnElement.foreign\_keys</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.get\_children"><code class="docutils literal notranslate"><span class="pre">ColumnElement.get\_children()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.icontains"><code class="docutils literal notranslate"><span class="pre">ColumnElement.icontains()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.iendswith"><code class="docutils literal notranslate"><span class="pre">ColumnElement.iendswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.ilike"><code class="docutils literal notranslate"><span class="pre">ColumnElement.ilike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.in\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.in\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.inherit\_cache"><code class="docutils literal notranslate"><span class="pre">ColumnElement.inherit\_cache</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_clause\_element"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_clause\_element</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_distinct\_from()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_dml"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_dml</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_not"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_not()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_not\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_not\_distinct\_from()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_selectable"><code class="docutils literal notranslate"><span class="pre">ColumnElement.is\_selectable</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.isnot"><code class="docutils literal notranslate"><span class="pre">ColumnElement.isnot()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.isnot\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnElement.isnot\_distinct\_from()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.istartswith"><code class="docutils literal notranslate"><span class="pre">ColumnElement.istartswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.key"><code class="docutils literal notranslate"><span class="pre">ColumnElement.key</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.label"><code class="docutils literal notranslate"><span class="pre">ColumnElement.label()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.like"><code class="docutils literal notranslate"><span class="pre">ColumnElement.like()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.match"><code class="docutils literal notranslate"><span class="pre">ColumnElement.match()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.negation\_clause"><code class="docutils literal notranslate"><span class="pre">ColumnElement.negation\_clause</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.not\_ilike"><code class="docutils literal notranslate"><span class="pre">ColumnElement.not\_ilike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.not\_in"><code class="docutils literal notranslate"><span class="pre">ColumnElement.not\_in()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.not\_like"><code class="docutils literal notranslate"><span class="pre">ColumnElement.not\_like()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.notilike"><code class="docutils literal notranslate"><span class="pre">ColumnElement.notilike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.notin\_"><code class="docutils literal notranslate"><span class="pre">ColumnElement.notin\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.notlike"><code class="docutils literal notranslate"><span class="pre">ColumnElement.notlike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nulls\_first"><code class="docutils literal notranslate"><span class="pre">ColumnElement.nulls\_first()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nulls\_last"><code class="docutils literal notranslate"><span class="pre">ColumnElement.nulls\_last()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nullsfirst"><code class="docutils literal notranslate"><span class="pre">ColumnElement.nullsfirst()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nullslast"><code class="docutils literal notranslate"><span class="pre">ColumnElement.nullslast()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op"><code class="docutils literal notranslate"><span class="pre">ColumnElement.op()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.operate"><code class="docutils literal notranslate"><span class="pre">ColumnElement.operate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.params"><code class="docutils literal notranslate"><span class="pre">ColumnElement.params()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.primary\_key"><code class="docutils literal notranslate"><span class="pre">ColumnElement.primary\_key</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.proxy\_set"><code class="docutils literal notranslate"><span class="pre">ColumnElement.proxy\_set</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_match"><code class="docutils literal notranslate"><span class="pre">ColumnElement.regexp\_match()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace"><code class="docutils literal notranslate"><span class="pre">ColumnElement.regexp\_replace()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.reverse\_operate"><code class="docutils literal notranslate"><span class="pre">ColumnElement.reverse\_operate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.self\_group"><code class="docutils literal notranslate"><span class="pre">ColumnElement.self\_group()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.shares\_lineage"><code class="docutils literal notranslate"><span class="pre">ColumnElement.shares\_lineage()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.startswith"><code class="docutils literal notranslate"><span class="pre">ColumnElement.startswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.stringify\_dialect"><code class="docutils literal notranslate"><span class="pre">ColumnElement.stringify\_dialect</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.supports\_execution"><code class="docutils literal notranslate"><span class="pre">ColumnElement.supports\_execution</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.timetuple"><code class="docutils literal notranslate"><span class="pre">ColumnElement.timetuple</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.type"><code class="docutils literal notranslate"><span class="pre">ColumnElement.type</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.unique\_params"><code class="docutils literal notranslate"><span class="pre">ColumnElement.unique\_params()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.uses\_inspection"><code class="docutils literal notranslate"><span class="pre">ColumnElement.uses\_inspection</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnExpressionArgument"><code class="docutils literal notranslate"><span class="pre">ColumnExpressionArgument</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_add\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_add\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_and\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_and\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_eq\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_eq\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_floordiv\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_floordiv\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ge\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_ge\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_getitem\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_getitem\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_gt\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_gt\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_hash\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_hash\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_invert\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_invert\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_le\_\_"><code class="docutils literal notranslate"><span 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href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ne\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_ne\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_neg\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_neg\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_or\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_or\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_radd\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_radd\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rfloordiv\_\_"><code class="docutils literal notranslate"><span 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href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rtruediv\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_rtruediv\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_sa\_operate\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_sub\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.\_\_truediv\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.all\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.all\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.any\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.any\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.asc"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.asc()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.between"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.between()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_and"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_and()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_lshift()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_not"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_not()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_or"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_or()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_rshift()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_xor()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bool\_op"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.bool\_op()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.collate"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.collate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.concat"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.concat()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.desc"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.desc()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.distinct"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.distinct()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.icontains()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.iendswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_distinct\_from()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_not()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.is\_not\_distinct\_from()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.isnot"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.isnot()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.isnot\_distinct\_from()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.istartswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.match"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.match()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_ilike"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.not\_ilike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_in"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.not\_in()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_like"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.not\_like()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.notilike"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.notilike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.notin\_"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.notin\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.notlike"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.notlike()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_first"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.nulls\_first()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_last"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.nulls\_last()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nullsfirst"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.nullsfirst()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nullslast"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.nullslast()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.op()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.operate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_match()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_replace()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.reverse\_operate"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.reverse\_operate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.timetuple"><code class="docutils literal notranslate"><span class="pre">ColumnOperators.timetuple</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Extract"><code class="docutils literal notranslate"><span class="pre">Extract</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.False\_"><code class="docutils literal notranslate"><span class="pre">False\_</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter"><code class="docutils literal notranslate"><span class="pre">FunctionFilter</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.filter"><code class="docutils literal notranslate"><span class="pre">FunctionFilter.filter()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.over"><code class="docutils literal notranslate"><span class="pre">FunctionFilter.over()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.self\_group"><code class="docutils literal notranslate"><span class="pre">FunctionFilter.self\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Label"><code class="docutils literal notranslate"><span class="pre">Label</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.Label.foreign\_keys"><code class="docutils literal notranslate"><span class="pre">Label.foreign\_keys</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Label.primary\_key"><code class="docutils literal notranslate"><span class="pre">Label.primary\_key</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Label.self\_group"><code class="docutils literal notranslate"><span class="pre">Label.self\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Null"><code class="docutils literal notranslate"><span class="pre">Null</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">Operators</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_and\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_and\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_invert\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_invert\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_or\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_or\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_"><code class="docutils literal notranslate"><span class="pre">Operators.\_\_sa\_operate\_\_()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op"><code class="docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op"><code class="docutils literal notranslate"><span class="pre">Operators.op()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.operate"><code class="docutils literal notranslate"><span class="pre">Operators.operate()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.reverse\_operate"><code class="docutils literal notranslate"><span class="pre">Operators.reverse\_operate()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Over"><code class="docutils literal notranslate"><span class="pre">Over</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.Over.element"><code class="docutils literal notranslate"><span class="pre">Over.element</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.SQLColumnExpression"><code class="docutils literal notranslate"><span class="pre">SQLColumnExpression</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause"><code class="docutils literal notranslate"><span class="pre">TextClause</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams"><code class="docutils literal notranslate"><span class="pre">TextClause.bindparams()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns"><code class="docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.self\_group"><code class="docutils literal notranslate"><span class="pre">TextClause.self\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.TryCast"><code class="docutils literal notranslate"><span class="pre">TryCast</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.TryCast.inherit\_cache"><code class="docutils literal notranslate"><span class="pre">TryCast.inherit\_cache</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.Tuple"><code class="docutils literal notranslate"><span class="pre">Tuple</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.Tuple.self\_group"><code class="docutils literal notranslate"><span class="pre">Tuple.self\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup"><code class="docutils literal notranslate"><span class="pre">WithinGroup</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup.over"><code class="docutils literal notranslate"><span class="pre">WithinGroup.over()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.elements.WrapsColumnExpression"><code class="docutils literal notranslate"><span class="pre">WrapsColumnExpression</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.True\_"><code class="docutils literal notranslate"><span class="pre">True\_</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce"><code class="docutils literal notranslate"><span class="pre">TypeCoerce</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group"><code class="docutils literal notranslate"><span class="pre">TypeCoerce.self\_group()</span></code></a></li></ul></li><li><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression"><code class="docutils literal notranslate"><span class="pre">UnaryExpression</span></code></a><ul><li><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression.self\_group"><code class="docutils literal notranslate"><span class="pre">UnaryExpression.self\_group()</span></code></a></li></ul></li></ul></li><li><a class="reference internal" href="#column-element-typing-utilities">Column Element Typing Utilities</a><ul><li><a class="reference internal" href="#sqlalchemy.NotNullable"><code class="docutils literal notranslate"><span class="pre">NotNullable()</span></code></a></li><li><a class="reference internal" href="#sqlalchemy.Nullable"><code class="docutils literal notranslate"><span class="pre">Nullable()</span></code></a></li></ul></li></ul></li></ul> </ul> </div> <div id="docs-body" role="main" class="withsidebar core-sqlelement" > <section id="column-elements-and-expressions"><h1>Column Elements and Expressions<a class="headerlink" href="#column-elements-and-expressions" title="Link to this heading">¶</a></h1><p>The expression API consists of a series of classes each of which represents aspecific lexical element within a SQL string. Composed togetherinto a larger structure, they form a statement construct that maybe <em>compiled</em> into a string representation that can be passed to a database.The classes are organized into a hierarchy that begins at the basemost<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a> class. Key subclasses include <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>,which represents the role of any column-based expressionin a SQL statement, such as in the columns clause, WHERE clause, and ORDER BYclause, and <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.FromClause" title="sqlalchemy.sql.expression.FromClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">FromClause</span></code></a>, which represents the role of a token thatis placed in the FROM clause of a SELECT statement.</p><section id="column-element-foundational-constructors"><span id="sqlelement-foundational-constructors"></span><h2>Column Element Foundational Constructors<a class="headerlink" href="#column-element-foundational-constructors" title="Link to this heading">¶</a></h2><p>Standalone functions imported from the <code class="docutils literal notranslate"><span class="pre">sqlalchemy</span></code> namespace which areused when building up SQLAlchemy Expression Language constructs.</p><table class="longtable docutils align-default"><thead><tr class="row-odd"><th class="head">Object Name</th><th class="head">Description</th></tr></thead><tbody><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.and\_"><span class="sig-name descname">and\_</span></a>(\*clauses)</p></td><td><p>Produce a conjunction of expressions joined by <code class="docutils literal notranslate"><span class="pre">AND</span></code>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.bindparam"><span class="sig-name descname">bindparam</span></a>(key[, value, type\_, unique, ...])</p></td><td><p>Produce a “bound expression”.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.bitwise\_not"><span class="sig-name descname">bitwise\_not</span></a>(expr)</p></td><td><p>Produce a unary bitwise NOT clause, typically via the <code class="docutils literal notranslate"><span class="pre">~</span></code> operator.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.case"><span class="sig-name descname">case</span></a>(\*whens, [value, else\_])</p></td><td><p>Produce a <code class="docutils literal notranslate"><span class="pre">CASE</span></code> expression.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.cast"><span class="sig-name descname">cast</span></a>(expression, type\_)</p></td><td><p>Produce a <code class="docutils literal notranslate"><span class="pre">CAST</span></code> expression.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.column"><span class="sig-name descname">column</span></a>(text[, type\_, is\_literal, \_selectable])</p></td><td><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> object.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.custom\_op"><span class="sig-name descname">custom\_op</span></a></p></td><td><p>Represent a ‘custom’ operator.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.distinct"><span class="sig-name descname">distinct</span></a>(expr)</p></td><td><p>Produce an column-expression-level unary <code class="docutils literal notranslate"><span class="pre">DISTINCT</span></code> clause.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.extract"><span class="sig-name descname">extract</span></a>(field, expr)</p></td><td><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.Extract" title="sqlalchemy.sql.expression.Extract"><code class="xref py py-class docutils literal notranslate"><span class="pre">Extract</span></code></a> construct.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.false"><span class="sig-name descname">false</span></a>()</p></td><td><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.False\_" title="sqlalchemy.sql.expression.False\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">False\_</span></code></a> construct.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.func"><span class="sig-name descname">func</span></a></p></td><td><p>Generate SQL function expressions.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt"><span class="sig-name descname">lambda\_stmt</span></a>(lmb[, enable\_tracking, track\_closure\_variables, track\_on, ...])</p></td><td><p>Produce a SQL statement that is cached as a lambda.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.literal"><span class="sig-name descname">literal</span></a>(value[, type\_, literal\_execute])</p></td><td><p>Return a literal clause, bound to a bind parameter.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column"><span class="sig-name descname">literal\_column</span></a>(text[, type\_])</p></td><td><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> object that has the<a class="reference internal" href="#sqlalchemy.sql.expression.column.params.is\_literal" title="sqlalchemy.sql.expression.column"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">column.is\_literal</span></code></a> flag set to True.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.not\_"><span class="sig-name descname">not\_</span></a>(clause)</p></td><td><p>Return a negation of the given clause, i.e. <code class="docutils literal notranslate"><span class="pre">NOT(clause)</span></code>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.null"><span class="sig-name descname">null</span></a>()</p></td><td><p>Return a constant <a class="reference internal" href="#sqlalchemy.sql.expression.Null" title="sqlalchemy.sql.expression.Null"><code class="xref py py-class docutils literal notranslate"><span class="pre">Null</span></code></a> construct.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.or\_"><span class="sig-name descname">or\_</span></a>(\*clauses)</p></td><td><p>Produce a conjunction of expressions joined by <code class="docutils literal notranslate"><span class="pre">OR</span></code>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.outparam"><span class="sig-name descname">outparam</span></a>(key[, type\_])</p></td><td><p>Create an ‘OUT’ parameter for usage in functions (stored procedures),for databases which support them.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name"><span class="sig-name descname">quoted\_name</span></a></p></td><td><p>Represent a SQL identifier combined with quoting preferences.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.text"><span class="sig-name descname">text</span></a>(text)</p></td><td><p>Construct a new <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextClause</span></code></a> clause,representinga textual SQL string directly.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.true"><span class="sig-name descname">true</span></a>()</p></td><td><p>Return a constant <a class="reference internal" href="#sqlalchemy.sql.expression.True\_" title="sqlalchemy.sql.expression.True\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">True\_</span></code></a> construct.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast"><span class="sig-name descname">try\_cast</span></a>(expression, type\_)</p></td><td><p>Produce a <code class="docutils literal notranslate"><span class="pre">TRY\_CAST</span></code> expression for backends which support it;this is a <code class="docutils literal notranslate"><span class="pre">CAST</span></code> which returns NULL for un-castable conversions.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.tuple\_"><span class="sig-name descname">tuple\_</span></a>(\*clauses, [types])</p></td><td><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.Tuple" title="sqlalchemy.sql.expression.Tuple"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tuple</span></code></a>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce"><span class="sig-name descname">type\_coerce</span></a>(expression, type\_)</p></td><td><p>Associate a SQL expression with a particular type, without rendering<code class="docutils literal notranslate"><span class="pre">CAST</span></code>.</p></td></tr></tbody></table><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.and\_"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">and\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">clauses</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.and\_" title="Link to this definition">¶</a></dt><dd><p>Produce a conjunction of expressions joined by <code class="docutils literal notranslate"><span class="pre">AND</span></code>.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">and\_</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">and\_</span><span class="p">(</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">,</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">enrolled</span> <span class="o">==</span> <span class="kc">True</span> <span class="p">)</span> <span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> conjunction is also available using thePython <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> operator (though note that compound expressionsneed to be parenthesized in order to function with Pythonoperator precedence behavior):</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">)</span> <span class="o">&amp;</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">enrolled</span> <span class="o">==</span> <span class="kc">True</span><span class="p">)</span> <span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> operation is also implicit in some cases;the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.where" title="sqlalchemy.sql.expression.Select.where"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.where()</span></code></a>method for example can be invoked multipletimes against a statement, which will have the effect of eachclause being combined using <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">enrolled</span> <span class="o">==</span> <span class="kc">True</span><span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> construct must be given at least one positionalargument in order to be valid; a <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> construct with noarguments is ambiguous. To produce an “empty” or dynamicallygenerated <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> expression, from a given list of expressions,a “default” element of <a class="reference internal" href="#sqlalchemy.sql.expression.true" title="sqlalchemy.sql.expression.true"><code class="xref py py-func docutils literal notranslate"><span class="pre">true()</span></code></a> (or just <code class="docutils literal notranslate"><span class="pre">True</span></code>) should bespecified:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">true</span><span class="n">criteria</span> <span class="o">=</span> <span class="n">and\_</span><span class="p">(</span><span class="n">true</span><span class="p">(),</span> <span class="o">\*</span><span class="n">expressions</span><span class="p">)</span></pre></div></div><p>The above expression will compile to SQL as the expression <code class="docutils literal notranslate"><span class="pre">true</span></code>or <code class="docutils literal notranslate"><span class="pre">1</span> <span class="pre">=</span> <span class="pre">1</span></code>, depending on backend, if no other expressions arepresent. If expressions are present, then the <a class="reference internal" href="#sqlalchemy.sql.expression.true" title="sqlalchemy.sql.expression.true"><code class="xref py py-func docutils literal notranslate"><span class="pre">true()</span></code></a> valueis ignored as it does not affect the outcome of an AND expression thathas other elements.</p><div class="deprecated"><p><span class="versionmodified deprecated">Deprecated since version 1.4: </span>The <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> element now requires that atleast one argument is passed; creating the <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> constructwith no arguments is deprecated, and will emit a deprecation warningwhile continuing to produce a blank SQL string.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.bindparam"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">bindparam</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">key</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">value</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">\_NoArg.NO\_ARG</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">unique</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">required</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">Literal</span><span class="p"><span class="pre">[</span></span><span class="pre">\_NoArg.NO\_ARG</span><span class="p"><span class="pre">]</span></span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">\_NoArg.NO\_ARG</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">quote</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">callable\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">expanding</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">isoutparam</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">literal\_execute</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><span class="pre">BindParameter</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.bindparam" title="Link to this definition">¶</a></dt><dd><p>Produce a “bound expression”.</p><p>The return value is an instance of <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a>; thisis a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>subclass which represents a so-called“placeholder” value in a SQL expression, the value of which issupplied at the point at which the statement in executed against adatabase connection.</p><p>In SQLAlchemy, the <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> construct hasthe ability to carry along the actual value that will be ultimatelyused at expression time. In this way, it serves not just asa “placeholder” for eventual population, but also as a means ofrepresenting so-called “unsafe” values which should not be rendereddirectly in a SQL statement, but rather should be passed alongto the <a class="reference internal" href="../glossary.html#term-DBAPI"><span class="xref std std-term">DBAPI</span></a> as values which need to be correctly escapedand potentially handled for type-safety.</p><p>When using <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> explicitly, the use case is typicallyone of traditional deferment of parameters; the <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>construct accepts a name which can then be referred to at executiontime:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">bindparam</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;username&#39;</span><span class="p">))</span></pre></div></div><p>The above statement, when rendered, will produce SQL similar to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span> <span class="n">WHERE</span> <span class="n">name</span> <span class="o">=</span> <span class="p">:</span><span class="n">username</span></pre></div></div><p>In order to populate the value of <code class="docutils literal notranslate"><span class="pre">:username</span></code> above, the valuewould typically be applied at execution time to a methodlike <a class="reference internal" href="connections.html#sqlalchemy.engine.Connection.execute" title="sqlalchemy.engine.Connection.execute"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Connection.execute()</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">,</span> <span class="n">username</span><span class="o">=</span><span class="s1">&#39;wendy&#39;</span><span class="p">)</span></pre></div></div><p>Explicit use of <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> is also common when producingUPDATE or DELETE statements that are to be invoked multiple times,where the WHERE criterion of the statement is to change on eachinvocation, such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">update</span><span class="p">()</span><span class="o">.</span> <span class="n">where</span><span class="p">(</span><span class="n">user\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;username&#39;</span><span class="p">))</span><span class="o">.</span> <span class="n">values</span><span class="p">(</span><span class="n">fullname</span><span class="o">=</span><span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;fullname&#39;</span><span class="p">))</span> <span class="p">)</span><span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span> <span class="n">stmt</span><span class="p">,</span> <span class="p">[{</span><span class="s2">&quot;username&quot;</span><span class="p">:</span> <span class="s2">&quot;wendy&quot;</span><span class="p">,</span> <span class="s2">&quot;fullname&quot;</span><span class="p">:</span> <span class="s2">&quot;Wendy Smith&quot;</span><span class="p">},</span> <span class="p">{</span><span class="s2">&quot;username&quot;</span><span class="p">:</span> <span class="s2">&quot;jack&quot;</span><span class="p">,</span> <span class="s2">&quot;fullname&quot;</span><span class="p">:</span> <span class="s2">&quot;Jack Jones&quot;</span><span class="p">},</span> <span class="p">]</span><span class="p">)</span></pre></div></div><p>SQLAlchemy’s Core expression system makes wide use of<a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> in an implicit sense. It is typical that Pythonliteral values passed to virtually all SQL expression functions arecoerced into fixed <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> constructs. For example, givena comparison operation such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">expr</span> <span class="o">=</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;Wendy&#39;</span></pre></div></div><p>The above expression will produce a <a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">BinaryExpression</span></code></a>construct, where the left side is the <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> objectrepresenting the <code class="docutils literal notranslate"><span class="pre">name</span></code> column, and the right side is a<a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> representing the literal value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">print</span><span class="p">(</span><span class="n">repr</span><span class="p">(</span><span class="n">expr</span><span class="o">.</span><span class="n">right</span><span class="p">))</span><span class="n">BindParameter</span><span class="p">(</span><span class="s1">&#39;%(4327771088 name)s&#39;</span><span class="p">,</span> <span class="s1">&#39;Wendy&#39;</span><span class="p">,</span> <span class="n">type\_</span><span class="o">=</span><span class="n">String</span><span class="p">())</span></pre></div></div><p>The expression above will render SQL such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">user</span><span class="o">.</span><span class="n">name</span> <span class="o">=</span> <span class="p">:</span><span class="n">name\_1</span></pre></div></div><p>Where the <code class="docutils literal notranslate"><span class="pre">:name\_1</span></code> parameter name is an anonymous name. Theactual string <code class="docutils literal notranslate"><span class="pre">Wendy</span></code> is not in the rendered string, but is carriedalong where it is later used within statement execution. If weinvoke a statement like the following:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;Wendy&#39;</span><span class="p">)</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">)</span></pre></div></div><p>We would see SQL logging output as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="s2">&quot;user&quot;</span><span class="o">.</span><span class="n">id</span><span class="p">,</span> <span class="s2">&quot;user&quot;</span><span class="o">.</span><span class="n">name</span><span class="n">FROM</span> <span class="s2">&quot;user&quot;</span><span class="n">WHERE</span> <span class="s2">&quot;user&quot;</span><span class="o">.</span><span class="n">name</span> <span class="o">=</span> <span class="o">%</span><span class="p">(</span><span class="n">name\_1</span><span class="p">)</span><span class="n">s</span><span class="p">{</span><span class="s1">&#39;name\_1&#39;</span><span class="p">:</span> <span class="s1">&#39;Wendy&#39;</span><span class="p">}</span></pre></div></div><p>Above, we see that <code class="docutils literal notranslate"><span class="pre">Wendy</span></code> is passed as a parameter to the database,while the placeholder <code class="docutils literal notranslate"><span class="pre">:name\_1</span></code> is rendered in the appropriate formfor the target database, in this case the PostgreSQL database.</p><p>Similarly, <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> is invoked automatically when workingwith <a class="reference internal" href="../glossary.html#term-CRUD"><span class="xref std std-term">CRUD</span></a> statements as far as the “VALUES” portion isconcerned. The <a class="reference internal" href="dml.html#sqlalchemy.sql.expression.insert" title="sqlalchemy.sql.expression.insert"><code class="xref py py-func docutils literal notranslate"><span class="pre">insert()</span></code></a> construct produces an<code class="docutils literal notranslate"><span class="pre">INSERT</span></code> expression which will, at statement execution time, generatebound placeholders based on the arguments passed, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">insert</span><span class="p">()</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">,</span> <span class="n">name</span><span class="o">=</span><span class="s1">&#39;Wendy&#39;</span><span class="p">)</span></pre></div></div><p>The above will produce SQL output as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">INSERT</span> <span class="n">INTO</span> <span class="s2">&quot;user&quot;</span> <span class="p">(</span><span class="n">name</span><span class="p">)</span> <span class="n">VALUES</span> <span class="p">(</span><span class="o">%</span><span class="p">(</span><span class="n">name</span><span class="p">)</span><span class="n">s</span><span class="p">)</span><span class="p">{</span><span class="s1">&#39;name&#39;</span><span class="p">:</span> <span class="s1">&#39;Wendy&#39;</span><span class="p">}</span></pre></div></div><p>The <a class="reference internal" href="dml.html#sqlalchemy.sql.expression.Insert" title="sqlalchemy.sql.expression.Insert"><code class="xref py py-class docutils literal notranslate"><span class="pre">Insert</span></code></a> construct, atcompilation/execution time, rendered a single <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>mirroring the column name <code class="docutils literal notranslate"><span class="pre">name</span></code> as a result of the single <code class="docutils literal notranslate"><span class="pre">name</span></code>parameter we passed to the <a class="reference internal" href="connections.html#sqlalchemy.engine.Connection.execute" title="sqlalchemy.engine.Connection.execute"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Connection.execute()</span></code></a> method.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.key"></span><strong>key</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.key">¶</a> – <p>the key (e.g. the name) for this bind param.Will be used in the generatedSQL statement for dialects that use named parameters. Thisvalue may be modified when part of a compilation operation,if other <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> objects exist with the samekey, or if its length is too long and truncation isrequired.</p><p>If omitted, an “anonymous” name is generated for the bound parameter;when given a value to bind, the end result is equivalent to calling uponthe <a class="reference internal" href="#sqlalchemy.sql.expression.literal" title="sqlalchemy.sql.expression.literal"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal()</span></code></a> function with a value to bind, particularlyif the <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.unique" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.unique</span></code></a> parameter is also provided.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.value"></span><strong>value</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.value">¶</a> – Initial value for this bind param. Will be used at statementexecution time as the value for this parameter passed to theDBAPI, if no other value is indicated to the statement executionmethod for this particular parameter name. Defaults to <code class="docutils literal notranslate"><span class="pre">None</span></code>.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.callable\_"></span><strong>callable\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.callable\_">¶</a> – A callable function that takes the place of “value”. The functionwill be called at statement execution time to determine theultimate value. Used for scenarios where the actual bindvalue cannot be determined at the point at which the clauseconstruct is created, but embedded bind values are still desirable.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.type\_"></span><strong>type\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.type\_">¶</a> – <p>A <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or instance representing an optionaldatatype for this <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>. If not passed, a typemay be determined automatically for the bind, based on the givenvalue; for example, trivial Python types such as <code class="docutils literal notranslate"><span class="pre">str</span></code>,<code class="docutils literal notranslate"><span class="pre">int</span></code>, <code class="docutils literal notranslate"><span class="pre">bool</span></code>may result in the <a class="reference internal" href="type\_basics.html#sqlalchemy.types.String" title="sqlalchemy.types.String"><code class="xref py py-class docutils literal notranslate"><span class="pre">String</span></code></a>, <a class="reference internal" href="type\_basics.html#sqlalchemy.types.Integer" title="sqlalchemy.types.Integer"><code class="xref py py-class docutils literal notranslate"><span class="pre">Integer</span></code></a> or<a class="reference internal" href="type\_basics.html#sqlalchemy.types.Boolean" title="sqlalchemy.types.Boolean"><code class="xref py py-class docutils literal notranslate"><span class="pre">Boolean</span></code></a> types being automatically selected.</p><p>The type of a <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> is significant especially in thatthe type will apply pre-processing to the value before it ispassed to the database. For example, a <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> whichrefers to a datetime value, and is specified as holding the<a class="reference internal" href="type\_basics.html#sqlalchemy.types.DateTime" title="sqlalchemy.types.DateTime"><code class="xref py py-class docutils literal notranslate"><span class="pre">DateTime</span></code></a> type, may apply conversion needed to thevalue (such as stringification on SQLite) before passing the valueto the database.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.unique"></span><strong>unique</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.unique">¶</a> – if True, the key name of this <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> will bemodified if another <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> of the same namealready has been located within the containingexpression. This flag is used generally by the internalswhen producing so-called “anonymous” bound expressions, itisn’t generally applicable to explicitly-named <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>constructs.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.required"></span><strong>required</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.required">¶</a> – If <code class="docutils literal notranslate"><span class="pre">True</span></code>, a value is required at execution time. If not passed,it defaults to <code class="docutils literal notranslate"><span class="pre">True</span></code> if neither <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.value" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.value</span></code></a>or <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.callable" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.callable</span></code></a> were passed. If either of theseparameters are present, then <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.required" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.required</span></code></a>defaults to <code class="docutils literal notranslate"><span class="pre">False</span></code>.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.quote"></span><strong>quote</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.quote">¶</a> – True if this parameter name requires quoting and is notcurrently known as a SQLAlchemy reserved word; this currentlyonly applies to the Oracle backend, where bound names mustsometimes be quoted.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.isoutparam"></span><strong>isoutparam</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.isoutparam">¶</a> – if True, the parameter should be treated like a stored procedure“OUT” parameter. This applies to backends such as Oracle whichsupport OUT parameters.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.expanding"></span><strong>expanding</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.expanding">¶</a> – <p>if True, this parameter will be treated as an “expanding” parameterat execution time; the parameter value is expected to be a sequence,rather than a scalar value, and the string SQL statement willbe transformed on a per-execution basis to accommodate the sequencewith a variable number of parameter slots passed to the DBAPI.This is to allow statement caching to be used in conjunction withan IN clause.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a></p><p><a class="reference internal" href="../orm/extensions/baked.html#baked-in"><span class="std std-ref">Using IN expressions</span></a> - with baked queries</p></div><div class="admonition note"><p class="admonition-title">Note</p><p>The “expanding” feature does not support “executemany”-style parameter sets.</p></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.2.</span></p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.3: </span>the “expanding” bound parameter feature nowsupports empty lists.</p></div></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.bindparam.params.literal\_execute"></span><strong>literal\_execute</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.bindparam.params.literal\_execute">¶</a> – <p>if True, the bound parameter will be rendered in the compile phasewith a special “POSTCOMPILE” token, and the SQLAlchemy compiler willrender the final value of the parameter into the SQL statement atstatement execution time, omitting the value from the parameterdictionary / list passed to DBAPI <code class="docutils literal notranslate"><span class="pre">cursor.execute()</span></code>. Thisproduces a similar effect as that of using the <code class="docutils literal notranslate"><span class="pre">literal\_binds</span></code>,compilation flag, however takes place as the statement is sent tothe DBAPI <code class="docutils literal notranslate"><span class="pre">cursor.execute()</span></code> method, rather than when the statementis compiled. The primary use of thiscapability is for rendering LIMIT / OFFSET clauses for databasedrivers that can’t accommodate for bound parameters in thesecontexts, while allowing SQL constructs to be cacheable at thecompilation level.</p><div class="versionadded"><p><span class="versionmodified added">New in version 1.4: </span>Added “post compile” bound parameters</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../changelog/migration\_14.html#change-4808"><span class="std std-ref">New “post compile” bound parameters used for LIMIT/OFFSET in Oracle, SQL Server</span></a>.</p></div></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/dbapi\_transactions.html#tutorial-sending-parameters"><span class="std std-ref">Sending Parameters</span></a> - in the<a class="reference internal" href="../tutorial/index.html#unified-tutorial"><span class="std std-ref">SQLAlchemy Unified Tutorial</span></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.bitwise\_not"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">bitwise\_not</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expr</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><span class="pre">UnaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.bitwise\_not" title="Link to this definition">¶</a></dt><dd><p>Produce a unary bitwise NOT clause, typically via the <code class="docutils literal notranslate"><span class="pre">~</span></code> operator.</p><p>Not to be confused with boolean negation <a class="reference internal" href="#sqlalchemy.sql.expression.not\_" title="sqlalchemy.sql.expression.not\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">not\_()</span></code></a>.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.case"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">case</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">whens</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">typing\_Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">Mapping</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">value</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">else\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Case" title="sqlalchemy.sql.expression.Case"><span class="pre">Case</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.case" title="Link to this definition">¶</a></dt><dd><p>Produce a <code class="docutils literal notranslate"><span class="pre">CASE</span></code> expression.</p><p>The <code class="docutils literal notranslate"><span class="pre">CASE</span></code> construct in SQL is a conditional object thatacts somewhat analogously to an “if/then” construct in otherlanguages. It returns an instance of <a class="reference internal" href="#sqlalchemy.sql.expression.Case" title="sqlalchemy.sql.expression.Case"><code class="xref py py-class docutils literal notranslate"><span class="pre">Case</span></code></a>.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.case" title="sqlalchemy.sql.expression.case"><code class="xref py py-func docutils literal notranslate"><span class="pre">case()</span></code></a> in its usual form is passed a series of “when”constructs, that is, a list of conditions and results as tuples:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">case</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span> <span class="k">case</span><span class="p">(</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">,</span> <span class="s1">&#39;W&#39;</span><span class="p">),</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;jack&#39;</span><span class="p">,</span> <span class="s1">&#39;J&#39;</span><span class="p">),</span> <span class="n">else\_</span><span class="o">=</span><span class="s1">&#39;E&#39;</span> <span class="p">)</span> <span class="p">)</span></pre></div></div><p>The above statement will produce SQL resembling:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span><span class="n">WHERE</span> <span class="n">CASE</span> <span class="n">WHEN</span> <span class="p">(</span><span class="n">name</span> <span class="o">=</span> <span class="p">:</span><span class="n">name\_1</span><span class="p">)</span> <span class="n">THEN</span> <span class="p">:</span><span class="n">param\_1</span> <span class="n">WHEN</span> <span class="p">(</span><span class="n">name</span> <span class="o">=</span> <span class="p">:</span><span class="n">name\_2</span><span class="p">)</span> <span class="n">THEN</span> <span class="p">:</span><span class="n">param\_2</span> <span class="n">ELSE</span> <span class="p">:</span><span class="n">param\_3</span><span class="n">END</span></pre></div></div><p>When simple equality expressions of several values against a singleparent column are needed, <a class="reference internal" href="#sqlalchemy.sql.expression.case" title="sqlalchemy.sql.expression.case"><code class="xref py py-func docutils literal notranslate"><span class="pre">case()</span></code></a> also has a “shorthand” formatused via the<a class="reference internal" href="#sqlalchemy.sql.expression.case.params.value" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.value</span></code></a> parameter, which is passed a columnexpression to be compared. In this form, the <a class="reference internal" href="#sqlalchemy.sql.expression.case.params.whens" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.whens</span></code></a>parameter is passed as a dictionary containing expressions to becompared against keyed to result expressions. The statement below isequivalent to the preceding statement:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span> <span class="k">case</span><span class="p">(</span> <span class="p">{</span><span class="s2">&quot;wendy&quot;</span><span class="p">:</span> <span class="s2">&quot;W&quot;</span><span class="p">,</span> <span class="s2">&quot;jack&quot;</span><span class="p">:</span> <span class="s2">&quot;J&quot;</span><span class="p">},</span> <span class="n">value</span><span class="o">=</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">,</span> <span class="n">else\_</span><span class="o">=</span><span class="s1">&#39;E&#39;</span> <span class="p">)</span> <span class="p">)</span></pre></div></div><p>The values which are accepted as result values in<a class="reference internal" href="#sqlalchemy.sql.expression.case.params.whens" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.whens</span></code></a> as well as with <a class="reference internal" href="#sqlalchemy.sql.expression.case.params.else\_" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.else\_</span></code></a> arecoerced from Python literals into <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> constructs.SQL expressions, e.g. <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> constructs,are acceptedas well. To coerce a literal string expression into a constantexpression rendered inline, use the <a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column" title="sqlalchemy.sql.expression.literal\_column"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal\_column()</span></code></a>construct,as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">case</span><span class="p">,</span> <span class="n">literal\_column</span><span class="k">case</span><span class="p">(</span> <span class="p">(</span> <span class="n">orderline</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">qty</span> <span class="o">&gt;</span> <span class="mi">100</span><span class="p">,</span> <span class="n">literal\_column</span><span class="p">(</span><span class="s2">&quot;&#39;greaterthan100&#39;&quot;</span><span class="p">)</span> <span class="p">),</span> <span class="p">(</span> <span class="n">orderline</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">qty</span> <span class="o">&gt;</span> <span class="mi">10</span><span class="p">,</span> <span class="n">literal\_column</span><span class="p">(</span><span class="s2">&quot;&#39;greaterthan10&#39;&quot;</span><span class="p">)</span> <span class="p">),</span> <span class="n">else\_</span><span class="o">=</span><span class="n">literal\_column</span><span class="p">(</span><span class="s2">&quot;&#39;lessthan10&#39;&quot;</span><span class="p">)</span><span class="p">)</span></pre></div></div><p>The above will render the given constants without using boundparameters for the result values (but still for the comparisonvalues), as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">CASE</span> <span class="n">WHEN</span> <span class="p">(</span><span class="n">orderline</span><span class="o">.</span><span class="n">qty</span> <span class="o">&gt;</span> <span class="p">:</span><span class="n">qty\_1</span><span class="p">)</span> <span class="n">THEN</span> <span class="s1">&#39;greaterthan100&#39;</span> <span class="n">WHEN</span> <span class="p">(</span><span class="n">orderline</span><span class="o">.</span><span class="n">qty</span> <span class="o">&gt;</span> <span class="p">:</span><span class="n">qty\_2</span><span class="p">)</span> <span class="n">THEN</span> <span class="s1">&#39;greaterthan10&#39;</span> <span class="n">ELSE</span> <span class="s1">&#39;lessthan10&#39;</span><span class="n">END</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.case.params.\*whens"></span><strong>\*whens</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.case.params.\*whens">¶</a> – <p>The criteria to be compared against,<a class="reference internal" href="#sqlalchemy.sql.expression.case.params.whens" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.whens</span></code></a> accepts two different forms, based onwhether or not <a class="reference internal" href="#sqlalchemy.sql.expression.case.params.value" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.value</span></code></a> is used.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>the <a class="reference internal" href="#sqlalchemy.sql.expression.case" title="sqlalchemy.sql.expression.case"><code class="xref py py-func docutils literal notranslate"><span class="pre">case()</span></code></a>function now accepts the series of WHEN conditions positionally</p></div><p>In the first form, it accepts multiple 2-tuples passed as positionalarguments; each 2-tuple consists of <code class="docutils literal notranslate"><span class="pre">(&lt;sql</span> <span class="pre">expression&gt;,</span> <span class="pre">&lt;value&gt;)</span></code>,where the SQL expression is a boolean expression and “value” is aresulting value, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">case</span><span class="p">(</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">,</span> <span class="s1">&#39;W&#39;</span><span class="p">),</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;jack&#39;</span><span class="p">,</span> <span class="s1">&#39;J&#39;</span><span class="p">)</span><span class="p">)</span></pre></div></div><p>In the second form, it accepts a Python dictionary of comparisonvalues mapped to a resulting value; this form requires<a class="reference internal" href="#sqlalchemy.sql.expression.case.params.value" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.value</span></code></a> to be present, and values will be comparedusing the <code class="docutils literal notranslate"><span class="pre">==</span></code> operator, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">case</span><span class="p">(</span> <span class="p">{</span><span class="s2">&quot;wendy&quot;</span><span class="p">:</span> <span class="s2">&quot;W&quot;</span><span class="p">,</span> <span class="s2">&quot;jack&quot;</span><span class="p">:</span> <span class="s2">&quot;J&quot;</span><span class="p">},</span> <span class="n">value</span><span class="o">=</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">)</span></pre></div></div></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.case.params.value"></span><strong>value</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.case.params.value">¶</a> – An optional SQL expression which will be used as afixed “comparison point” for candidate values within a dictionarypassed to <a class="reference internal" href="#sqlalchemy.sql.expression.case.params.whens" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.whens</span></code></a>.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.case.params.else\_"></span><strong>else\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.case.params.else\_">¶</a> – An optional SQL expression which will be the evaluatedresult of the <code class="docutils literal notranslate"><span class="pre">CASE</span></code> construct if all expressions within<a class="reference internal" href="#sqlalchemy.sql.expression.case.params.whens" title="sqlalchemy.sql.expression.case"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">case.whens</span></code></a> evaluate to false. When omitted, mostdatabases will produce a result of NULL if none of the “when”expressions evaluate to true.</p></li></ul></dd></dl></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.cast"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">cast</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expression</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionOrLiteralArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><span class="pre">Cast</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.cast" title="Link to this definition">¶</a></dt><dd><p>Produce a <code class="docutils literal notranslate"><span class="pre">CAST</span></code> expression.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a> returns an instance of <a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><code class="xref py py-class docutils literal notranslate"><span class="pre">Cast</span></code></a>.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">cast</span><span class="p">,</span> <span class="n">Numeric</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">cast</span><span class="p">(</span><span class="n">product\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">unit\_price</span><span class="p">,</span> <span class="n">Numeric</span><span class="p">(</span><span class="mi">10</span><span class="p">,</span> <span class="mi">4</span><span class="p">)))</span></pre></div></div><p>The above statement will produce SQL resembling:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">CAST</span><span class="p">(</span><span class="n">unit\_price</span> <span class="n">AS</span> <span class="n">NUMERIC</span><span class="p">(</span><span class="mi">10</span><span class="p">,</span> <span class="mi">4</span><span class="p">))</span> <span class="n">FROM</span> <span class="n">product</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a> function performs two distinct functions whenused. The first is that it renders the <code class="docutils literal notranslate"><span class="pre">CAST</span></code> expression withinthe resulting SQL string. The second is that it associates the giventype (e.g. <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or instance) with the columnexpression on the Python side, which means the expression will takeon the expression operator behavior associated with that type,as well as the bound-value handling and result-row-handling behaviorof the type.</p><p>An alternative to <a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a> is the <a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> function.This function performs the second task of associating an expressionwith a specific type, but does not render the <code class="docutils literal notranslate"><span class="pre">CAST</span></code> expressionin SQL.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.cast.params.expression"></span><strong>expression</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.cast.params.expression">¶</a> – A SQL expression, such as a<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>expression or a Python string which will be coerced into a boundliteral value.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.cast.params.type\_"></span><strong>type\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.cast.params.type\_">¶</a> – A <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or instance indicatingthe type to which the <code class="docutils literal notranslate"><span class="pre">CAST</span></code> should apply.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-casts"><span class="std std-ref">Data Casts and Type Coercion</span></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a> - an alternative to CAST that results inNULLs when the cast fails, instead of raising an error.Only supported by some dialects.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> - an alternative to CAST that coerces the typeon the Python side only, which is often sufficient to generate thecorrect SQL and data coercion.</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.column"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">column</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">text</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">is\_literal</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">\_selectable</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.FromClause" title="sqlalchemy.sql.expression.FromClause"><span class="pre">FromClause</span></a><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><span class="pre">ColumnClause</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.column" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> object.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> is a lightweight analogue to the<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> class. The <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>function canbe invoked with just a name alone, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">column</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;name&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">)</span><span class="o">.</span><span class="n">select\_from</span><span class="p">(</span><span class="s2">&quot;user&quot;</span><span class="p">)</span></pre></div></div><p>The above statement would produce SQL like:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span></pre></div></div><p>Once constructed, <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>may be used like any other SQLexpression element such as within <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">column</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;name&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">)</span><span class="o">.</span><span class="n">select\_from</span><span class="p">(</span><span class="s2">&quot;user&quot;</span><span class="p">)</span></pre></div></div><p>The text handled by <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>is assumed to be handledlike the name of a database column; if the string contains mixed case,special characters, or matches a known reserved word on the targetbackend, the column expression will render using the quotingbehavior determined by the backend. To produce a textual SQLexpression that is rendered exactly without any quoting,use <a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column" title="sqlalchemy.sql.expression.literal\_column"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal\_column()</span></code></a> instead,or pass <code class="docutils literal notranslate"><span class="pre">True</span></code> as thevalue of <a class="reference internal" href="#sqlalchemy.sql.expression.column.params.is\_literal" title="sqlalchemy.sql.expression.column"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">column.is\_literal</span></code></a>. Additionally,full SQLstatements are best handled using the <a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a>construct.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a> can be used in a table-likefashion by combining it with the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.table" title="sqlalchemy.sql.expression.table"><code class="xref py py-func docutils literal notranslate"><span class="pre">table()</span></code></a> function(which is the lightweight analogue to <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a>) to producea working table construct with minimal boilerplate:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">table</span><span class="p">,</span> <span class="n">column</span><span class="p">,</span> <span class="n">select</span><span class="n">user</span> <span class="o">=</span> <span class="n">table</span><span class="p">(</span><span class="s2">&quot;user&quot;</span><span class="p">,</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;name&quot;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;description&quot;</span><span class="p">),</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">user</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">description</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">user</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">)</span></pre></div></div><p>A <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a> / <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.table" title="sqlalchemy.sql.expression.table"><code class="xref py py-func docutils literal notranslate"><span class="pre">table()</span></code></a>construct like that illustratedabove can be created in anad-hoc fashion and is not associated with any<a class="reference internal" href="metadata.html#sqlalchemy.schema.MetaData" title="sqlalchemy.schema.MetaData"><code class="xref py py-class docutils literal notranslate"><span class="pre">MetaData</span></code></a>, DDL, or events, unlike its<a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a> counterpart.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.column.params.text"></span><strong>text</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.column.params.text">¶</a> – the text of the element.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.column.params.type"></span><strong>type</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.column.params.type">¶</a> – <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> object which can associatethis <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> with a type.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.column.params.is\_literal"></span><strong>is\_literal</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.column.params.is\_literal">¶</a> – if True, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> is assumed tobe an exact expression that will be delivered to the output with noquoting rules applied regardless of case sensitive settings. the<a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column" title="sqlalchemy.sql.expression.literal\_column"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal\_column()</span></code></a> function essentially invokes<a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a> while passing <code class="docutils literal notranslate"><span class="pre">is\_literal=True</span></code>.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column" title="sqlalchemy.sql.expression.literal\_column"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal\_column()</span></code></a></p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.table" title="sqlalchemy.sql.expression.table"><code class="xref py py-func docutils literal notranslate"><span class="pre">table()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a></p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-select-arbitrary-text"><span class="std std-ref">Selecting with Textual Column Expressions</span></a></p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.custom\_op"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">custom\_op</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.custom\_op" title="Link to this definition">¶</a></dt><dd><p>Represent a ‘custom’ operator.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.custom\_op" title="sqlalchemy.sql.expression.custom\_op"><code class="xref py py-class docutils literal notranslate"><span class="pre">custom\_op</span></code></a> is normally instantiated when the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a> or <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a> methodsare used to create a custom operator callable. The class can also beused directly when programmatically constructing expressions. E.g.to represent the “factorial” operation:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">UnaryExpression</span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">operators</span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">Numeric</span><span class="n">unary</span> <span class="o">=</span> <span class="n">UnaryExpression</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somecolumn</span><span class="p">,</span> <span class="n">modifier</span><span class="o">=</span><span class="n">operators</span><span class="o">.</span><span class="n">custom\_op</span><span class="p">(</span><span class="s2">&quot;!&quot;</span><span class="p">),</span> <span class="n">type\_</span><span class="o">=</span><span class="n">Numeric</span><span class="p">)</span></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.custom\_op" title="sqlalchemy.sql.expression.custom\_op"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.custom\_op</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.OperatorType</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">typing.Generic</span></code>)</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.distinct"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">distinct</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expr</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><span class="pre">UnaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.distinct" title="Link to this definition">¶</a></dt><dd><p>Produce an column-expression-level unary <code class="docutils literal notranslate"><span class="pre">DISTINCT</span></code> clause.</p><p>This applies the <code class="docutils literal notranslate"><span class="pre">DISTINCT</span></code> keyword to an individual columnexpression, and is typically contained within an aggregate function,as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">distinct</span><span class="p">,</span> <span class="n">func</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">count</span><span class="p">(</span><span class="n">distinct</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">)))</span></pre></div></div><p>The above would produce an expression resembling:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">COUNT</span><span class="p">(</span><span class="n">DISTINCT</span> <span class="n">name</span><span class="p">)</span> <span class="n">FROM</span> <span class="n">user</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.distinct" title="sqlalchemy.sql.expression.distinct"><code class="xref py py-func docutils literal notranslate"><span class="pre">distinct()</span></code></a> function is also available as a column-levelmethod, e.g. <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.distinct" title="sqlalchemy.sql.expression.ColumnElement.distinct"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.distinct()</span></code></a>, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">count</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="o">.</span><span class="n">distinct</span><span class="p">()))</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.distinct" title="sqlalchemy.sql.expression.distinct"><code class="xref py py-func docutils literal notranslate"><span class="pre">distinct()</span></code></a> operator is different from the<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.distinct" title="sqlalchemy.sql.expression.Select.distinct"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.distinct()</span></code></a> method of<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select" title="sqlalchemy.sql.expression.Select"><code class="xref py py-class docutils literal notranslate"><span class="pre">Select</span></code></a>,which produces a <code class="docutils literal notranslate"><span class="pre">SELECT</span></code> statementwith <code class="docutils literal notranslate"><span class="pre">DISTINCT</span></code> applied to the result set as a whole,e.g. a <code class="docutils literal notranslate"><span class="pre">SELECT</span> <span class="pre">DISTINCT</span></code> expression. See that method for furtherinformation.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.distinct" title="sqlalchemy.sql.expression.ColumnElement.distinct"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.distinct()</span></code></a></p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.distinct" title="sqlalchemy.sql.expression.Select.distinct"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.distinct()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.extract"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">extract</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">field</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">expr</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Extract" title="sqlalchemy.sql.expression.Extract"><span class="pre">Extract</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.extract" title="Link to this definition">¶</a></dt><dd><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.Extract" title="sqlalchemy.sql.expression.Extract"><code class="xref py py-class docutils literal notranslate"><span class="pre">Extract</span></code></a> construct.</p><p>This is typically available as <a class="reference internal" href="#sqlalchemy.sql.expression.extract" title="sqlalchemy.sql.expression.extract"><code class="xref py py-func docutils literal notranslate"><span class="pre">extract()</span></code></a>as well as <code class="docutils literal notranslate"><span class="pre">func.extract</span></code> from the<a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a> namespace.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.extract.params.field"></span><strong>field</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.extract.params.field">¶</a> – The field to extract.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.extract.params.expr"></span><strong>expr</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.extract.params.expr">¶</a> – A column or Python scalar expression serving as theright side of the <code class="docutils literal notranslate"><span class="pre">EXTRACT</span></code> expression.</p></li></ul></dd></dl><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">extract</span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">table</span><span class="p">,</span> <span class="n">column</span><span class="n">logged\_table</span> <span class="o">=</span> <span class="n">table</span><span class="p">(</span><span class="s2">&quot;user&quot;</span><span class="p">,</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;date\_created&quot;</span><span class="p">),</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">logged\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">extract</span><span class="p">(</span><span class="s2">&quot;YEAR&quot;</span><span class="p">,</span> <span class="n">logged\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">date\_created</span><span class="p">)</span> <span class="o">==</span> <span class="mi">2021</span><span class="p">)</span></pre></div></div><p>In the above example, the statement is used to select ids from thedatabase where the <code class="docutils literal notranslate"><span class="pre">YEAR</span></code> component matches a specific value.</p><p>Similarly, one can also select an extracted component:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span> <span class="n">extract</span><span class="p">(</span><span class="s2">&quot;YEAR&quot;</span><span class="p">,</span> <span class="n">logged\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">date\_created</span><span class="p">)</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">logged\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span> <span class="o">==</span> <span class="mi">1</span><span class="p">)</span></pre></div></div><p>The implementation of <code class="docutils literal notranslate"><span class="pre">EXTRACT</span></code> may vary across database backends.Users are reminded to consult their database documentation.</p></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.false"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">false</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.False\_" title="sqlalchemy.sql.elements.False\_"><span class="pre">False\_</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.false" title="Link to this definition">¶</a></dt><dd><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.False\_" title="sqlalchemy.sql.expression.False\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">False\_</span></code></a> construct.</p><p>E.g.:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">false</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">false</span><span class="p">()))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="k">false</span></div></pre></div></div><p>A backend which does not support true/false constants will render asan expression against 1 or 0:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">false</span><span class="p">()))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="mi">0</span><span class="w"> </span><span class="o">=</span><span class="w"> </span><span class="mi">1</span></div></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.true" title="sqlalchemy.sql.expression.true"><code class="xref py py-func docutils literal notranslate"><span class="pre">true()</span></code></a> and <a class="reference internal" href="#sqlalchemy.sql.expression.false" title="sqlalchemy.sql.expression.false"><code class="xref py py-func docutils literal notranslate"><span class="pre">false()</span></code></a> constants also feature“short circuit” operation within an <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> or <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a>conjunction:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">or\_</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">,</span> <span class="n">true</span><span class="p">())))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="k">true</span></div><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">and\_</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">,</span> <span class="n">false</span><span class="p">())))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="k">false</span></div></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.true" title="sqlalchemy.sql.expression.true"><code class="xref py py-func docutils literal notranslate"><span class="pre">true()</span></code></a></p></div></dd></dl><dl class="py data"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.func"><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">func</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">&lt;sqlalchemy.sql.functions.\_FunctionGenerator</span> <span class="pre">object&gt;</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.func" title="Link to this definition">¶</a></dt><dd><p>Generate SQL function expressions.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a> is a special object instance which generates SQLfunctions based on name-based attributes, e.g.:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">count</span><span class="p">(</span><span class="mi">1</span><span class="p">))</span><div class='show\_sql\_print'><span class="k">count</span><span class="p">(:</span><span class="n">param\_1</span><span class="p">)</span></div></pre></div></div><p>The returned object is an instance of <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.Function" title="sqlalchemy.sql.functions.Function"><code class="xref py py-class docutils literal notranslate"><span class="pre">Function</span></code></a>, and is acolumn-oriented SQL element like any other, and is used in that way:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">count</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="p">)))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="k">count</span><span class="p">(</span><span class="n">sometable</span><span class="p">.</span><span class="n">id</span><span class="p">)</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">sometable</span></div></pre></div></div><p>Any name can be given to <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a>. If the function name is unknown toSQLAlchemy, it will be rendered exactly as is. For common SQL functionswhich SQLAlchemy is aware of, the name may be interpreted as a <em>genericfunction</em> which will be compiled appropriately to the target database:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">current\_timestamp</span><span class="p">())</span><div class='show\_sql\_print'><span class="k">CURRENT\_TIMESTAMP</span></div></pre></div></div><p>To call functions which are present in dot-separated packages,specify them in the same manner:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">stats</span><span class="o">.</span><span class="n">yield\_curve</span><span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">10</span><span class="p">))</span><div class='show\_sql\_print'><span class="n">stats</span><span class="p">.</span><span class="n">yield\_curve</span><span class="p">(:</span><span class="n">yield\_curve\_1</span><span class="p">,</span><span class="w"> </span><span class="p">:</span><span class="n">yield\_curve\_2</span><span class="p">)</span></div></pre></div></div><p>SQLAlchemy can be made aware of the return type of functions to enabletype-specific lexical and result-based behavior. For example, to ensurethat a string-based function returns a Unicode value and is similarlytreated as a string in expressions, specify<a class="reference internal" href="type\_basics.html#sqlalchemy.types.Unicode" title="sqlalchemy.types.Unicode"><code class="xref py py-class docutils literal notranslate"><span class="pre">Unicode</span></code></a> as the type:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">my\_string</span><span class="p">(</span><span class="sa">u</span><span class="s1">&#39;hi&#39;</span><span class="p">,</span> <span class="n">type\_</span><span class="o">=</span><span class="n">Unicode</span><span class="p">)</span> <span class="o">+</span> <span class="s1">&#39; &#39;</span> <span class="o">+</span><span class="go">... func.my\_string(u&#39;there&#39;, type\_=Unicode))</span><div class='show\_sql\_print'><span class="n">my\_string</span><span class="p">(:</span><span class="n">my\_string\_1</span><span class="p">)</span><span class="w"> </span><span class="o">||</span><span class="w"> </span><span class="p">:</span><span class="n">my\_string\_2</span><span class="w"> </span><span class="o">||</span><span class="w"> </span><span class="n">my\_string</span><span class="p">(:</span><span class="n">my\_string\_3</span><span class="p">)</span></div></pre></div></div><p>The object returned by a <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a> call is usually an instance of<a class="reference internal" href="functions.html#sqlalchemy.sql.functions.Function" title="sqlalchemy.sql.functions.Function"><code class="xref py py-class docutils literal notranslate"><span class="pre">Function</span></code></a>.This object meets the “column” interface, including comparison and labelingfunctions. The object can also be passed the <code class="xref py py-meth docutils literal notranslate"><span class="pre">Connectable.execute()</span></code>method of a <a class="reference internal" href="connections.html#sqlalchemy.engine.Connection" title="sqlalchemy.engine.Connection"><code class="xref py py-class docutils literal notranslate"><span class="pre">Connection</span></code></a> or <a class="reference internal" href="connections.html#sqlalchemy.engine.Engine" title="sqlalchemy.engine.Engine"><code class="xref py py-class docutils literal notranslate"><span class="pre">Engine</span></code></a>,where it will bewrapped inside of a SELECT statement first:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">print</span><span class="p">(</span><span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">current\_timestamp</span><span class="p">())</span><span class="o">.</span><span class="n">scalar</span><span class="p">())</span></pre></div></div><p>In a few exception cases, the <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a> accessorwill redirect a name to a built-in expression such as <a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a>or <a class="reference internal" href="#sqlalchemy.sql.expression.extract" title="sqlalchemy.sql.expression.extract"><code class="xref py py-func docutils literal notranslate"><span class="pre">extract()</span></code></a>, as these names have well-known meaningbut are not exactly the same as “functions” from a SQLAlchemyperspective.</p><p>Functions which are interpreted as “generic” functions know how tocalculate their return type automatically. For a listing of known genericfunctions, see <a class="reference internal" href="functions.html#generic-functions"><span class="std std-ref">SQL and Generic Functions</span></a>.</p><div class="admonition note"><p class="admonition-title">Note</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a> construct has only limited support for callingstandalone “stored procedures”, especially those with specialparameterization concerns.</p><p>See the section <a class="reference internal" href="connections.html#stored-procedures"><span class="std std-ref">Calling Stored Procedures and User Defined Functions</span></a> for details on how to usethe DBAPI-level <code class="docutils literal notranslate"><span class="pre">callproc()</span></code> method for fully traditional storedprocedures.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-functions"><span class="std std-ref">Working with SQL Functions</span></a> - in the <a class="reference internal" href="../tutorial/index.html#unified-tutorial"><span class="std std-ref">SQLAlchemy Unified Tutorial</span></a></p><p><a class="reference internal" href="functions.html#sqlalchemy.sql.functions.Function" title="sqlalchemy.sql.functions.Function"><code class="xref py py-class docutils literal notranslate"><span class="pre">Function</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.lambda\_stmt"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">lambda\_stmt</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">lmb</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">enable\_tracking</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">True</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">track\_closure\_variables</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">True</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">track\_on</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">object</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">global\_track\_bound\_values</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">True</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">track\_bound\_values</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">True</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">lambda\_cache</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">MutableMapping</span><span class="p"><span class="pre">[</span></span><span class="pre">Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">NonAnalyzedFunction</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">AnalyzedFunction</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.StatementLambdaElement" title="sqlalchemy.sql.lambdas.StatementLambdaElement"><span class="pre">StatementLambdaElement</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.lambda\_stmt" title="Link to this definition">¶</a></dt><dd><p>Produce a SQL statement that is cached as a lambda.</p><p>The Python code object within the lambda is scanned for both Pythonliterals that will become bound parameters as well as closure variablesthat refer to Core or ORM constructs that may vary. The lambda itselfwill be invoked only once per particular set of constructs detected.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">lambda\_stmt</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">lambda\_stmt</span><span class="p">(</span><span class="k">lambda</span><span class="p">:</span> <span class="n">table</span><span class="o">.</span><span class="n">select</span><span class="p">())</span><span class="n">stmt</span> <span class="o">+=</span> <span class="k">lambda</span> <span class="n">s</span><span class="p">:</span> <span class="n">s</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span> <span class="o">==</span> <span class="mi">5</span><span class="p">)</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">)</span></pre></div></div><p>The object returned is an instance of <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.StatementLambdaElement" title="sqlalchemy.sql.expression.StatementLambdaElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">StatementLambdaElement</span></code></a>.</p><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.</span></p></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.lambda\_stmt.params.lmb"></span><strong>lmb</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt.params.lmb">¶</a> – a Python function, typically a lambda, which takes no argumentsand returns a SQL expression construct</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.lambda\_stmt.params.enable\_tracking"></span><strong>enable\_tracking</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt.params.enable\_tracking">¶</a> – when False, all scanning of the given lambda forchanges in closure variables or bound parameters is disabled. Use fora lambda that produces the identical results in all cases with noparameterization.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.lambda\_stmt.params.track\_closure\_variables"></span><strong>track\_closure\_variables</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt.params.track\_closure\_variables">¶</a> – when False, changes in closure variableswithin the lambda will not be scanned. Use for a lambda where thestate of its closure variables will never change the SQL structurereturned by the lambda.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.lambda\_stmt.params.track\_bound\_values"></span><strong>track\_bound\_values</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt.params.track\_bound\_values">¶</a> – when False, bound parameter tracking willbe disabled for the given lambda. Use for a lambda that either doesnot produce any bound values, or where the initial bound values neverchange.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.lambda\_stmt.params.global\_track\_bound\_values"></span><strong>global\_track\_bound\_values</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt.params.global\_track\_bound\_values">¶</a> – when False, bound parameter trackingwill be disabled for the entire statement including additional linksadded via the <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.StatementLambdaElement.add\_criteria" title="sqlalchemy.sql.expression.StatementLambdaElement.add\_criteria"><code class="xref py py-meth docutils literal notranslate"><span class="pre">StatementLambdaElement.add\_criteria()</span></code></a> method.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.lambda\_stmt.params.lambda\_cache"></span><strong>lambda\_cache</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.lambda\_stmt.params.lambda\_cache">¶</a> – a dictionary or other mapping-like object whereinformation about the lambda’s Python code as well as the tracked closurevariables in the lambda itself will be stored. Defaultsto a global LRU cache. This cache is independent of the “compiled\_cache”used by the <a class="reference internal" href="connections.html#sqlalchemy.engine.Connection" title="sqlalchemy.engine.Connection"><code class="xref py py-class docutils literal notranslate"><span class="pre">Connection</span></code></a> object.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="connections.html#engine-lambda-caching"><span class="std std-ref">Using Lambdas to add significant speed gains to statement production</span></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.literal"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">literal</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">value</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">literal\_execute</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><span class="pre">BindParameter</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.literal" title="Link to this definition">¶</a></dt><dd><p>Return a literal clause, bound to a bind parameter.</p><p>Literal clauses are created automatically when non-<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a> objects (such as strings, ints, dates,etc.) areused in a comparison operation with a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>subclass,such as a <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> object. Use this functionto force the generation of a literal clause, which will be created as a<a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> with a bound value.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.literal.params.value"></span><strong>value</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.literal.params.value">¶</a> – the value to be bound. Can be any Python object supported bythe underlying DB-API, or is translatable via the given type argument.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.literal.params.type\_"></span><strong>type\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.literal.params.type\_">¶</a> – an optional <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> which willprovide bind-parameter translation for this literal.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.literal.params.literal\_execute"></span><strong>literal\_execute</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.literal.params.literal\_execute">¶</a> – <p>optional bool, when True, the SQL engine willattempt to render the bound value directly in the SQL statement atexecution time rather than providing as a parameter value.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.</span></p></div></p></li></ul></dd></dl></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.literal\_column"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">literal\_column</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">text</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><span class="pre">ColumnClause</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.literal\_column" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> object that has the<a class="reference internal" href="#sqlalchemy.sql.expression.column.params.is\_literal" title="sqlalchemy.sql.expression.column"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">column.is\_literal</span></code></a> flag set to True.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column" title="sqlalchemy.sql.expression.literal\_column"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal\_column()</span></code></a> is similar to<a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>, except thatit is more often used as a “standalone” column expression that rendersexactly as stated; while <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>stores a string name thatwill be assumed to be part of a table and may be quoted as such,<a class="reference internal" href="#sqlalchemy.sql.expression.literal\_column" title="sqlalchemy.sql.expression.literal\_column"><code class="xref py py-func docutils literal notranslate"><span class="pre">literal\_column()</span></code></a> can be that,or any other arbitrary column-orientedexpression.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.literal\_column.params.text"></span><strong>text</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.literal\_column.params.text">¶</a> – the text of the expression; can be any SQL expression.Quoting rules will not be applied. To specify a column-name expressionwhich should be subject to quoting rules, use the <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>function.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.literal\_column.params.type\_"></span><strong>type\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.literal\_column.params.type\_">¶</a> – an optional <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a>object which willprovide result-set translation and additional expression semantics forthis column. If left as <code class="docutils literal notranslate"><span class="pre">None</span></code> the type will be <a class="reference internal" href="type\_api.html#sqlalchemy.types.NullType" title="sqlalchemy.types.NullType"><code class="xref py py-class docutils literal notranslate"><span class="pre">NullType</span></code></a>.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a></p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-select-arbitrary-text"><span class="std std-ref">Selecting with Textual Column Expressions</span></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.not\_"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">not\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">clause</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.not\_" title="Link to this definition">¶</a></dt><dd><p>Return a negation of the given clause, i.e. <code class="docutils literal notranslate"><span class="pre">NOT(clause)</span></code>.</p><p>The <code class="docutils literal notranslate"><span class="pre">~</span></code> operator is also overloaded on all<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> subclasses to produce thesame result.</p></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.null"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">null</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Null" title="sqlalchemy.sql.elements.Null"><span class="pre">Null</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.null" title="Link to this definition">¶</a></dt><dd><p>Return a constant <a class="reference internal" href="#sqlalchemy.sql.expression.Null" title="sqlalchemy.sql.expression.Null"><code class="xref py py-class docutils literal notranslate"><span class="pre">Null</span></code></a> construct.</p></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.or\_"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">or\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">clauses</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.or\_" title="Link to this definition">¶</a></dt><dd><p>Produce a conjunction of expressions joined by <code class="docutils literal notranslate"><span class="pre">OR</span></code>.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">or\_</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">or\_</span><span class="p">(</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">,</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;jack&#39;</span> <span class="p">)</span> <span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a> conjunction is also available using thePython <code class="docutils literal notranslate"><span class="pre">|</span></code> operator (though note that compound expressionsneed to be parenthesized in order to function with Pythonoperator precedence behavior):</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">)</span> <span class="o">|</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;jack&#39;</span><span class="p">)</span> <span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a> construct must be given at least one positionalargument in order to be valid; a <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a> construct with noarguments is ambiguous. To produce an “empty” or dynamicallygenerated <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a> expression, from a given list of expressions,a “default” element of <a class="reference internal" href="#sqlalchemy.sql.expression.false" title="sqlalchemy.sql.expression.false"><code class="xref py py-func docutils literal notranslate"><span class="pre">false()</span></code></a> (or just <code class="docutils literal notranslate"><span class="pre">False</span></code>) should bespecified:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">false</span><span class="n">or\_criteria</span> <span class="o">=</span> <span class="n">or\_</span><span class="p">(</span><span class="n">false</span><span class="p">(),</span> <span class="o">\*</span><span class="n">expressions</span><span class="p">)</span></pre></div></div><p>The above expression will compile to SQL as the expression <code class="docutils literal notranslate"><span class="pre">false</span></code>or <code class="docutils literal notranslate"><span class="pre">0</span> <span class="pre">=</span> <span class="pre">1</span></code>, depending on backend, if no other expressions arepresent. If expressions are present, then the <a class="reference internal" href="#sqlalchemy.sql.expression.false" title="sqlalchemy.sql.expression.false"><code class="xref py py-func docutils literal notranslate"><span class="pre">false()</span></code></a> valueis ignored as it does not affect the outcome of an OR expression whichhas other elements.</p><div class="deprecated"><p><span class="versionmodified deprecated">Deprecated since version 1.4: </span>The <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a> element now requires that atleast one argument is passed; creating the <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a> constructwith no arguments is deprecated, and will emit a deprecation warningwhile continuing to produce a blank SQL string.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.outparam"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">outparam</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">key</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><span class="pre">BindParameter</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.outparam" title="Link to this definition">¶</a></dt><dd><p>Create an ‘OUT’ parameter for usage in functions (stored procedures),for databases which support them.</p><p>The <code class="docutils literal notranslate"><span class="pre">outparam</span></code> can be used like a regular function parameter.The “output” value will be available from the<a class="reference internal" href="connections.html#sqlalchemy.engine.CursorResult" title="sqlalchemy.engine.CursorResult"><code class="xref py py-class docutils literal notranslate"><span class="pre">CursorResult</span></code></a> object via its <code class="docutils literal notranslate"><span class="pre">out\_parameters</span></code>attribute, which returns a dictionary containing the values.</p></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.text"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">text</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">text</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.elements.TextClause"><span class="pre">TextClause</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.text" title="Link to this definition">¶</a></dt><dd><p>Construct a new <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextClause</span></code></a> clause,representinga textual SQL string directly.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">text</span><span class="n">t</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT \* FROM users&quot;</span><span class="p">)</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">t</span><span class="p">)</span></pre></div></div><p>The advantages <a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a>provides over a plain string arebackend-neutral support for bind parameters, per-statementexecution options, as well asbind parameter and result-column typing behavior, allowingSQLAlchemy type constructs to play a role when executinga statement that is specified literally. The construct can alsobe provided with a <code class="docutils literal notranslate"><span class="pre">.c</span></code> collection of column elements, allowingit to be embedded in other SQL expression constructs as a subquery.</p><p>Bind parameters are specified by name, using the format <code class="docutils literal notranslate"><span class="pre">:name</span></code>.E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">t</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT \* FROM users WHERE id=:user\_id&quot;</span><span class="p">)</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">t</span><span class="p">,</span> <span class="n">user\_id</span><span class="o">=</span><span class="mi">12</span><span class="p">)</span></pre></div></div><p>For SQL statements where a colon is required verbatim, as withinan inline string, use a backslash to escape:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">t</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="sa">r</span><span class="s2">&quot;SELECT \* FROM users WHERE name=&#39;\:username&#39;&quot;</span><span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextClause</span></code></a>construct includes methods which canprovide information about the bound parameters as well as the columnvalues which would be returned from the textual statement, assumingit’s an executable SELECT type of statement. The<a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams" title="sqlalchemy.sql.expression.TextClause.bindparams"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.bindparams()</span></code></a>method is used to provide boundparameter detail, and <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns" title="sqlalchemy.sql.expression.TextClause.columns"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a>method allowsspecification of return columns including names and types:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">t</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT \* FROM users WHERE id=:user\_id&quot;</span><span class="p">)</span><span class="o">.</span>\ <span class="n">bindparams</span><span class="p">(</span><span class="n">user\_id</span><span class="o">=</span><span class="mi">7</span><span class="p">)</span><span class="o">.</span>\ <span class="n">columns</span><span class="p">(</span><span class="n">id</span><span class="o">=</span><span class="n">Integer</span><span class="p">,</span> <span class="n">name</span><span class="o">=</span><span class="n">String</span><span class="p">)</span><span class="k">for</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="ow">in</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">t</span><span class="p">):</span> <span class="n">print</span><span class="p">(</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a> construct is used in cases whena literal string SQL fragment is specified as part of a larger query,such as for the WHERE clause of a SELECT statement:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">s</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="p">,</span> <span class="n">users</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">text</span><span class="p">(</span><span class="s2">&quot;id=:user\_id&quot;</span><span class="p">))</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">s</span><span class="p">,</span> <span class="n">user\_id</span><span class="o">=</span><span class="mi">12</span><span class="p">)</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a> is also used for the constructionof a full, standalone statement using plain text.As such, SQLAlchemy refersto it as an <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Executable" title="sqlalchemy.sql.expression.Executable"><code class="xref py py-class docutils literal notranslate"><span class="pre">Executable</span></code></a> object and may be usedlike any other statement passed to an <code class="docutils literal notranslate"><span class="pre">.execute()</span></code> method.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><p><span class="target" id="sqlalchemy.sql.expression.text.params.text"></span><strong>text</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.text.params.text">¶</a> – <p>the text of the SQL statement to be created. Use <code class="docutils literal notranslate"><span class="pre">:&lt;param&gt;</span></code>to specify bind parameters; they will be compiled to theirengine-specific format.</p><div class="admonition warning"><p class="admonition-title">Warning</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.text.params.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">text.text</span></code></a> argument to <a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a> can be passed as a Python string argument, which will be treated as <strong>trusted SQL text</strong> and rendered as given. <strong>DO NOT PASS UNTRUSTED INPUT TO THIS PARAMETER</strong>.</p></div></p></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-select-arbitrary-text"><span class="std std-ref">Selecting with Textual Column Expressions</span></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.true"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">true</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.True\_" title="sqlalchemy.sql.elements.True\_"><span class="pre">True\_</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.true" title="Link to this definition">¶</a></dt><dd><p>Return a constant <a class="reference internal" href="#sqlalchemy.sql.expression.True\_" title="sqlalchemy.sql.expression.True\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">True\_</span></code></a> construct.</p><p>E.g.:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">true</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">true</span><span class="p">()))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="k">true</span></div></pre></div></div><p>A backend which does not support true/false constants will render asan expression against 1 or 0:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">true</span><span class="p">()))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="mi">1</span><span class="w"> </span><span class="o">=</span><span class="w"> </span><span class="mi">1</span></div></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.true" title="sqlalchemy.sql.expression.true"><code class="xref py py-func docutils literal notranslate"><span class="pre">true()</span></code></a> and <a class="reference internal" href="#sqlalchemy.sql.expression.false" title="sqlalchemy.sql.expression.false"><code class="xref py py-func docutils literal notranslate"><span class="pre">false()</span></code></a> constants also feature“short circuit” operation within an <a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a> or <a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a>conjunction:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">or\_</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">,</span> <span class="n">true</span><span class="p">())))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="k">true</span></div><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">and\_</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">,</span> <span class="n">false</span><span class="p">())))</span><div class='show\_sql\_print'><span class="k">SELECT</span><span class="w"> </span><span class="n">x</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">t</span><span class="w"> </span><span class="k">WHERE</span><span class="w"> </span><span class="k">false</span></div></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.false" title="sqlalchemy.sql.expression.false"><code class="xref py py-func docutils literal notranslate"><span class="pre">false()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.try\_cast"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">try\_cast</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expression</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionOrLiteralArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.TryCast" title="sqlalchemy.sql.expression.TryCast"><span class="pre">TryCast</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.try\_cast" title="Link to this definition">¶</a></dt><dd><p>Produce a <code class="docutils literal notranslate"><span class="pre">TRY\_CAST</span></code> expression for backends which support it;this is a <code class="docutils literal notranslate"><span class="pre">CAST</span></code> which returns NULL for un-castable conversions.</p><p>In SQLAlchemy, this construct is supported <strong>only</strong> by the SQL Serverdialect, and will raise a <a class="reference internal" href="exceptions.html#sqlalchemy.exc.CompileError" title="sqlalchemy.exc.CompileError"><code class="xref py py-class docutils literal notranslate"><span class="pre">CompileError</span></code></a> if used on otherincluded backends. However, third party backends may also supportthis construct.</p><div class="admonition tip"><p class="admonition-title">Tip</p><p>As <a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a> originates from the SQL Server dialect,it’s importable both from <code class="docutils literal notranslate"><span class="pre">sqlalchemy.</span></code> as well as from<code class="docutils literal notranslate"><span class="pre">sqlalchemy.dialects.mssql</span></code>.</p></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a> returns an instance of <a class="reference internal" href="#sqlalchemy.sql.expression.TryCast" title="sqlalchemy.sql.expression.TryCast"><code class="xref py py-class docutils literal notranslate"><span class="pre">TryCast</span></code></a> andgenerally behaves similarly to the <a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><code class="xref py py-class docutils literal notranslate"><span class="pre">Cast</span></code></a> construct;at the SQL level, the difference between <code class="docutils literal notranslate"><span class="pre">CAST</span></code> and <code class="docutils literal notranslate"><span class="pre">TRY\_CAST</span></code>is that <code class="docutils literal notranslate"><span class="pre">TRY\_CAST</span></code> returns NULL for an un-castable expression,such as attempting to cast a string <code class="docutils literal notranslate"><span class="pre">&quot;hi&quot;</span></code> to an integer value.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">select</span><span class="p">,</span> <span class="n">try\_cast</span><span class="p">,</span> <span class="n">Numeric</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span> <span class="n">try\_cast</span><span class="p">(</span><span class="n">product\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">unit\_price</span><span class="p">,</span> <span class="n">Numeric</span><span class="p">(</span><span class="mi">10</span><span class="p">,</span> <span class="mi">4</span><span class="p">))</span><span class="p">)</span></pre></div></div><p>The above would render on Microsoft SQL Server as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">TRY\_CAST</span> <span class="p">(</span><span class="n">product\_table</span><span class="o">.</span><span class="n">unit\_price</span> <span class="n">AS</span> <span class="n">NUMERIC</span><span class="p">(</span><span class="mi">10</span><span class="p">,</span> <span class="mi">4</span><span class="p">))</span><span class="n">FROM</span> <span class="n">product\_table</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.14: </span><a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a> has beengeneralized from the SQL Server dialect into a general useconstruct that may be supported by additional dialects.</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.tuple\_"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">tuple\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">clauses</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">types</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="defaults.html#sqlalchemy.schema.Sequence" title="sqlalchemy.schema.Sequence"><span class="pre">Sequence</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Tuple" title="sqlalchemy.sql.expression.Tuple"><span class="pre">Tuple</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.tuple\_" title="Link to this definition">¶</a></dt><dd><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.Tuple" title="sqlalchemy.sql.expression.Tuple"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tuple</span></code></a>.</p><p>Main usage is to produce a composite IN construct using<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a></p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">tuple\_</span><span class="n">tuple\_</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">col1</span><span class="p">,</span> <span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">col2</span><span class="p">)</span><span class="o">.</span><span class="n">in\_</span><span class="p">(</span> <span class="p">[(</span><span class="mi">1</span><span class="p">,</span> <span class="mi">2</span><span class="p">),</span> <span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">12</span><span class="p">),</span> <span class="p">(</span><span class="mi">10</span><span class="p">,</span> <span class="mi">19</span><span class="p">)]</span><span class="p">)</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.3.6: </span>Added support for SQLite IN tuples.</p></div><div class="admonition warning"><p class="admonition-title">Warning</p><p>The composite IN construct is not supported by all backends, and iscurrently known to work on PostgreSQL, MySQL, and SQLite.Unsupported backends will raise a subclass of<a class="reference internal" href="exceptions.html#sqlalchemy.exc.DBAPIError" title="sqlalchemy.exc.DBAPIError"><code class="xref py py-class docutils literal notranslate"><span class="pre">DBAPIError</span></code></a> when such an expression isinvoked.</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.type\_coerce"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">type\_coerce</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expression</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionOrLiteralArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce" title="sqlalchemy.sql.expression.TypeCoerce"><span class="pre">TypeCoerce</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.type\_coerce" title="Link to this definition">¶</a></dt><dd><p>Associate a SQL expression with a particular type, without rendering<code class="docutils literal notranslate"><span class="pre">CAST</span></code>.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">type\_coerce</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">type\_coerce</span><span class="p">(</span><span class="n">log\_table</span><span class="o">.</span><span class="n">date\_string</span><span class="p">,</span> <span class="n">StringDateTime</span><span class="p">()))</span></pre></div></div><p>The above construct will produce a <a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce" title="sqlalchemy.sql.expression.TypeCoerce"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeCoerce</span></code></a> object, whichdoes not modify the rendering in any way on the SQL side, with thepossible exception of a generated label if used in a columns clausecontext:</p><div class="highlight-sql notranslate"><div class="highlight"><pre><span></span><span class="k">SELECT</span><span class="w"> </span><span class="n">date\_string</span><span class="w"> </span><span class="k">AS</span><span class="w"> </span><span class="n">date\_string</span><span class="w"> </span><span class="k">FROM</span><span class="w"> </span><span class="n">log</span></pre></div></div><p>When result rows are fetched, the <code class="docutils literal notranslate"><span class="pre">StringDateTime</span></code> type processorwill be applied to result rows on behalf of the <code class="docutils literal notranslate"><span class="pre">date\_string</span></code> column.</p><div class="admonition note"><p class="admonition-title">Note</p><p>the <a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> construct does not render anySQL syntax of its own, including that it does not implyparenthesization. Please use <a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group" title="sqlalchemy.sql.expression.TypeCoerce.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TypeCoerce.self\_group()</span></code></a>if explicit parenthesization is required.</p></div><p>In order to provide a named label for the expression, use<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.label" title="sqlalchemy.sql.expression.ColumnElement.label"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.label()</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span> <span class="n">type\_coerce</span><span class="p">(</span><span class="n">log\_table</span><span class="o">.</span><span class="n">date\_string</span><span class="p">,</span> <span class="n">StringDateTime</span><span class="p">())</span><span class="o">.</span><span class="n">label</span><span class="p">(</span><span class="s1">&#39;date&#39;</span><span class="p">)</span><span class="p">)</span></pre></div></div><p>A type that features bound-value handling will also have that behaviortake effect when literal values or <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> constructs arepassed to <a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> as targets.For example, if a type implements the<a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine.bind\_expression" title="sqlalchemy.types.TypeEngine.bind\_expression"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TypeEngine.bind\_expression()</span></code></a>method or <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine.bind\_processor" title="sqlalchemy.types.TypeEngine.bind\_processor"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TypeEngine.bind\_processor()</span></code></a> method or equivalent,these functions will take effect at statement compilation/executiontime when a literal value is passed, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># bound-value handling of MyStringType will be applied to the</span><span class="c1"># literal value &quot;some string&quot;</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">type\_coerce</span><span class="p">(</span><span class="s2">&quot;some string&quot;</span><span class="p">,</span> <span class="n">MyStringType</span><span class="p">))</span></pre></div></div><p>When using <a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> with composed expressions, note that<strong>parenthesis are not applied</strong>. If <a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> is beingused in an operator context where the parenthesis normally present fromCAST are necessary, use the <a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group" title="sqlalchemy.sql.expression.TypeCoerce.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TypeCoerce.self\_group()</span></code></a> method:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">some\_integer</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;someint&quot;</span><span class="p">,</span> <span class="n">Integer</span><span class="p">)</span><span class="gp">&gt;&gt;&gt; </span><span class="n">some\_string</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;somestr&quot;</span><span class="p">,</span> <span class="n">String</span><span class="p">)</span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span> <span class="o">=</span> <span class="n">type\_coerce</span><span class="p">(</span><span class="n">some\_integer</span> <span class="o">+</span> <span class="mi">5</span><span class="p">,</span> <span class="n">String</span><span class="p">)</span> <span class="o">+</span> <span class="n">some\_string</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">expr</span><span class="p">)</span><div class='show\_sql\_print'><span class="n">someint</span><span class="w"> </span><span class="o">+</span><span class="w"> </span><span class="p">:</span><span class="n">someint\_1</span><span class="w"> </span><span class="o">||</span><span class="w"> </span><span class="n">somestr</span></div><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span> <span class="o">=</span> <span class="n">type\_coerce</span><span class="p">(</span><span class="n">some\_integer</span> <span class="o">+</span> <span class="mi">5</span><span class="p">,</span> <span class="n">String</span><span class="p">)</span><span class="o">.</span><span class="n">self\_group</span><span class="p">()</span> <span class="o">+</span> <span class="n">some\_string</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">expr</span><span class="p">)</span><div class='show\_sql\_print'><span class="p">(</span><span class="n">someint</span><span class="w"> </span><span class="o">+</span><span class="w"> </span><span class="p">:</span><span class="n">someint\_1</span><span class="p">)</span><span class="w"> </span><span class="o">||</span><span class="w"> </span><span class="n">somestr</span></div></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.type\_coerce.params.expression"></span><strong>expression</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.type\_coerce.params.expression">¶</a> – A SQL expression, such as a<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>expression or a Python string which will be coerced into a boundliteral value.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.type\_coerce.params.type\_"></span><strong>type\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.type\_coerce.params.type\_">¶</a> – A <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or instance indicatingthe type to which the expression is coerced.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-casts"><span class="std std-ref">Data Casts and Type Coercion</span></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a></p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.quoted\_name"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">quoted\_name</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.quoted\_name" title="Link to this definition">¶</a></dt><dd><p>Represent a SQL identifier combined with quoting preferences.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name" title="sqlalchemy.sql.expression.quoted\_name"><code class="xref py py-class docutils literal notranslate"><span class="pre">quoted\_name</span></code></a> is a Python unicode/str subclass whichrepresents a particular identifier name along with a<code class="docutils literal notranslate"><span class="pre">quote</span></code> flag. This <code class="docutils literal notranslate"><span class="pre">quote</span></code> flag, when set to<code class="docutils literal notranslate"><span class="pre">True</span></code> or <code class="docutils literal notranslate"><span class="pre">False</span></code>, overrides automatic quoting behaviorfor this identifier in order to either unconditionally quoteor to not quote the name. If left at its default of <code class="docutils literal notranslate"><span class="pre">None</span></code>,quoting behavior is applied to the identifier on a per-backend basisbased on an examination of the token itself.</p><p>A <a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name" title="sqlalchemy.sql.expression.quoted\_name"><code class="xref py py-class docutils literal notranslate"><span class="pre">quoted\_name</span></code></a> object with <code class="docutils literal notranslate"><span class="pre">quote=True</span></code> is alsoprevented from being modified in the case of a so-called“name normalize” option. Certain database backends, such asOracle, Firebird, and DB2 “normalize” case-insensitive namesas uppercase. The SQLAlchemy dialects for these backendsconvert from SQLAlchemy’s lower-case-means-insensitive conventionto the upper-case-means-insensitive conventions of those backends.The <code class="docutils literal notranslate"><span class="pre">quote=True</span></code> flag here will prevent this conversion from occurringto support an identifier that’s quoted as all lower case againstsuch a backend.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name" title="sqlalchemy.sql.expression.quoted\_name"><code class="xref py py-class docutils literal notranslate"><span class="pre">quoted\_name</span></code></a> object is normally created automaticallywhen specifying the name for key schema constructs such as<a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a>, <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a>, and others.The class can also bepassed explicitly as the name to any function that receives a name whichcan be quoted. Such as to use the <code class="xref py py-meth docutils literal notranslate"><span class="pre">Engine.has\_table()</span></code>method withan unconditionally quoted name:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">create\_engine</span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">inspect</span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">quoted\_name</span><span class="n">engine</span> <span class="o">=</span> <span class="n">create\_engine</span><span class="p">(</span><span class="s2">&quot;oracle+cx\_oracle://some\_dsn&quot;</span><span class="p">)</span><span class="n">print</span><span class="p">(</span><span class="n">inspect</span><span class="p">(</span><span class="n">engine</span><span class="p">)</span><span class="o">.</span><span class="n">has\_table</span><span class="p">(</span><span class="n">quoted\_name</span><span class="p">(</span><span class="s2">&quot;some\_table&quot;</span><span class="p">,</span> <span class="kc">True</span><span class="p">)))</span></pre></div></div><p>The above logic will run the “has table” logic against the Oracle backend,passing the name exactly as <code class="docutils literal notranslate"><span class="pre">&quot;some\_table&quot;</span></code> without converting toupper case.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.2: </span>The <a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name" title="sqlalchemy.sql.expression.quoted\_name"><code class="xref py py-class docutils literal notranslate"><span class="pre">quoted\_name</span></code></a> construct is nowimportable from <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql</span></code>, in addition to the previouslocation of <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.elements</span></code>.</p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name.quote"><span class="sig-name descname">quote</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name" title="sqlalchemy.sql.expression.quoted\_name"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.quoted\_name</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.util.langhelpers.MemoizedSlots</span></code>, <code class="docutils literal notranslate"><span class="pre">builtins.str</span></code>)</p></div><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.quoted\_name.quote"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.quoted\_name"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.quoted\_name.</span></code></a><span class="sig-name descname"><span class="pre">quote</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.quoted\_name.quote" title="Link to this definition">¶</a></dt><dd><p>whether the string should be unconditionally quoted</p></dd></dl></dd></dl></section><section id="column-element-modifier-constructors"><span id="sqlelement-modifier-constructors"></span><h2>Column Element Modifier Constructors<a class="headerlink" href="#column-element-modifier-constructors" title="Link to this heading">¶</a></h2><p>Functions listed here are more commonly available as methods from any<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> construct, for example, the<a class="reference internal" href="#sqlalchemy.sql.expression.label" title="sqlalchemy.sql.expression.label"><code class="xref py py-func docutils literal notranslate"><span class="pre">label()</span></code></a> function is usually invoked via the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.label" title="sqlalchemy.sql.expression.ColumnElement.label"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.label()</span></code></a> method.</p><table class="longtable docutils align-default"><thead><tr class="row-odd"><th class="head">Object Name</th><th class="head">Description</th></tr></thead><tbody><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.all\_"><span class="sig-name descname">all\_</span></a>(expr)</p></td><td><p>Produce an ALL expression.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.any\_"><span class="sig-name descname">any\_</span></a>(expr)</p></td><td><p>Produce an ANY expression.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.asc"><span class="sig-name descname">asc</span></a>(column)</p></td><td><p>Produce an ascending <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> clause element.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.between"><span class="sig-name descname">between</span></a>(expr, lower\_bound, upper\_bound[, symmetric])</p></td><td><p>Produce a <code class="docutils literal notranslate"><span class="pre">BETWEEN</span></code> predicate clause.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.collate"><span class="sig-name descname">collate</span></a>(expression, collation)</p></td><td><p>Return the clause <code class="docutils literal notranslate"><span class="pre">expression</span> <span class="pre">COLLATE</span> <span class="pre">collation</span></code>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.desc"><span class="sig-name descname">desc</span></a>(column)</p></td><td><p>Produce a descending <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> clause element.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.funcfilter"><span class="sig-name descname">funcfilter</span></a>(func, \*criterion)</p></td><td><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter" title="sqlalchemy.sql.expression.FunctionFilter"><code class="xref py py-class docutils literal notranslate"><span class="pre">FunctionFilter</span></code></a> object against a function.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.label"><span class="sig-name descname">label</span></a>(name, element[, type\_])</p></td><td><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.Label" title="sqlalchemy.sql.expression.Label"><code class="xref py py-class docutils literal notranslate"><span class="pre">Label</span></code></a> object for thegiven <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first"><span class="sig-name descname">nulls\_first</span></a>(column)</p></td><td><p>Produce the <code class="docutils literal notranslate"><span class="pre">NULLS</span> <span class="pre">FIRST</span></code> modifier for an <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> expression.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last"><span class="sig-name descname">nulls\_last</span></a>(column)</p></td><td><p>Produce the <code class="docutils literal notranslate"><span class="pre">NULLS</span> <span class="pre">LAST</span></code> modifier for an <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> expression.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.nullsfirst"><span class="sig-name descname">nullsfirst</span></a></p></td><td><p>Synonym for the <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> function.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.nullslast"><span class="sig-name descname">nullslast</span></a></p></td><td><p>Legacy synonym for the <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> function.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.over"><span class="sig-name descname">over</span></a>(element[, partition\_by, order\_by, range\_, ...])</p></td><td><p>Produce an <a class="reference internal" href="#sqlalchemy.sql.expression.Over" title="sqlalchemy.sql.expression.Over"><code class="xref py py-class docutils literal notranslate"><span class="pre">Over</span></code></a> object against a function.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.within\_group"><span class="sig-name descname">within\_group</span></a>(element, \*order\_by)</p></td><td><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><code class="xref py py-class docutils literal notranslate"><span class="pre">WithinGroup</span></code></a> object against a function.</p></td></tr></tbody></table><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.all\_"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">all\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expr</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">CollectionAggregate</span><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.all\_" title="Link to this definition">¶</a></dt><dd><p>Produce an ALL expression.</p><p>For dialects such as that of PostgreSQL, this operator appliesto usage of the <a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a> datatype, for that ofMySQL, it may apply to a subquery. e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># renders on PostgreSQL:</span><span class="c1"># &#39;5 = ALL (somearray)&#39;</span><span class="n">expr</span> <span class="o">=</span> <span class="mi">5</span> <span class="o">==</span> <span class="n">all\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="p">)</span><span class="c1"># renders on MySQL:</span><span class="c1"># &#39;5 = ALL (SELECT value FROM table)&#39;</span><span class="n">expr</span> <span class="o">=</span> <span class="mi">5</span> <span class="o">==</span> <span class="n">all\_</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">value</span><span class="p">))</span></pre></div></div><p>Comparison to NULL may work using <code class="docutils literal notranslate"><span class="pre">None</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kc">None</span> <span class="o">==</span> <span class="n">all\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="p">)</span></pre></div></div><p>The any\_() / all\_() operators also feature a special “operand flipping”behavior such that if any\_() / all\_() are used on the left side of acomparison using a standalone operator such as <code class="docutils literal notranslate"><span class="pre">==</span></code>, <code class="docutils literal notranslate"><span class="pre">!=</span></code>, etc.(not including operator methods such as<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a>) the rendered expression is flipped:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># would render &#39;5 = ALL (column)`</span><span class="n">all\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="p">)</span> <span class="o">==</span> <span class="mi">5</span></pre></div></div><p>Or with <code class="docutils literal notranslate"><span class="pre">None</span></code>, which note will not performthe usual step of rendering “IS” as is normally the case for NULL:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># would render &#39;NULL = ALL(somearray)&#39;</span><span class="n">all\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="p">)</span> <span class="o">==</span> <span class="kc">None</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4.26: </span>repaired the use of any\_() / all\_()comparing to NULL on the right side to be flipped to the left.</p></div><p>The column-level <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.all\_" title="sqlalchemy.sql.expression.ColumnElement.all\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.all\_()</span></code></a> method (not to beconfused with <a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a> level<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY.Comparator.all" title="sqlalchemy.types.ARRAY.Comparator.all"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Comparator.all()</span></code></a>) is shorthand for<code class="docutils literal notranslate"><span class="pre">all\_(col)</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="mi">5</span> <span class="o">==</span> <span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="o">.</span><span class="n">all\_</span><span class="p">()</span></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.all\_" title="sqlalchemy.sql.expression.ColumnOperators.all\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.all\_()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.any\_" title="sqlalchemy.sql.expression.any\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">any\_()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.any\_"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">any\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expr</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">CollectionAggregate</span><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.any\_" title="Link to this definition">¶</a></dt><dd><p>Produce an ANY expression.</p><p>For dialects such as that of PostgreSQL, this operator appliesto usage of the <a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a> datatype, for that ofMySQL, it may apply to a subquery. e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># renders on PostgreSQL:</span><span class="c1"># &#39;5 = ANY (somearray)&#39;</span><span class="n">expr</span> <span class="o">=</span> <span class="mi">5</span> <span class="o">==</span> <span class="n">any\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="p">)</span><span class="c1"># renders on MySQL:</span><span class="c1"># &#39;5 = ANY (SELECT value FROM table)&#39;</span><span class="n">expr</span> <span class="o">=</span> <span class="mi">5</span> <span class="o">==</span> <span class="n">any\_</span><span class="p">(</span><span class="n">select</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">value</span><span class="p">))</span></pre></div></div><p>Comparison to NULL may work using <code class="docutils literal notranslate"><span class="pre">None</span></code> or <a class="reference internal" href="#sqlalchemy.sql.expression.null" title="sqlalchemy.sql.expression.null"><code class="xref py py-func docutils literal notranslate"><span class="pre">null()</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kc">None</span> <span class="o">==</span> <span class="n">any\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="p">)</span></pre></div></div><p>The any\_() / all\_() operators also feature a special “operand flipping”behavior such that if any\_() / all\_() are used on the left side of acomparison using a standalone operator such as <code class="docutils literal notranslate"><span class="pre">==</span></code>, <code class="docutils literal notranslate"><span class="pre">!=</span></code>, etc.(not including operator methods such as<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a>) the rendered expression is flipped:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># would render &#39;5 = ANY (column)`</span><span class="n">any\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="p">)</span> <span class="o">==</span> <span class="mi">5</span></pre></div></div><p>Or with <code class="docutils literal notranslate"><span class="pre">None</span></code>, which note will not performthe usual step of rendering “IS” as is normally the case for NULL:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># would render &#39;NULL = ANY(somearray)&#39;</span><span class="n">any\_</span><span class="p">(</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="p">)</span> <span class="o">==</span> <span class="kc">None</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4.26: </span>repaired the use of any\_() / all\_()comparing to NULL on the right side to be flipped to the left.</p></div><p>The column-level <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.any\_" title="sqlalchemy.sql.expression.ColumnElement.any\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.any\_()</span></code></a> method (not to beconfused with <a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a> level<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY.Comparator.any" title="sqlalchemy.types.ARRAY.Comparator.any"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Comparator.any()</span></code></a>) is shorthand for<code class="docutils literal notranslate"><span class="pre">any\_(col)</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="mi">5</span> <span class="o">=</span> <span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">somearray</span><span class="o">.</span><span class="n">any\_</span><span class="p">()</span></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.any\_" title="sqlalchemy.sql.expression.ColumnOperators.any\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.any\_()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.all\_" title="sqlalchemy.sql.expression.all\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">all\_()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.asc"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">asc</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">column</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionOrStrLabelArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><span class="pre">UnaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.asc" title="Link to this definition">¶</a></dt><dd><p>Produce an ascending <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> clause element.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">asc</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span><span class="n">asc</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">))</span></pre></div></div><p>will produce SQL as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span> <span class="n">ORDER</span> <span class="n">BY</span> <span class="n">name</span> <span class="n">ASC</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> function is a standalone version of the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.asc" title="sqlalchemy.sql.expression.ColumnElement.asc"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.asc()</span></code></a>method available on all SQL expressions,e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="o">.</span><span class="n">asc</span><span class="p">())</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><p><span class="target" id="sqlalchemy.sql.expression.asc.params.column"></span><strong>column</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.asc.params.column">¶</a> – A <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> (e.g.scalar SQL expression)with which to apply the <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> operation.</p></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a></p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.order\_by" title="sqlalchemy.sql.expression.Select.order\_by"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.order\_by()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.between"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">between</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expr</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionOrLiteralArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">lower\_bound</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">upper\_bound</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">symmetric</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><span class="pre">BinaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.between" title="Link to this definition">¶</a></dt><dd><p>Produce a <code class="docutils literal notranslate"><span class="pre">BETWEEN</span></code> predicate clause.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">between</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">between</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="p">,</span> <span class="mi">5</span><span class="p">,</span> <span class="mi">7</span><span class="p">))</span></pre></div></div><p>Would produce SQL resembling:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span> <span class="n">WHERE</span> <span class="n">id</span> <span class="n">BETWEEN</span> <span class="p">:</span><span class="n">id\_1</span> <span class="n">AND</span> <span class="p">:</span><span class="n">id\_2</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.between" title="sqlalchemy.sql.expression.between"><code class="xref py py-func docutils literal notranslate"><span class="pre">between()</span></code></a> function is a standalone version of the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.between" title="sqlalchemy.sql.expression.ColumnElement.between"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.between()</span></code></a> method available on allSQL expressions, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="o">.</span><span class="n">between</span><span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">7</span><span class="p">))</span></pre></div></div><p>All arguments passed to <a class="reference internal" href="#sqlalchemy.sql.expression.between" title="sqlalchemy.sql.expression.between"><code class="xref py py-func docutils literal notranslate"><span class="pre">between()</span></code></a>, including the left sidecolumn expression, are coerced from Python scalar values if athe value is not a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> subclass.For example,three fixed values can be compared as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">print</span><span class="p">(</span><span class="n">between</span><span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">3</span><span class="p">,</span> <span class="mi">7</span><span class="p">))</span></pre></div></div><p>Which would produce:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">:</span><span class="n">param\_1</span> <span class="n">BETWEEN</span> <span class="p">:</span><span class="n">param\_2</span> <span class="n">AND</span> <span class="p">:</span><span class="n">param\_3</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.between.params.expr"></span><strong>expr</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.between.params.expr">¶</a> – a column expression, typically a<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>instance or alternatively a Python scalar expression to be coercedinto a column expression, serving as the left side of the <code class="docutils literal notranslate"><span class="pre">BETWEEN</span></code>expression.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.between.params.lower\_bound"></span><strong>lower\_bound</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.between.params.lower\_bound">¶</a> – a column or Python scalar expression serving as thelower bound of the right side of the <code class="docutils literal notranslate"><span class="pre">BETWEEN</span></code> expression.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.between.params.upper\_bound"></span><strong>upper\_bound</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.between.params.upper\_bound">¶</a> – a column or Python scalar expression serving as theupper bound of the right side of the <code class="docutils literal notranslate"><span class="pre">BETWEEN</span></code> expression.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.between.params.symmetric"></span><strong>symmetric</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.between.params.symmetric">¶</a> – if True, will render “ BETWEEN SYMMETRIC “. Notethat not all databases support this syntax.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.between" title="sqlalchemy.sql.expression.ColumnElement.between"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.between()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.collate"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">collate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">expression</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">str</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">collation</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><span class="pre">BinaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">str</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.collate" title="Link to this definition">¶</a></dt><dd><p>Return the clause <code class="docutils literal notranslate"><span class="pre">expression</span> <span class="pre">COLLATE</span> <span class="pre">collation</span></code>.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">collate</span><span class="p">(</span><span class="n">mycolumn</span><span class="p">,</span> <span class="s1">&#39;utf8\_bin&#39;</span><span class="p">)</span></pre></div></div><p>produces:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">mycolumn</span> <span class="n">COLLATE</span> <span class="n">utf8\_bin</span></pre></div></div><p>The collation expression is also quoted if it is a case sensitiveidentifier, e.g. contains uppercase characters.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.2: </span>quoting is automatically applied to COLLATEexpressions if they are case sensitive.</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.desc"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">desc</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">column</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionOrStrLabelArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><span class="pre">UnaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.desc" title="Link to this definition">¶</a></dt><dd><p>Produce a descending <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> clause element.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">desc</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span><span class="n">desc</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">))</span></pre></div></div><p>will produce SQL as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span> <span class="n">ORDER</span> <span class="n">BY</span> <span class="n">name</span> <span class="n">DESC</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a> function is a standalone version of the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.desc" title="sqlalchemy.sql.expression.ColumnElement.desc"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.desc()</span></code></a>method available on all SQL expressions,e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="o">.</span><span class="n">desc</span><span class="p">())</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><p><span class="target" id="sqlalchemy.sql.expression.desc.params.column"></span><strong>column</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.desc.params.column">¶</a> – A <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> (e.g.scalar SQL expression)with which to apply the <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a> operation.</p></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a></p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.order\_by" title="sqlalchemy.sql.expression.Select.order\_by"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.order\_by()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.funcfilter"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">funcfilter</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">func</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement" title="sqlalchemy.sql.functions.FunctionElement"><span class="pre">FunctionElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">criterion</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter" title="sqlalchemy.sql.expression.FunctionFilter"><span class="pre">FunctionFilter</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.funcfilter" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter" title="sqlalchemy.sql.expression.FunctionFilter"><code class="xref py py-class docutils literal notranslate"><span class="pre">FunctionFilter</span></code></a> object against a function.</p><p>Used against aggregate and window functions,for database backends that support the “FILTER” clause.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">funcfilter</span><span class="n">funcfilter</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">count</span><span class="p">(</span><span class="mi">1</span><span class="p">),</span> <span class="n">MyClass</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;some name&#39;</span><span class="p">)</span></pre></div></div><p>Would produce “COUNT(1) FILTER (WHERE myclass.name = ‘some name’)”.</p><p>This function is also available from the <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a>construct itself via the <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.filter" title="sqlalchemy.sql.functions.FunctionElement.filter"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.filter()</span></code></a> method.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-functions-within-group"><span class="std std-ref">Special Modifiers WITHIN GROUP, FILTER</span></a> - in the<a class="reference internal" href="../tutorial/index.html#unified-tutorial"><span class="std std-ref">SQLAlchemy Unified Tutorial</span></a></p><p><a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.filter" title="sqlalchemy.sql.functions.FunctionElement.filter"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.filter()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.label"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">label</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">name</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">element</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Label" title="sqlalchemy.sql.expression.Label"><span class="pre">Label</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.label" title="Link to this definition">¶</a></dt><dd><p>Return a <a class="reference internal" href="#sqlalchemy.sql.expression.Label" title="sqlalchemy.sql.expression.Label"><code class="xref py py-class docutils literal notranslate"><span class="pre">Label</span></code></a> object for thegiven <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>.</p><p>A label changes the name of an element in the columns clause of a<code class="docutils literal notranslate"><span class="pre">SELECT</span></code> statement, typically via the <code class="docutils literal notranslate"><span class="pre">AS</span></code> SQL keyword.</p><p>This functionality is more conveniently available via the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.label" title="sqlalchemy.sql.expression.ColumnElement.label"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.label()</span></code></a> method on<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.label.params.name"></span><strong>name</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.label.params.name">¶</a> – label name</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.label.params.obj"></span><strong>obj</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.label.params.obj">¶</a> – a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>.</p></li></ul></dd></dl></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.nulls\_first"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">nulls\_first</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">column</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><span class="pre">UnaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.nulls\_first" title="Link to this definition">¶</a></dt><dd><p>Produce the <code class="docutils literal notranslate"><span class="pre">NULLS</span> <span class="pre">FIRST</span></code> modifier for an <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> expression.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> is intended to modify the expression producedby <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> or <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a>, and indicates how NULL valuesshould be handled when they are encountered during ordering:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">desc</span><span class="p">,</span> <span class="n">nulls\_first</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span> <span class="n">nulls\_first</span><span class="p">(</span><span class="n">desc</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">)))</span></pre></div></div><p>The SQL expression from the above would resemble:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span> <span class="n">ORDER</span> <span class="n">BY</span> <span class="n">name</span> <span class="n">DESC</span> <span class="n">NULLS</span> <span class="n">FIRST</span></pre></div></div><p>Like <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> and <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> is typicallyinvoked from the column expression itself using<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nulls\_first" title="sqlalchemy.sql.expression.ColumnElement.nulls\_first"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.nulls\_first()</span></code></a>,rather than as its standalonefunction version, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="o">.</span><span class="n">desc</span><span class="p">()</span><span class="o">.</span><span class="n">nulls\_first</span><span class="p">())</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> is renamed from<a class="reference internal" href="#sqlalchemy.sql.expression.nullsfirst" title="sqlalchemy.sql.expression.nullsfirst"><code class="xref py py-func docutils literal notranslate"><span class="pre">nullsfirst()</span></code></a> in previous releases.The previous name remains available for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a></p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.order\_by" title="sqlalchemy.sql.expression.Select.order\_by"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.order\_by()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.nullsfirst"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">nullsfirst</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.nullsfirst" title="Link to this definition">¶</a></dt><dd><p>Synonym for the <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> function.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 2.0.5: </span>restored missing legacy symbol <a class="reference internal" href="#sqlalchemy.sql.expression.nullsfirst" title="sqlalchemy.sql.expression.nullsfirst"><code class="xref py py-func docutils literal notranslate"><span class="pre">nullsfirst()</span></code></a>.</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.nulls\_last"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">nulls\_last</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">column</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><span class="pre">UnaryExpression</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.nulls\_last" title="Link to this definition">¶</a></dt><dd><p>Produce the <code class="docutils literal notranslate"><span class="pre">NULLS</span> <span class="pre">LAST</span></code> modifier for an <code class="docutils literal notranslate"><span class="pre">ORDER</span> <span class="pre">BY</span></code> expression.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> is intended to modify the expression producedby <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> or <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a>, and indicates how NULL valuesshould be handled when they are encountered during ordering:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">desc</span><span class="p">,</span> <span class="n">nulls\_last</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span> <span class="n">nulls\_last</span><span class="p">(</span><span class="n">desc</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">)))</span></pre></div></div><p>The SQL expression from the above would resemble:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span> <span class="n">ORDER</span> <span class="n">BY</span> <span class="n">name</span> <span class="n">DESC</span> <span class="n">NULLS</span> <span class="n">LAST</span></pre></div></div><p>Like <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> and <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> is typicallyinvoked from the column expression itself using<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nulls\_last" title="sqlalchemy.sql.expression.ColumnElement.nulls\_last"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnElement.nulls\_last()</span></code></a>,rather than as its standalonefunction version, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span><span class="n">order\_by</span><span class="p">(</span> <span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="o">.</span><span class="n">desc</span><span class="p">()</span><span class="o">.</span><span class="n">nulls\_last</span><span class="p">())</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> is renamed from<a class="reference internal" href="#sqlalchemy.sql.expression.nullslast" title="sqlalchemy.sql.expression.nullslast"><code class="xref py py-func docutils literal notranslate"><span class="pre">nullslast()</span></code></a> in previous releases.The previous name remains available for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a></p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.order\_by" title="sqlalchemy.sql.expression.Select.order\_by"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.order\_by()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.nullslast"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">nullslast</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.nullslast" title="Link to this definition">¶</a></dt><dd><p>Legacy synonym for the <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> function.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 2.0.5: </span>restored missing legacy symbol <a class="reference internal" href="#sqlalchemy.sql.expression.nullslast" title="sqlalchemy.sql.expression.nullslast"><code class="xref py py-func docutils literal notranslate"><span class="pre">nullslast()</span></code></a>.</p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.over"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">over</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">element</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement" title="sqlalchemy.sql.functions.FunctionElement"><span class="pre">FunctionElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">partition\_by</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ByArgument</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">order\_by</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ByArgument</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">range\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">typing\_Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">rows</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">typing\_Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Over" title="sqlalchemy.sql.expression.Over"><span class="pre">Over</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.over" title="Link to this definition">¶</a></dt><dd><p>Produce an <a class="reference internal" href="#sqlalchemy.sql.expression.Over" title="sqlalchemy.sql.expression.Over"><code class="xref py py-class docutils literal notranslate"><span class="pre">Over</span></code></a> object against a function.</p><p>Used against aggregate or so-called “window” functions,for database backends that support window functions.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.over" title="sqlalchemy.sql.expression.over"><code class="xref py py-func docutils literal notranslate"><span class="pre">over()</span></code></a> is usually called usingthe <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.over" title="sqlalchemy.sql.functions.FunctionElement.over"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.over()</span></code></a> method, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">row\_number</span><span class="p">()</span><span class="o">.</span><span class="n">over</span><span class="p">(</span><span class="n">order\_by</span><span class="o">=</span><span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="p">)</span></pre></div></div><p>Would produce:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">ROW\_NUMBER</span><span class="p">()</span> <span class="n">OVER</span><span class="p">(</span><span class="n">ORDER</span> <span class="n">BY</span> <span class="n">some\_column</span><span class="p">)</span></pre></div></div><p>Ranges are also possible using the <a class="reference internal" href="#sqlalchemy.sql.expression.over.params.range\_" title="sqlalchemy.sql.expression.over"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">over.range\_</span></code></a>and <a class="reference internal" href="#sqlalchemy.sql.expression.over.params.rows" title="sqlalchemy.sql.expression.over"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">over.rows</span></code></a> parameters. Thesemutually-exclusive parameters each accept a 2-tuple, which containsa combination of integers and None:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">row\_number</span><span class="p">()</span><span class="o">.</span><span class="n">over</span><span class="p">(</span> <span class="n">order\_by</span><span class="o">=</span><span class="n">my\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="p">,</span> <span class="n">range\_</span><span class="o">=</span><span class="p">(</span><span class="kc">None</span><span class="p">,</span> <span class="mi">0</span><span class="p">))</span></pre></div></div><p>The above would produce:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">ROW\_NUMBER</span><span class="p">()</span> <span class="n">OVER</span><span class="p">(</span><span class="n">ORDER</span> <span class="n">BY</span> <span class="n">some\_column</span><span class="n">RANGE</span> <span class="n">BETWEEN</span> <span class="n">UNBOUNDED</span> <span class="n">PRECEDING</span> <span class="n">AND</span> <span class="n">CURRENT</span> <span class="n">ROW</span><span class="p">)</span></pre></div></div><p>A value of <code class="docutils literal notranslate"><span class="pre">None</span></code> indicates “unbounded”, avalue of zero indicates “current row”, and negative / positiveintegers indicate “preceding” and “following”:</p><ul><li><p>RANGE BETWEEN 5 PRECEDING AND 10 FOLLOWING:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">row\_number</span><span class="p">()</span><span class="o">.</span><span class="n">over</span><span class="p">(</span><span class="n">order\_by</span><span class="o">=</span><span class="s1">&#39;x&#39;</span><span class="p">,</span> <span class="n">range\_</span><span class="o">=</span><span class="p">(</span><span class="o">-</span><span class="mi">5</span><span class="p">,</span> <span class="mi">10</span><span class="p">))</span></pre></div></div></li><li><p>ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">row\_number</span><span class="p">()</span><span class="o">.</span><span class="n">over</span><span class="p">(</span><span class="n">order\_by</span><span class="o">=</span><span class="s1">&#39;x&#39;</span><span class="p">,</span> <span class="n">rows</span><span class="o">=</span><span class="p">(</span><span class="kc">None</span><span class="p">,</span> <span class="mi">0</span><span class="p">))</span></pre></div></div></li><li><p>RANGE BETWEEN 2 PRECEDING AND UNBOUNDED FOLLOWING:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">row\_number</span><span class="p">()</span><span class="o">.</span><span class="n">over</span><span class="p">(</span><span class="n">order\_by</span><span class="o">=</span><span class="s1">&#39;x&#39;</span><span class="p">,</span> <span class="n">range\_</span><span class="o">=</span><span class="p">(</span><span class="o">-</span><span class="mi">2</span><span class="p">,</span> <span class="kc">None</span><span class="p">))</span></pre></div></div></li><li><p>RANGE BETWEEN 1 FOLLOWING AND 3 FOLLOWING:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">row\_number</span><span class="p">()</span><span class="o">.</span><span class="n">over</span><span class="p">(</span><span class="n">order\_by</span><span class="o">=</span><span class="s1">&#39;x&#39;</span><span class="p">,</span> <span class="n">range\_</span><span class="o">=</span><span class="p">(</span><span class="mi">1</span><span class="p">,</span> <span class="mi">3</span><span class="p">))</span></pre></div></div></li></ul><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.over.params.element"></span><strong>element</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.over.params.element">¶</a> – a <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement" title="sqlalchemy.sql.functions.FunctionElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">FunctionElement</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><code class="xref py py-class docutils literal notranslate"><span class="pre">WithinGroup</span></code></a>,or other compatible construct.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.over.params.partition\_by"></span><strong>partition\_by</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.over.params.partition\_by">¶</a> – a column element or string, or a listof such, that will be used as the PARTITION BY clauseof the OVER construct.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.over.params.order\_by"></span><strong>order\_by</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.over.params.order\_by">¶</a> – a column element or string, or a listof such, that will be used as the ORDER BY clauseof the OVER construct.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.over.params.range\_"></span><strong>range\_</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.over.params.range\_">¶</a> – optional range clause for the window. This is atuple value which can contain integer values or <code class="docutils literal notranslate"><span class="pre">None</span></code>,and will render a RANGE BETWEEN PRECEDING / FOLLOWING clause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.over.params.rows"></span><strong>rows</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.over.params.rows">¶</a> – optional rows clause for the window. This is a tuplevalue which can contain integer values or None, and will rendera ROWS BETWEEN PRECEDING / FOLLOWING clause.</p></li></ul></dd></dl><p>This function is also available from the <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a>construct itself via the <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.over" title="sqlalchemy.sql.functions.FunctionElement.over"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.over()</span></code></a> method.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-window-functions"><span class="std std-ref">Using Window Functions</span></a> - in the <a class="reference internal" href="../tutorial/index.html#unified-tutorial"><span class="std std-ref">SQLAlchemy Unified Tutorial</span></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.within\_group" title="sqlalchemy.sql.expression.within\_group"><code class="xref py py-func docutils literal notranslate"><span class="pre">within\_group()</span></code></a></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.within\_group"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">within\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">element</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement" title="sqlalchemy.sql.functions.FunctionElement"><span class="pre">FunctionElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">order\_by</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><span class="pre">WithinGroup</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.within\_group" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><code class="xref py py-class docutils literal notranslate"><span class="pre">WithinGroup</span></code></a> object against a function.</p><p>Used against so-called “ordered set aggregate” and “hypotheticalset aggregate” functions, including <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.percentile\_cont" title="sqlalchemy.sql.functions.percentile\_cont"><code class="xref py py-class docutils literal notranslate"><span class="pre">percentile\_cont</span></code></a>,<a class="reference internal" href="functions.html#sqlalchemy.sql.functions.rank" title="sqlalchemy.sql.functions.rank"><code class="xref py py-class docutils literal notranslate"><span class="pre">rank</span></code></a>, <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.dense\_rank" title="sqlalchemy.sql.functions.dense\_rank"><code class="xref py py-class docutils literal notranslate"><span class="pre">dense\_rank</span></code></a>, etc.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.within\_group" title="sqlalchemy.sql.expression.within\_group"><code class="xref py py-func docutils literal notranslate"><span class="pre">within\_group()</span></code></a> is usually called usingthe <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.within\_group" title="sqlalchemy.sql.functions.FunctionElement.within\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.within\_group()</span></code></a> method, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">within\_group</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span> <span class="n">department</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="p">,</span> <span class="n">func</span><span class="o">.</span><span class="n">percentile\_cont</span><span class="p">(</span><span class="mf">0.5</span><span class="p">)</span><span class="o">.</span><span class="n">within\_group</span><span class="p">(</span> <span class="n">department</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">salary</span><span class="o">.</span><span class="n">desc</span><span class="p">()</span> <span class="p">)</span><span class="p">)</span></pre></div></div><p>The above statement would produce SQL similar to<code class="docutils literal notranslate"><span class="pre">SELECT</span> <span class="pre">department.id,</span> <span class="pre">percentile\_cont(0.5)</span><span class="pre">WITHIN</span> <span class="pre">GROUP</span> <span class="pre">(ORDER</span> <span class="pre">BY</span> <span class="pre">department.salary</span> <span class="pre">DESC)</span></code>.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.within\_group.params.element"></span><strong>element</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.within\_group.params.element">¶</a> – a <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement" title="sqlalchemy.sql.functions.FunctionElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">FunctionElement</span></code></a> construct, typicallygenerated by <a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a>.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.within\_group.params.\*order\_by"></span><strong>\*order\_by</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.within\_group.params.\*order\_by">¶</a> – one or more column elements that will be usedas the ORDER BY clause of the WITHIN GROUP construct.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-functions-within-group"><span class="std std-ref">Special Modifiers WITHIN GROUP, FILTER</span></a> - in the<a class="reference internal" href="../tutorial/index.html#unified-tutorial"><span class="std std-ref">SQLAlchemy Unified Tutorial</span></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.func" title="sqlalchemy.sql.expression.func"><code class="xref py py-data docutils literal notranslate"><span class="pre">func</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.over" title="sqlalchemy.sql.expression.over"><code class="xref py py-func docutils literal notranslate"><span class="pre">over()</span></code></a></p></div></dd></dl></section><section id="column-element-class-documentation"><h2>Column Element Class Documentation<a class="headerlink" href="#column-element-class-documentation" title="Link to this heading">¶</a></h2><p>The classes here are generated using the constructors listed at<a class="reference internal" href="#sqlelement-foundational-constructors"><span class="std std-ref">Column Element Foundational Constructors</span></a> and<a class="reference internal" href="#sqlelement-modifier-constructors"><span class="std std-ref">Column Element Modifier Constructors</span></a>.</p><table class="longtable docutils align-default"><thead><tr class="row-odd"><th class="head">Object Name</th><th class="head">Description</th></tr></thead><tbody><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression"><span class="sig-name descname">BinaryExpression</span></a></p></td><td><p>Represent an expression that is <code class="docutils literal notranslate"><span class="pre">LEFT</span> <span class="pre">&lt;operator&gt;</span> <span class="pre">RIGHT</span></code>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter"><span class="sig-name descname">BindParameter</span></a></p></td><td><p>Represent a “bound expression”.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Case"><span class="sig-name descname">Case</span></a></p></td><td><p>Represent a <code class="docutils literal notranslate"><span class="pre">CASE</span></code> expression.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Cast"><span class="sig-name descname">Cast</span></a></p></td><td><p>Represent a <code class="docutils literal notranslate"><span class="pre">CAST</span></code> expression.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList"><span class="sig-name descname">ClauseList</span></a></p></td><td><p>Describe a list of clauses, separated by an operator.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause"><span class="sig-name descname">ColumnClause</span></a></p></td><td><p>Represents a column expression from any textual string.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><span class="sig-name descname">ColumnCollection</span></a></p></td><td><p>Collection of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> instances,typically for<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.FromClause" title="sqlalchemy.sql.expression.FromClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">FromClause</span></code></a> objects.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><span class="sig-name descname">ColumnElement</span></a></p></td><td><p>Represent a column-oriented SQL expression suitable for usage in the“columns” clause, WHERE clause etc. of a statement.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnExpressionArgument"><span class="sig-name descname">ColumnExpressionArgument</span></a></p></td><td><p>General purpose “column expression” argument.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><span class="sig-name descname">ColumnOperators</span></a></p></td><td><p>Defines boolean, comparison, and other operators for<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> expressions.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Extract"><span class="sig-name descname">Extract</span></a></p></td><td><p>Represent a SQL EXTRACT clause, <code class="docutils literal notranslate"><span class="pre">extract(field</span> <span class="pre">FROM</span> <span class="pre">expr)</span></code>.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.False\_"><span class="sig-name descname">False\_</span></a></p></td><td><p>Represent the <code class="docutils literal notranslate"><span class="pre">false</span></code> keyword, or equivalent, in a SQL statement.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter"><span class="sig-name descname">FunctionFilter</span></a></p></td><td><p>Represent a function FILTER clause.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Label"><span class="sig-name descname">Label</span></a></p></td><td><p>Represents a column label (AS).</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Null"><span class="sig-name descname">Null</span></a></p></td><td><p>Represent the NULL keyword in a SQL statement.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><span class="sig-name descname">Operators</span></a></p></td><td><p>Base of comparison and logical operators.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Over"><span class="sig-name descname">Over</span></a></p></td><td><p>Represent an OVER clause.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.SQLColumnExpression"><span class="sig-name descname">SQLColumnExpression</span></a></p></td><td><p>A type that may be used to indicate any SQL column element or objectthat acts in place of one.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause"><span class="sig-name descname">TextClause</span></a></p></td><td><p>Represent a literal SQL text fragment.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.True\_"><span class="sig-name descname">True\_</span></a></p></td><td><p>Represent the <code class="docutils literal notranslate"><span class="pre">true</span></code> keyword, or equivalent, in a SQL statement.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.TryCast"><span class="sig-name descname">TryCast</span></a></p></td><td><p>Represent a TRY\_CAST expression.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.Tuple"><span class="sig-name descname">Tuple</span></a></p></td><td><p>Represent a SQL tuple.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce"><span class="sig-name descname">TypeCoerce</span></a></p></td><td><p>Represent a Python-side type-coercion wrapper.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression"><span class="sig-name descname">UnaryExpression</span></a></p></td><td><p>Define a ‘unary’ expression.</p></td></tr><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup"><span class="sig-name descname">WithinGroup</span></a></p></td><td><p>Represent a WITHIN GROUP (ORDER BY) clause.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.sql.elements.WrapsColumnExpression"><span class="sig-name descname">WrapsColumnExpression</span></a></p></td><td><p>Mixin that defines a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>as a wrapper with speciallabeling behavior for an expression that already has a name.</p></td></tr></tbody></table><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.BinaryExpression"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">BinaryExpression</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.BinaryExpression" title="Link to this definition">¶</a></dt><dd><p>Represent an expression that is <code class="docutils literal notranslate"><span class="pre">LEFT</span> <span class="pre">&lt;operator&gt;</span> <span class="pre">RIGHT</span></code>.</p><p>A <a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">BinaryExpression</span></code></a> is generated automaticallywhenever two column expressions are used in a Python binary expression:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">column</span><span class="gp">&gt;&gt;&gt; </span><span class="n">column</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)</span> <span class="o">+</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;b&#39;</span><span class="p">)</span><span class="go">&lt;sqlalchemy.sql.expression.BinaryExpression object at 0x101029dd0&gt;</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">column</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)</span> <span class="o">+</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;b&#39;</span><span class="p">))</span><div class='show\_sql\_print'><span class="n">a</span><span class="w"> </span><span class="o">+</span><span class="w"> </span><span class="n">b</span></div></pre></div></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.BinaryExpression</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.OperatorExpression</span></code>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.BindParameter"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">BindParameter</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.BindParameter" title="Link to this definition">¶</a></dt><dd><p>Represent a “bound expression”.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> is invoked explicitly using the<a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> function, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">bindparam</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;username&#39;</span><span class="p">))</span></pre></div></div><p>Detailed discussion of how <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> is used isat <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.effective\_value"><span class="sig-name descname">effective\_value</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.inherit\_cache"><span class="sig-name descname">inherit\_cache</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.render\_literal\_execute"><span class="sig-name descname">render\_literal\_execute()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.BindParameter</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.InElementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.KeyedColumnElement</span></code>)</p></div><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.BindParameter.effective\_value"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.BindParameter.</span></code></a><span class="sig-name descname"><span class="pre">effective\_value</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.BindParameter.effective\_value" title="Link to this definition">¶</a></dt><dd><p>Return the value of this bound parameter,taking into account if the <code class="docutils literal notranslate"><span class="pre">callable</span></code> parameterwas set.</p><p>The <code class="docutils literal notranslate"><span class="pre">callable</span></code> value will be evaluatedand returned if present, else <code class="docutils literal notranslate"><span class="pre">value</span></code>.</p></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.BindParameter.inherit\_cache"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.BindParameter.</span></code></a><span class="sig-name descname"><span class="pre">inherit\_cache</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">bool</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">True</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.BindParameter.inherit\_cache" title="Link to this definition">¶</a></dt><dd><p>Indicate if this <a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey" title="sqlalchemy.sql.traversals.HasCacheKey"><code class="xref py py-class docutils literal notranslate"><span class="pre">HasCacheKey</span></code></a> instance should make use of thecache key generation scheme used by its immediate superclass.</p><p>The attribute defaults to <code class="docutils literal notranslate"><span class="pre">None</span></code>, which indicates that a construct hasnot yet taken into account whether or not its appropriate for it toparticipate in caching; this is functionally equivalent to setting thevalue to <code class="docutils literal notranslate"><span class="pre">False</span></code>, except that a warning is also emitted.</p><p>This flag can be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> on a particular class, if the SQL thatcorresponds to the object does not change based on attributes whichare local to this class, and not its superclass.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="compiler.html#compilerext-caching"><span class="std std-ref">Enabling Caching Support for Custom Constructs</span></a> - General guideslines for setting the<a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey.inherit\_cache" title="sqlalchemy.sql.traversals.HasCacheKey.inherit\_cache"><code class="xref py py-attr docutils literal notranslate"><span class="pre">HasCacheKey.inherit\_cache</span></code></a> attribute for third-party or userdefined SQL constructs.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.BindParameter.render\_literal\_execute"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.BindParameter.</span></code></a><span class="sig-name descname"><span class="pre">render\_literal\_execute</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.elements.BindParameter"><span class="pre">BindParameter</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.BindParameter.render\_literal\_execute" title="Link to this definition">¶</a></dt><dd><p>Produce a copy of this bound parameter that will enable the<a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.params.literal\_execute" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">BindParameter.literal\_execute</span></code></a> flag.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.params.literal\_execute" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">BindParameter.literal\_execute</span></code></a> flag willhave the effect of the parameter rendered in the compiled SQLstring using <code class="docutils literal notranslate"><span class="pre">[POSTCOMPILE]</span></code> form, which is a special form thatis converted to be a rendering of the literal value of the parameterat SQL execution time. The rationale is to support cachingof SQL statement strings that can embed per-statement literal values,such as LIMIT and OFFSET parameters, in the final SQL string thatis passed to the DBAPI. Dialects in particular may want to usethis method within custom compilation schemes.</p><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.5.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="connections.html#engine-thirdparty-caching"><span class="std std-ref">Caching for Third Party Dialects</span></a></p></div></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Case"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Case</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Case" title="Link to this definition">¶</a></dt><dd><p>Represent a <code class="docutils literal notranslate"><span class="pre">CASE</span></code> expression.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Case" title="sqlalchemy.sql.expression.Case"><code class="xref py py-class docutils literal notranslate"><span class="pre">Case</span></code></a> is produced using the <a class="reference internal" href="#sqlalchemy.sql.expression.case" title="sqlalchemy.sql.expression.case"><code class="xref py py-func docutils literal notranslate"><span class="pre">case()</span></code></a> factory function,as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">case</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">users\_table</span><span class="p">)</span><span class="o">.</span> <span class="n">where</span><span class="p">(</span> <span class="k">case</span><span class="p">(</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;wendy&#39;</span><span class="p">,</span> <span class="s1">&#39;W&#39;</span><span class="p">),</span> <span class="p">(</span><span class="n">users\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="s1">&#39;jack&#39;</span><span class="p">,</span> <span class="s1">&#39;J&#39;</span><span class="p">),</span> <span class="n">else\_</span><span class="o">=</span><span class="s1">&#39;E&#39;</span> <span class="p">)</span> <span class="p">)</span></pre></div></div><p>Details on <a class="reference internal" href="#sqlalchemy.sql.expression.Case" title="sqlalchemy.sql.expression.Case"><code class="xref py py-class docutils literal notranslate"><span class="pre">Case</span></code></a> usage is at <a class="reference internal" href="#sqlalchemy.sql.expression.case" title="sqlalchemy.sql.expression.case"><code class="xref py py-func docutils literal notranslate"><span class="pre">case()</span></code></a>.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.case" title="sqlalchemy.sql.expression.case"><code class="xref py py-func docutils literal notranslate"><span class="pre">case()</span></code></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Case" title="sqlalchemy.sql.expression.Case"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Case</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Cast"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Cast</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Cast" title="Link to this definition">¶</a></dt><dd><p>Represent a <code class="docutils literal notranslate"><span class="pre">CAST</span></code> expression.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><code class="xref py py-class docutils literal notranslate"><span class="pre">Cast</span></code></a> is produced using the <a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a> factory function,as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">cast</span><span class="p">,</span> <span class="n">Numeric</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">cast</span><span class="p">(</span><span class="n">product\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">unit\_price</span><span class="p">,</span> <span class="n">Numeric</span><span class="p">(</span><span class="mi">10</span><span class="p">,</span> <span class="mi">4</span><span class="p">)))</span></pre></div></div><p>Details on <a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><code class="xref py py-class docutils literal notranslate"><span class="pre">Cast</span></code></a> usage is at <a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a>.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-casts"><span class="std std-ref">Data Casts and Type Coercion</span></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a> - an alternative to CAST that coerces the typeon the Python side only, which is often sufficient to generate thecorrect SQL and data coercion.</p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Cast</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.WrapsColumnExpression</span></code>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ClauseList"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">ClauseList</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ClauseList" title="Link to this definition">¶</a></dt><dd><p>Describe a list of clauses, separated by an operator.</p><p>By default, is comma-separated, such as a column listing.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList" title="sqlalchemy.sql.expression.ClauseList"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ClauseList</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.InElementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.OrderByRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ColumnsClauseRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DMLColumnRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.DQLDMLClauseElement</span></code>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ClauseList.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ClauseList.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.ClauseList.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList.self\_group" title="sqlalchemy.sql.expression.ClauseList.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList.self\_group" title="sqlalchemy.sql.expression.ClauseList.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnClause"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">ColumnClause</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnClause" title="Link to this definition">¶</a></dt><dd><p>Represents a column expression from any textual string.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a>, a lightweight analogue to the<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> class, is typically invoked using the<a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a> function, as in:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">column</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;name&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">)</span><span class="o">.</span><span class="n">select\_from</span><span class="p">(</span><span class="s2">&quot;user&quot;</span><span class="p">)</span></pre></div></div><p>The above statement would produce SQL like:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">SELECT</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span> <span class="n">FROM</span> <span class="n">user</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> is the immediate superclass of the schema-specific<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> object. While the <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a>class has all thesame capabilities as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a>, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a>class is usable by itself in those cases where behavioral requirementsare limited to simple SQL expression generation. The object has none ofthe associations with schema-level metadata or with execution-timebehavior that <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> does,so in that sense is a “lightweight”version of <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a>.</p><p>Full details on <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> usage is at<a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a></p><p><a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause.get\_children"><span class="sig-name descname">get\_children()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnClause</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DDLReferredColumnRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.LabeledColumnExprRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.StrAsPlainColumnRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Immutable</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.NamedColumn</span></code>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnClause.get\_children"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnClause.</span></code></a><span class="sig-name descname"><span class="pre">get\_children</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">column\_tables</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnClause.get\_children" title="Link to this definition">¶</a></dt><dd><p>Return immediate child <code class="xref py py-class docutils literal notranslate"><span class="pre">HasTraverseInternals</span></code>elements of this <code class="xref py py-class docutils literal notranslate"><span class="pre">HasTraverseInternals</span></code>.</p><p>This is used for visit traversal.</p><p>\*\*kw may contain flags that change the collection that isreturned, for example to return a subset of items in order tocut down on larger traversals, or to return child items from adifferent context (such as schema-level collections instead ofclause-level).</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">ColumnCollection</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection" title="Link to this definition">¶</a></dt><dd><p>Collection of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> instances,typically for<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.FromClause" title="sqlalchemy.sql.expression.FromClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">FromClause</span></code></a> objects.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> object is most commonly availableas the <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table.c" title="sqlalchemy.schema.Table.c"><code class="xref py py-attr docutils literal notranslate"><span class="pre">Table.c</span></code></a> or <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table.columns" title="sqlalchemy.schema.Table.columns"><code class="xref py py-attr docutils literal notranslate"><span class="pre">Table.columns</span></code></a> collectionon the <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a> object, introduced at<a class="reference internal" href="metadata.html#metadata-tables-and-columns"><span class="std std-ref">Accessing Tables and Columns</span></a>.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> has both mapping- and sequence-like behaviors. A <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> usually stores<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> objects, which are then accessible both via mappingstyle access as well as attribute access style.</p><p>To access <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> objects using ordinary attribute-styleaccess, specify the name like any other object attribute, such as belowa column named <code class="docutils literal notranslate"><span class="pre">employee\_name</span></code> is accessed:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">employee\_table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">employee\_name</span></pre></div></div><p>To access columns that have names with special characters or spaces,index-style access is used, such as below which illustrates a column named<code class="docutils literal notranslate"><span class="pre">employee</span> <span class="pre">'</span> <span class="pre">payment</span></code> is accessed:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">employee\_table</span><span class="o">.</span><span class="n">c</span><span class="p">[</span><span class="s2">&quot;employee &#39; payment&quot;</span><span class="p">]</span></pre></div></div><p>As the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> object provides a Python dictionaryinterface, common dictionary method names like<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.keys" title="sqlalchemy.sql.expression.ColumnCollection.keys"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnCollection.keys()</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.values" title="sqlalchemy.sql.expression.ColumnCollection.values"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnCollection.values()</span></code></a>,and <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.items" title="sqlalchemy.sql.expression.ColumnCollection.items"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnCollection.items()</span></code></a> are available, which means thatdatabase columns that are keyed under these names also need to use indexedaccess:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">employee\_table</span><span class="o">.</span><span class="n">c</span><span class="p">[</span><span class="s2">&quot;values&quot;</span><span class="p">]</span></pre></div></div><p>The name for which a <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> would be present is normallythat of the <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column.params.key" title="sqlalchemy.schema.Column"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Column.key</span></code></a> parameter. In some contexts,such as a <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select" title="sqlalchemy.sql.expression.Select"><code class="xref py py-class docutils literal notranslate"><span class="pre">Select</span></code></a> object that uses a label style setusing the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.set\_label\_style" title="sqlalchemy.sql.expression.Select.set\_label\_style"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.set\_label\_style()</span></code></a> method, a column of a certainkey may instead be represented under a particular label name suchas <code class="docutils literal notranslate"><span class="pre">tablename\_columnname</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">select</span><span class="p">,</span> <span class="n">column</span><span class="p">,</span> <span class="n">table</span><span class="gp">&gt;&gt;&gt; </span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">LABEL\_STYLE\_TABLENAME\_PLUS\_COL</span><span class="gp">&gt;&gt;&gt; </span><span class="n">t</span> <span class="o">=</span> <span class="n">table</span><span class="p">(</span><span class="s2">&quot;t&quot;</span><span class="p">,</span> <span class="n">column</span><span class="p">(</span><span class="s2">&quot;c&quot;</span><span class="p">))</span><span class="gp">&gt;&gt;&gt; </span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="p">)</span><span class="o">.</span><span class="n">set\_label\_style</span><span class="p">(</span><span class="n">LABEL\_STYLE\_TABLENAME\_PLUS\_COL</span><span class="p">)</span><span class="gp">&gt;&gt;&gt; </span><span class="n">subq</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">subquery</span><span class="p">()</span><span class="gp">&gt;&gt;&gt; </span><span class="n">subq</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">t\_c</span><span class="go">&lt;sqlalchemy.sql.elements.ColumnClause at 0x7f59dcf04fa0; t\_c&gt;</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> also indexes the columns in order and allowsthem to be accessible by their integer position:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">cc</span><span class="p">[</span><span class="mi">0</span><span class="p">]</span><span class="go">Column(&#39;x&#39;, Integer(), table=None)</span><span class="gp">&gt;&gt;&gt; </span><span class="n">cc</span><span class="p">[</span><span class="mi">1</span><span class="p">]</span><span class="go">Column(&#39;y&#39;, Integer(), table=None)</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.4: </span><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>allows integer-basedindex access to the collection.</p></div><p>Iterating the collection yields the column expressions in order:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">list</span><span class="p">(</span><span class="n">cc</span><span class="p">)</span><span class="go">[Column(&#39;x&#39;, Integer(), table=None),</span><span class="go"> Column(&#39;y&#39;, Integer(), table=None)]</span></pre></div></div><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> object can storeduplicates, which canmean either two columns with the same key, in which case the columnreturned by key access is <strong>arbitrary</strong>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">x1</span><span class="p">,</span> <span class="n">x2</span> <span class="o">=</span> <span class="n">Column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">,</span> <span class="n">Integer</span><span class="p">),</span> <span class="n">Column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">,</span> <span class="n">Integer</span><span class="p">)</span><span class="gp">&gt;&gt;&gt; </span><span class="n">cc</span> <span class="o">=</span> <span class="n">ColumnCollection</span><span class="p">(</span><span class="n">columns</span><span class="o">=</span><span class="p">[(</span><span class="n">x1</span><span class="o">.</span><span class="n">name</span><span class="p">,</span> <span class="n">x1</span><span class="p">),</span> <span class="p">(</span><span class="n">x2</span><span class="o">.</span><span class="n">name</span><span class="p">,</span> <span class="n">x2</span><span class="p">)])</span><span class="gp">&gt;&gt;&gt; </span><span class="n">list</span><span class="p">(</span><span class="n">cc</span><span class="p">)</span><span class="go">[Column(&#39;x&#39;, Integer(), table=None),</span><span class="go"> Column(&#39;x&#39;, Integer(), table=None)]</span><span class="gp">&gt;&gt;&gt; </span><span class="n">cc</span><span class="p">[</span><span class="s1">&#39;x&#39;</span><span class="p">]</span> <span class="ow">is</span> <span class="n">x1</span><span class="go">False</span><span class="gp">&gt;&gt;&gt; </span><span class="n">cc</span><span class="p">[</span><span class="s1">&#39;x&#39;</span><span class="p">]</span> <span class="ow">is</span> <span class="n">x2</span><span class="go">True</span></pre></div></div><p>Or it can also mean the same column multiple times. These cases aresupported as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>is used to represent the columns ina SELECT statement which may include duplicates.</p><p>A special subclass <code class="xref py py-class docutils literal notranslate"><span class="pre">DedupeColumnCollection</span></code> exists which insteadmaintains SQLAlchemy’s older behavior of not allowing duplicates; thiscollection is used for schema level objects like <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a>and<a class="reference internal" href="constraints.html#sqlalchemy.schema.PrimaryKeyConstraint" title="sqlalchemy.schema.PrimaryKeyConstraint"><code class="xref py py-class docutils literal notranslate"><span class="pre">PrimaryKeyConstraint</span></code></a> where this deduping is helpful. The<code class="xref py py-class docutils literal notranslate"><span class="pre">DedupeColumnCollection</span></code> class also has additional mutation methodsas the schema constructs have more use cases that require removal andreplacement of columns.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>now stores duplicatecolumn keys as well as the same column in multiple positions. The<code class="xref py py-class docutils literal notranslate"><span class="pre">DedupeColumnCollection</span></code> class is added to maintain theformer behavior in those cases where deduplication as well asadditional replace/remove operations are needed.</p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.add"><span class="sig-name descname">add()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.as\_readonly"><span class="sig-name descname">as\_readonly()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.clear"><span class="sig-name descname">clear()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.compare"><span class="sig-name descname">compare()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.contains\_column"><span class="sig-name descname">contains\_column()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.corresponding\_column"><span class="sig-name descname">corresponding\_column()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.get"><span class="sig-name descname">get()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.items"><span class="sig-name descname">items()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.keys"><span class="sig-name descname">keys()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.update"><span class="sig-name descname">update()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.values"><span class="sig-name descname">values()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">typing.Generic</span></code>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.add"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">add</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">column</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="n"><span class="pre">key</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_COLKEY</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">None</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.add" title="Link to this definition">¶</a></dt><dd><p>Add a column to this <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>.</p><div class="admonition note"><p class="admonition-title">Note</p><p>This method is <strong>not normally used by user-facing code</strong>, as the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> is usually part of an existingobject such as a <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a>. To add a<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> to an existing <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a>object, use the <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table.append\_column" title="sqlalchemy.schema.Table.append\_column"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Table.append\_column()</span></code></a> method.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.as\_readonly"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">as\_readonly</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">ReadOnlyColumnCollection</span><span class="p"><span class="pre">[</span></span><span class="pre">\_COLKEY</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">\_COL\_co</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.as\_readonly" title="Link to this definition">¶</a></dt><dd><p>Return a “read only” form of this<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.clear"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">clear</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">NoReturn</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.clear" title="Link to this definition">¶</a></dt><dd><p>Dictionary clear() is not implemented for<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.compare"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">compare</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.base.ColumnCollection"><span class="pre">ColumnCollection</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">bool</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.compare" title="Link to this definition">¶</a></dt><dd><p>Compare this <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> to anotherbased on the names of the keys</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.contains\_column"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">contains\_column</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">col</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">bool</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.contains\_column" title="Link to this definition">¶</a></dt><dd><p>Checks if a column object exists in this collection</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.corresponding\_column"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">corresponding\_column</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">column</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_COL</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">require\_embedded</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">\_COL</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">\_COL\_co</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.corresponding\_column" title="Link to this definition">¶</a></dt><dd><p>Given a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>, return the exported<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> object from this<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>which corresponds to that original <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>via a commonancestor column.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnCollection.corresponding\_column.params.column"></span><strong>column</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.corresponding\_column.params.column">¶</a> – the target <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>to be matched.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnCollection.corresponding\_column.params.require\_embedded"></span><strong>require\_embedded</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnCollection.corresponding\_column.params.require\_embedded">¶</a> – only return corresponding columns forthe given <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>, if the given<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>is actually present within a sub-elementof this <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Selectable" title="sqlalchemy.sql.expression.Selectable"><code class="xref py py-class docutils literal notranslate"><span class="pre">Selectable</span></code></a>.Normally the column will match ifit merely shares a common ancestor with one of the exportedcolumns of this <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Selectable" title="sqlalchemy.sql.expression.Selectable"><code class="xref py py-class docutils literal notranslate"><span class="pre">Selectable</span></code></a>.</p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Selectable.corresponding\_column" title="sqlalchemy.sql.expression.Selectable.corresponding\_column"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Selectable.corresponding\_column()</span></code></a>- invokes this methodagainst the collection returned by<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Selectable.exported\_columns" title="sqlalchemy.sql.expression.Selectable.exported\_columns"><code class="xref py py-attr docutils literal notranslate"><span class="pre">Selectable.exported\_columns</span></code></a>.</p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>the implementation for <code class="docutils literal notranslate"><span class="pre">corresponding\_column</span></code>was moved onto the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a> itself.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.get"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">get</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">key</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">default</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_COL\_co</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">\_COL\_co</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.get" title="Link to this definition">¶</a></dt><dd><p>Get a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> or <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> objectbased on a string key name from this<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.items"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">items</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">List</span><span class="p"><span class="pre">[</span></span><span class="pre">Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">\_COLKEY</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">\_COL\_co</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.items" title="Link to this definition">¶</a></dt><dd><p>Return a sequence of (key, column) tuples for all columns in thiscollection each consisting of a string key name and a<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> or<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> object.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.keys"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">keys</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">List</span><span class="p"><span class="pre">[</span></span><span class="pre">\_COLKEY</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.keys" title="Link to this definition">¶</a></dt><dd><p>Return a sequence of string key names for all columns in thiscollection.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.update"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">update</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">iter\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">NoReturn</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.update" title="Link to this definition">¶</a></dt><dd><p>Dictionary update() is not implemented for<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection" title="sqlalchemy.sql.expression.ColumnCollection"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnCollection</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnCollection.values"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnCollection"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnCollection.</span></code></a><span class="sig-name descname"><span class="pre">values</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">List</span><span class="p"><span class="pre">[</span></span><span class="pre">\_COL\_co</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnCollection.values" title="Link to this definition">¶</a></dt><dd><p>Return a sequence of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> or<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> objects for all columns in thiscollection.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">ColumnElement</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement" title="Link to this definition">¶</a></dt><dd><p>Represent a column-oriented SQL expression suitable for usage in the“columns” clause, WHERE clause etc. of a statement.</p><p>While the most familiar kind of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> is the<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> object, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>serves as the basisfor any unit that may be present in a SQL expression, includingthe expressions themselves, SQL functions, bound parameters,literal expressions, keywords such as <code class="docutils literal notranslate"><span class="pre">NULL</span></code>, etc.<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>is the ultimate base class for all such elements.</p><p>A wide variety of SQLAlchemy Core functions work at the SQL expressionlevel, and are intended to accept instances of<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> asarguments. These functions will typically document that they accept a“SQL expression” as an argument. What this means in terms of SQLAlchemyusually refers to an input which is either already in the form of a<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> object,or a value which can be <strong>coerced</strong> intoone. The coercion rules followed by most, but not all, SQLAlchemy Corefunctions with regards to SQL expressions are as follows:</p><blockquote><div><ul class="simple"><li><p>a literal Python value, such as a string, integer or floatingpoint value, boolean, datetime, <code class="docutils literal notranslate"><span class="pre">Decimal</span></code> object, or virtuallyany other Python object, will be coerced into a “literal boundvalue”. This generally means that a <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> will beproduced featuring the given value embedded into the construct; theresulting <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> object is an instance of<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>.The Python value will ultimately be sentto the DBAPI at execution time as a parameterized argument to the<code class="docutils literal notranslate"><span class="pre">execute()</span></code> or <code class="docutils literal notranslate"><span class="pre">executemany()</span></code> methods, after SQLAlchemytype-specific converters (e.g. those provided by any associated<a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> objects) are applied to the value.</p></li><li><p>any special object value, typically ORM-level constructs, whichfeature an accessor called <code class="docutils literal notranslate"><span class="pre">\_\_clause\_element\_\_()</span></code>. The Coreexpression system looks for this method when an object of otherwiseunknown type is passed to a function that is looking to coerce theargument into a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> and sometimes a<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.SelectBase" title="sqlalchemy.sql.expression.SelectBase"><code class="xref py py-class docutils literal notranslate"><span class="pre">SelectBase</span></code></a> expression.It is used within the ORM toconvert from ORM-specific objects like mapped classes andmapped attributes into Core expression objects.</p></li><li><p>The Python <code class="docutils literal notranslate"><span class="pre">None</span></code> value is typically interpreted as <code class="docutils literal notranslate"><span class="pre">NULL</span></code>,which in SQLAlchemy Core produces an instance of <a class="reference internal" href="#sqlalchemy.sql.expression.null" title="sqlalchemy.sql.expression.null"><code class="xref py py-func docutils literal notranslate"><span class="pre">null()</span></code></a>.</p></li></ul></div></blockquote><p>A <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> provides the ability to generate new<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>objects using Python expressions. This means that Python operatorssuch as <code class="docutils literal notranslate"><span class="pre">==</span></code>, <code class="docutils literal notranslate"><span class="pre">!=</span></code> and <code class="docutils literal notranslate"><span class="pre">&lt;</span></code> are overloaded to mimic SQL operations,and allow the instantiation of further <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>instanceswhich are composed from other, more fundamental<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>objects. For example, two <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> objects can be addedtogether with the addition operator <code class="docutils literal notranslate"><span class="pre">+</span></code> to producea <a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">BinaryExpression</span></code></a>.Both <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnClause" title="sqlalchemy.sql.expression.ColumnClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnClause</span></code></a> and <a class="reference internal" href="#sqlalchemy.sql.expression.BinaryExpression" title="sqlalchemy.sql.expression.BinaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">BinaryExpression</span></code></a> are subclassesof <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>:</p><div class="highlight-pycon+sql notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">column</span><span class="gp">&gt;&gt;&gt; </span><span class="n">column</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)</span> <span class="o">+</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;b&#39;</span><span class="p">)</span><span class="go">&lt;sqlalchemy.sql.expression.BinaryExpression object at 0x101029dd0&gt;</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">column</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)</span> <span class="o">+</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;b&#39;</span><span class="p">))</span><div class='show\_sql\_print'><span class="n">a</span><span class="w"> </span><span class="o">+</span><span class="w"> </span><span class="n">b</span></div></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_eq\_\_"><span class="sig-name descname">\_\_eq\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_le\_\_"><span class="sig-name descname">\_\_le\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_lt\_\_"><span class="sig-name descname">\_\_lt\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.\_\_ne\_\_"><span class="sig-name descname">\_\_ne\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.all\_"><span class="sig-name descname">all\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.allows\_lambda"><span class="sig-name descname">allows\_lambda</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.anon\_key\_label"><span class="sig-name descname">anon\_key\_label</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.anon\_label"><span class="sig-name descname">anon\_label</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.any\_"><span class="sig-name descname">any\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.asc"><span class="sig-name descname">asc()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.base\_columns"><span class="sig-name descname">base\_columns</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.between"><span class="sig-name descname">between()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_and"><span class="sig-name descname">bitwise\_and()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_lshift"><span class="sig-name descname">bitwise\_lshift()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_not"><span class="sig-name descname">bitwise\_not()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_or"><span class="sig-name descname">bitwise\_or()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_rshift"><span class="sig-name descname">bitwise\_rshift()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_xor"><span class="sig-name descname">bitwise\_xor()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.bool\_op"><span class="sig-name descname">bool\_op()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.cast"><span class="sig-name descname">cast()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.collate"><span class="sig-name descname">collate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.comparator"><span class="sig-name descname">comparator</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compare"><span class="sig-name descname">compare()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compile"><span class="sig-name descname">compile()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.concat"><span class="sig-name descname">concat()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.contains"><span class="sig-name descname">contains()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.desc"><span class="sig-name descname">desc()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.description"><span class="sig-name descname">description</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.distinct"><span class="sig-name descname">distinct()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.endswith"><span class="sig-name descname">endswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.entity\_namespace"><span class="sig-name descname">entity\_namespace</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.expression"><span class="sig-name descname">expression</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.foreign\_keys"><span class="sig-name descname">foreign\_keys</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.get\_children"><span class="sig-name descname">get\_children()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.icontains"><span class="sig-name descname">icontains()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.iendswith"><span class="sig-name descname">iendswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.ilike"><span class="sig-name descname">ilike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.in\_"><span class="sig-name descname">in\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.inherit\_cache"><span class="sig-name descname">inherit\_cache</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_"><span class="sig-name descname">is\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_clause\_element"><span class="sig-name descname">is\_clause\_element</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_distinct\_from"><span class="sig-name descname">is\_distinct\_from()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_dml"><span class="sig-name descname">is\_dml</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_not"><span class="sig-name descname">is\_not()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_not\_distinct\_from"><span class="sig-name descname">is\_not\_distinct\_from()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.is\_selectable"><span class="sig-name descname">is\_selectable</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.isnot"><span class="sig-name descname">isnot()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.isnot\_distinct\_from"><span class="sig-name descname">isnot\_distinct\_from()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.istartswith"><span class="sig-name descname">istartswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.key"><span class="sig-name descname">key</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.label"><span class="sig-name descname">label()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.like"><span class="sig-name descname">like()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.match"><span class="sig-name descname">match()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.negation\_clause"><span class="sig-name descname">negation\_clause</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.not\_ilike"><span class="sig-name descname">not\_ilike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.not\_in"><span class="sig-name descname">not\_in()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.not\_like"><span class="sig-name descname">not\_like()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.notilike"><span class="sig-name descname">notilike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.notin\_"><span class="sig-name descname">notin\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.notlike"><span class="sig-name descname">notlike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nulls\_first"><span class="sig-name descname">nulls\_first()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nulls\_last"><span class="sig-name descname">nulls\_last()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nullsfirst"><span class="sig-name descname">nullsfirst()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.nullslast"><span class="sig-name descname">nullslast()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op"><span class="sig-name descname">op()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.operate"><span class="sig-name descname">operate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.params"><span class="sig-name descname">params()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.primary\_key"><span class="sig-name descname">primary\_key</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.proxy\_set"><span class="sig-name descname">proxy\_set</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_match"><span class="sig-name descname">regexp\_match()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace"><span class="sig-name descname">regexp\_replace()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.reverse\_operate"><span class="sig-name descname">reverse\_operate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.self\_group"><span class="sig-name descname">self\_group()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.shares\_lineage"><span class="sig-name descname">shares\_lineage()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.startswith"><span class="sig-name descname">startswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.stringify\_dialect"><span class="sig-name descname">stringify\_dialect</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.supports\_execution"><span class="sig-name descname">supports\_execution</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.timetuple"><span class="sig-name descname">timetuple</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.type"><span class="sig-name descname">type</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.unique\_params"><span class="sig-name descname">unique\_params()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.uses\_inspection"><span class="sig-name descname">uses\_inspection</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ColumnArgumentOrKeyRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.StatementOptionRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.WhereHavingRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.BinaryElementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.OrderByRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ColumnsClauseRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.LimitOffsetRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DMLColumnRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DDLConstraintColumnRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DDLExpressionRole</span></code>, <a class="reference internal" href="#sqlalchemy.sql.expression.SQLColumnExpression" title="sqlalchemy.sql.expression.SQLColumnExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.SQLColumnExpression</span></code></a>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.DQLDMLClauseElement</span></code>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.\_\_eq\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">\_\_eq\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.\_\_eq\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.\_\_eq\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">==</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">=</span> <span class="pre">b</span></code>.If the target is <code class="docutils literal notranslate"><span class="pre">None</span></code>, produces <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">IS</span> <span class="pre">NULL</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.\_\_le\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">\_\_le\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.\_\_le\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.\_\_le\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">&lt;=</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">&lt;=</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.\_\_lt\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">\_\_lt\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.\_\_lt\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.\_\_lt\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">&lt;</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">&lt;</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.\_\_ne\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">\_\_ne\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.\_\_ne\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.\_\_ne\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">!=</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">!=</span> <span class="pre">b</span></code>.If the target is <code class="docutils literal notranslate"><span class="pre">None</span></code>, produces <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">IS</span> <span class="pre">NOT</span> <span class="pre">NULL</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.all\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">all\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.all\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.all\_" title="sqlalchemy.sql.expression.ColumnOperators.all\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.all\_()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce an <a class="reference internal" href="#sqlalchemy.sql.expression.all\_" title="sqlalchemy.sql.expression.all\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">all\_()</span></code></a> clause against theparent object.</p><p>See the documentation for <a class="reference internal" href="#sqlalchemy.sql.expression.all\_" title="sqlalchemy.sql.expression.all\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">all\_()</span></code></a> for examples.</p><div class="admonition note"><p class="admonition-title">Note</p><p>be sure to not confuse the newer<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.all\_" title="sqlalchemy.sql.expression.ColumnOperators.all\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.all\_()</span></code></a> method with its older<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a>-specific counterpart, the<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY.Comparator.all" title="sqlalchemy.types.ARRAY.Comparator.all"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Comparator.all()</span></code></a> method, which a differentcalling syntax and usage pattern.</p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.allows\_lambda"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">allows\_lambda</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">True</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.allows\_lambda" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.anon\_key\_label"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">anon\_key\_label</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.anon\_key\_label" title="Link to this definition">¶</a></dt><dd><div class="deprecated"><p><span class="versionmodified deprecated">Deprecated since version 1.4: </span>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.anon\_key\_label" title="sqlalchemy.sql.expression.ColumnElement.anon\_key\_label"><code class="xref py py-attr docutils literal notranslate"><span class="pre">ColumnElement.anon\_key\_label</span></code></a> attribute is now private, and the public accessor is deprecated.</p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.anon\_label"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">anon\_label</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.anon\_label" title="Link to this definition">¶</a></dt><dd><div class="deprecated"><p><span class="versionmodified deprecated">Deprecated since version 1.4: </span>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.anon\_label" title="sqlalchemy.sql.expression.ColumnElement.anon\_label"><code class="xref py py-attr docutils literal notranslate"><span class="pre">ColumnElement.anon\_label</span></code></a> attribute is now private, and the public accessor is deprecated.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.any\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">any\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.any\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.any\_" title="sqlalchemy.sql.expression.ColumnOperators.any\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.any\_()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce an <a class="reference internal" href="#sqlalchemy.sql.expression.any\_" title="sqlalchemy.sql.expression.any\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">any\_()</span></code></a> clause against theparent object.</p><p>See the documentation for <a class="reference internal" href="#sqlalchemy.sql.expression.any\_" title="sqlalchemy.sql.expression.any\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">any\_()</span></code></a> for examples.</p><div class="admonition note"><p class="admonition-title">Note</p><p>be sure to not confuse the newer<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.any\_" title="sqlalchemy.sql.expression.ColumnOperators.any\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.any\_()</span></code></a> method with its older<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a>-specific counterpart, the<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY.Comparator.any" title="sqlalchemy.types.ARRAY.Comparator.any"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Comparator.any()</span></code></a> method, which a differentcalling syntax and usage pattern.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.asc"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">asc</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.asc" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.asc" title="sqlalchemy.sql.expression.ColumnOperators.asc"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.asc()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> clause against theparent object.</p></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.base\_columns"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">base\_columns</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.base\_columns" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.between"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">between</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">cleft</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">cright</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">symmetric</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.between" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.between" title="sqlalchemy.sql.expression.ColumnOperators.between"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.between()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.between" title="sqlalchemy.sql.expression.between"><code class="xref py py-func docutils literal notranslate"><span class="pre">between()</span></code></a> clause againstthe parent object, given the lower and upper range.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bitwise\_and"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_and</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_and" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_and" title="sqlalchemy.sql.expression.ColumnOperators.bitwise\_and"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_and()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a bitwise AND operation, typically via the <code class="docutils literal notranslate"><span class="pre">&amp;</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bitwise\_lshift"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_lshift</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_lshift" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift" title="sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_lshift()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a bitwise LSHIFT operation, typically via the <code class="docutils literal notranslate"><span class="pre">&lt;&lt;</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bitwise\_not"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_not</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_not" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_not" title="sqlalchemy.sql.expression.ColumnOperators.bitwise\_not"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_not()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a bitwise NOT operation, typically via the <code class="docutils literal notranslate"><span class="pre">~</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bitwise\_or"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_or</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_or" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_or" title="sqlalchemy.sql.expression.ColumnOperators.bitwise\_or"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_or()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a bitwise OR operation, typically via the <code class="docutils literal notranslate"><span class="pre">|</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bitwise\_rshift"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_rshift</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_rshift" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift" title="sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_rshift()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a bitwise RSHIFT operation, typically via the <code class="docutils literal notranslate"><span class="pre">&gt;&gt;</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bitwise\_xor"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_xor</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bitwise\_xor" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor" title="sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.bitwise\_xor()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a bitwise XOR operation, typically via the <code class="docutils literal notranslate"><span class="pre">^</span></code>operator, or <code class="docutils literal notranslate"><span class="pre">#</span></code> for PostgreSQL.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.bool\_op"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">bool\_op</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">opstring</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">precedence</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">int</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">0</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">python\_impl</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.bool\_op" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Return a custom boolean operator.</p><p>This method is shorthand for calling<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a> and passing the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Operators.op.is\_comparison</span></code></a>flag with True. A key advantage to using <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a>is that when using column constructs, the “boolean” nature of thereturned expression will be present for <span class="target" id="index-0"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a> purposes.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.cast"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">cast</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">type\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypeEngineArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_OPT</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><span class="pre">Cast</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_OPT</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.cast" title="Link to this definition">¶</a></dt><dd><p>Produce a type cast, i.e. <code class="docutils literal notranslate"><span class="pre">CAST(&lt;expression&gt;</span> <span class="pre">AS</span> <span class="pre">&lt;type&gt;)</span></code>.</p><p>This is a shortcut to the <a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a> function.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-casts"><span class="std std-ref">Data Casts and Type Coercion</span></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.collate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">collate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">collation</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.collate" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.collate" title="sqlalchemy.sql.expression.ColumnOperators.collate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.collate()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.collate" title="sqlalchemy.sql.expression.collate"><code class="xref py py-func docutils literal notranslate"><span class="pre">collate()</span></code></a> clause againstthe parent object, given the collation string.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.collate" title="sqlalchemy.sql.expression.collate"><code class="xref py py-func docutils literal notranslate"><span class="pre">collate()</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.comparator"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">comparator</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.comparator" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.compare"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">compare</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.elements.ClauseElement"><span class="pre">ClauseElement</span></a></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">bool</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.compare" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement.compare" title="sqlalchemy.sql.expression.ClauseElement.compare"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ClauseElement.compare()</span></code></a> <em>method of</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a></p></div><p>Compare this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a> tothe given <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>Subclasses should override the default behavior, which is astraight identity comparison.</p><p>\*\*kw are arguments consumed by subclass <code class="docutils literal notranslate"><span class="pre">compare()</span></code> methods andmay be used to modify the criteria for comparison(see <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>).</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.compile"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">compile</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">bind</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="connections.html#sqlalchemy.engine.Engine" title="sqlalchemy.engine.Engine"><span class="pre">Engine</span></a><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><a class="reference internal" href="connections.html#sqlalchemy.engine.Connection" title="sqlalchemy.engine.Connection"><span class="pre">Connection</span></a><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">dialect</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="internals.html#sqlalchemy.engine.Dialect" title="sqlalchemy.engine.Dialect"><span class="pre">Dialect</span></a><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="internals.html#sqlalchemy.engine.Compiled" title="sqlalchemy.engine.Compiled"><span class="pre">Compiled</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.compile" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="xref py py-meth docutils literal notranslate"><span class="pre">CompilerElement.compile()</span></code> <em>method of</em> <code class="xref py py-class docutils literal notranslate"><span class="pre">CompilerElement</span></code></p></div><p>Compile this SQL expression.</p><p>The return value is a <a class="reference internal" href="internals.html#sqlalchemy.engine.Compiled" title="sqlalchemy.engine.Compiled"><code class="xref py py-class docutils literal notranslate"><span class="pre">Compiled</span></code></a> object.Calling <code class="docutils literal notranslate"><span class="pre">str()</span></code> or <code class="docutils literal notranslate"><span class="pre">unicode()</span></code> on the returned value will yield astring representation of the result. The<a class="reference internal" href="internals.html#sqlalchemy.engine.Compiled" title="sqlalchemy.engine.Compiled"><code class="xref py py-class docutils literal notranslate"><span class="pre">Compiled</span></code></a> object also can return adictionary of bind parameter names and valuesusing the <code class="docutils literal notranslate"><span class="pre">params</span></code> accessor.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.compile.params.bind"></span><strong>bind</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compile.params.bind">¶</a> – An <a class="reference internal" href="connections.html#sqlalchemy.engine.Connection" title="sqlalchemy.engine.Connection"><code class="xref py py-class docutils literal notranslate"><span class="pre">Connection</span></code></a> or <a class="reference internal" href="connections.html#sqlalchemy.engine.Engine" title="sqlalchemy.engine.Engine"><code class="xref py py-class docutils literal notranslate"><span class="pre">Engine</span></code></a> whichcan provide a <a class="reference internal" href="internals.html#sqlalchemy.engine.Dialect" title="sqlalchemy.engine.Dialect"><code class="xref py py-class docutils literal notranslate"><span class="pre">Dialect</span></code></a> in order to generate a<a class="reference internal" href="internals.html#sqlalchemy.engine.Compiled" title="sqlalchemy.engine.Compiled"><code class="xref py py-class docutils literal notranslate"><span class="pre">Compiled</span></code></a> object. If the <code class="docutils literal notranslate"><span class="pre">bind</span></code> and<code class="docutils literal notranslate"><span class="pre">dialect</span></code> parameters are both omitted, a default SQL compileris used.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.compile.params.column\_keys"></span><strong>column\_keys</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compile.params.column\_keys">¶</a> – Used for INSERT and UPDATE statements, a list ofcolumn names which should be present in the VALUES clause of thecompiled statement. If <code class="docutils literal notranslate"><span class="pre">None</span></code>, all columns from the target tableobject are rendered.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.compile.params.dialect"></span><strong>dialect</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compile.params.dialect">¶</a> – A <a class="reference internal" href="internals.html#sqlalchemy.engine.Dialect" title="sqlalchemy.engine.Dialect"><code class="xref py py-class docutils literal notranslate"><span class="pre">Dialect</span></code></a> instance which can generatea <a class="reference internal" href="internals.html#sqlalchemy.engine.Compiled" title="sqlalchemy.engine.Compiled"><code class="xref py py-class docutils literal notranslate"><span class="pre">Compiled</span></code></a> object. This argument takes precedence overthe <code class="docutils literal notranslate"><span class="pre">bind</span></code> argument.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.compile.params.compile\_kwargs"></span><strong>compile\_kwargs</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.compile.params.compile\_kwargs">¶</a> – <p>optional dictionary of additional parametersthat will be passed through to the compiler within all “visit”methods. This allows any custom flag to be passed through toa custom compilation construct, for example. It is also usedfor the case of passing the <code class="docutils literal notranslate"><span class="pre">literal\_binds</span></code> flag through:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">table</span><span class="p">,</span> <span class="n">column</span><span class="p">,</span> <span class="n">select</span><span class="n">t</span> <span class="o">=</span> <span class="n">table</span><span class="p">(</span><span class="s1">&#39;t&#39;</span><span class="p">,</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">))</span><span class="n">s</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">t</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">t</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">==</span> <span class="mi">5</span><span class="p">)</span><span class="n">print</span><span class="p">(</span><span class="n">s</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="n">compile\_kwargs</span><span class="o">=</span><span class="p">{</span><span class="s2">&quot;literal\_binds&quot;</span><span class="p">:</span> <span class="kc">True</span><span class="p">}))</span></pre></div></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../faq/sqlexpressions.html#faq-sql-expression-string"><span class="std std-ref">How do I render SQL expressions as strings, possibly with bound parameters inlined?</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.concat"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">concat</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.concat" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.concat" title="sqlalchemy.sql.expression.ColumnOperators.concat"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.concat()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the ‘concat’ operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">||</span> <span class="pre">b</span></code>,or uses the <code class="docutils literal notranslate"><span class="pre">concat()</span></code> operator on MySQL.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.contains"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">contains</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.contains" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the ‘contains’ operator.</p><p>Produces a LIKE expression that tests against a match for the middleof a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">column</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.contains.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.contains.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.contains.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.contains.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.contains.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.contains.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.desc"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">desc</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.desc" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.desc" title="sqlalchemy.sql.expression.ColumnOperators.desc"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.desc()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a> clause against theparent object.</p></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.description"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">description</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.description" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="xref py py-attr docutils literal notranslate"><span class="pre">ClauseElement.description</span></code> <em>attribute of</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.distinct"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">distinct</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.distinct" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.distinct" title="sqlalchemy.sql.expression.ColumnOperators.distinct"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.distinct()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.distinct" title="sqlalchemy.sql.expression.distinct"><code class="xref py py-func docutils literal notranslate"><span class="pre">distinct()</span></code></a> clause against theparent object.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.endswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">endswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.endswith" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the ‘endswith’ operator.</p><p>Produces a LIKE expression that tests against a match for the endof a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">column</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.endswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.endswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.endswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.endswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.endswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.endswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.entity\_namespace"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">entity\_namespace</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.entity\_namespace" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="xref py py-attr docutils literal notranslate"><span class="pre">ClauseElement.entity\_namespace</span></code> <em>attribute of</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.expression"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">expression</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.expression" title="Link to this definition">¶</a></dt><dd><p>Return a column expression.</p><p>Part of the inspection interface; returns self.</p></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.foreign\_keys"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">foreign\_keys</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">AbstractSet</span><span class="p"><span class="pre">[</span></span><a class="reference internal" href="constraints.html#sqlalchemy.schema.ForeignKey" title="sqlalchemy.schema.ForeignKey"><span class="pre">ForeignKey</span></a><span class="p"><span class="pre">]</span></span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">frozenset({})</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.foreign\_keys" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.get\_children"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">get\_children</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">omit\_attrs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">str</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">]</span></span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">()</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Iterable</span><span class="p"><span class="pre">[</span></span><span class="pre">HasTraverseInternals</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.get\_children" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="xref py py-meth docutils literal notranslate"><span class="pre">HasTraverseInternals.get\_children()</span></code> <em>method of</em> <code class="xref py py-class docutils literal notranslate"><span class="pre">HasTraverseInternals</span></code></p></div><p>Return immediate child <code class="xref py py-class docutils literal notranslate"><span class="pre">HasTraverseInternals</span></code>elements of this <code class="xref py py-class docutils literal notranslate"><span class="pre">HasTraverseInternals</span></code>.</p><p>This is used for visit traversal.</p><p>\*\*kw may contain flags that change the collection that isreturned, for example to return a subset of items in order tocut down on larger traversals, or to return child items from adifferent context (such as schema-level collections instead ofclause-level).</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.icontains"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">icontains</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.icontains" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.icontains()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">icontains</span></code> operator, e.g. case insensitiveversion of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p><p>Produces a LIKE expression that tests against an insensitive matchfor the middle of a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">column</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(</span><span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.icontains.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.icontains.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.icontains.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.icontains.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.icontains.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.icontains.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.icontains.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.icontains.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.icontains.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.iendswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">iendswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.iendswith" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.iendswith()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">iendswith</span></code> operator, e.g. case insensitiveversion of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a>.</p><p>Produces a LIKE expression that tests against an insensitive matchfor the end of a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">column</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(</span><span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span><span class="p">)</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">iendswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.iendswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.iendswith.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.iendswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.iendswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.iendswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.iendswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.iendswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">iendswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.iendswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.iendswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">iendswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.iendswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.ilike"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">ilike</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.ilike" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">ilike</span></code> operator, e.g. case insensitive LIKE.</p><p>In a column context, produces an expression either of the form:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">a</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">)</span></pre></div></div><p>Or on backends that support the ILIKE operator:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="n">ILIKE</span> <span class="n">other</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">ilike</span><span class="p">(</span><span class="s2">&quot;</span><span class="si">%f</span><span class="s2">oobar%&quot;</span><span class="p">))</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.ilike.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.ilike.params.other">¶</a> – expression to be compared</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.ilike.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.ilike.params.escape">¶</a> – <p>optional escape character, renders the <code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code>keyword, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">ilike</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;/&quot;</span><span class="p">)</span></pre></div></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.in\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">in\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.in\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">in</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">column</span> <span class="pre">IN</span> <span class="pre">&lt;other&gt;</span></code>.</p><p>The given parameter <code class="docutils literal notranslate"><span class="pre">other</span></code> may be:</p><ul><li><p>A list of literal values, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">([</span><span class="mi">1</span><span class="p">,</span> <span class="mi">2</span><span class="p">,</span> <span class="mi">3</span><span class="p">]))</span></pre></div></div><p>In this calling form, the list of items is converted to a set ofbound parameters the same length as the list given:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">)</span></pre></div></div></li><li><p>A list of tuples may be provided if the comparison is against a<a class="reference internal" href="#sqlalchemy.sql.expression.tuple\_" title="sqlalchemy.sql.expression.tuple\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">tuple\_()</span></code></a> containing multiple expressions:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">tuple\_</span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">tuple\_</span><span class="p">(</span><span class="n">col1</span><span class="p">,</span> <span class="n">col2</span><span class="p">)</span><span class="o">.</span><span class="n">in\_</span><span class="p">([(</span><span class="mi">1</span><span class="p">,</span> <span class="mi">10</span><span class="p">),</span> <span class="p">(</span><span class="mi">2</span><span class="p">,</span> <span class="mi">20</span><span class="p">),</span> <span class="p">(</span><span class="mi">3</span><span class="p">,</span> <span class="mi">30</span><span class="p">)]))</span></pre></div></div></li><li><p>An empty list, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">([]))</span></pre></div></div><p>In this calling form, the expression renders an “empty set”expression. These expressions are tailored to individual backendsand are generally trying to get an empty SELECT statement as asubquery. Such as on SQLite, the expression is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">col</span> <span class="n">IN</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span> <span class="n">FROM</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span><span class="p">)</span> <span class="n">WHERE</span> <span class="mi">1</span><span class="o">!=</span><span class="mi">1</span><span class="p">)</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>empty IN expressions now use anexecution-time generated SELECT subquery in all cases.</p></div></li><li><p>A bound parameter, e.g. <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>, may be used if itincludes the <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.expanding" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.expanding</span></code></a> flag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">(</span><span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;value&#39;</span><span class="p">,</span> <span class="n">expanding</span><span class="o">=</span><span class="kc">True</span><span class="p">)))</span></pre></div></div><p>In this calling form, the expression renders a special non-SQLplaceholder expression that looks like:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">([</span><span class="n">EXPANDING\_value</span><span class="p">])</span></pre></div></div><p>This placeholder expression is intercepted at statement executiontime to be converted into the variable number of bound parameterform illustrated earlier. If the statement were executed as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">,</span> <span class="p">{</span><span class="s2">&quot;value&quot;</span><span class="p">:</span> <span class="p">[</span><span class="mi">1</span><span class="p">,</span> <span class="mi">2</span><span class="p">,</span> <span class="mi">3</span><span class="p">]})</span></pre></div></div><p>The database would be passed a bound parameter for each value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">)</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.2: </span>added “expanding” bound parameters</p></div><p>If an empty list is passed, a special “empty list” expression,which is specific to the database in use, is rendered. OnSQLite this would be:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span> <span class="n">FROM</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span><span class="p">)</span> <span class="n">WHERE</span> <span class="mi">1</span><span class="o">!=</span><span class="mi">1</span><span class="p">)</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.3: </span>“expanding” bound parameters now supportempty lists</p></div></li><li><p>a <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a> construct, which is usually acorrelated scalar select:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">(</span> <span class="n">select</span><span class="p">(</span><span class="n">othertable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">y</span><span class="p">)</span><span class="o">.</span> <span class="n">where</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">==</span> <span class="n">othertable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span> <span class="p">)</span><span class="p">)</span></pre></div></div><p>In this calling form, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a> renders as given:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="n">SELECT</span> <span class="n">othertable</span><span class="o">.</span><span class="n">y</span><span class="n">FROM</span> <span class="n">othertable</span> <span class="n">WHERE</span> <span class="n">othertable</span><span class="o">.</span><span class="n">x</span> <span class="o">=</span> <span class="n">table</span><span class="o">.</span><span class="n">x</span><span class="p">)</span></pre></div></div></li></ul><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.in\_.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.in\_.params.other">¶</a> – a list of literals, a <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>construct, or a <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> construct that includes the<a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.expanding" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.expanding</span></code></a> flag set to True.</p></dd></dl></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.inherit\_cache"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">inherit\_cache</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">bool</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">None</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.inherit\_cache" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="xref py py-attr docutils literal notranslate"><span class="pre">HasCacheKey.inherit\_cache</span></code> <em>attribute of</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey" title="sqlalchemy.sql.cache\_key.HasCacheKey"><code class="xref py py-class docutils literal notranslate"><span class="pre">HasCacheKey</span></code></a></p></div><p>Indicate if this <a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey" title="sqlalchemy.sql.traversals.HasCacheKey"><code class="xref py py-class docutils literal notranslate"><span class="pre">HasCacheKey</span></code></a> instance should make use of thecache key generation scheme used by its immediate superclass.</p><p>The attribute defaults to <code class="docutils literal notranslate"><span class="pre">None</span></code>, which indicates that a construct hasnot yet taken into account whether or not its appropriate for it toparticipate in caching; this is functionally equivalent to setting thevalue to <code class="docutils literal notranslate"><span class="pre">False</span></code>, except that a warning is also emitted.</p><p>This flag can be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> on a particular class, if the SQL thatcorresponds to the object does not change based on attributes whichare local to this class, and not its superclass.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="compiler.html#compilerext-caching"><span class="std std-ref">Enabling Caching Support for Custom Constructs</span></a> - General guideslines for setting the<a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey.inherit\_cache" title="sqlalchemy.sql.traversals.HasCacheKey.inherit\_cache"><code class="xref py py-attr docutils literal notranslate"><span class="pre">HasCacheKey.inherit\_cache</span></code></a> attribute for third-party or userdefined SQL constructs.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.is\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">is\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.is\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span></code> operator.</p><p>Normally, <code class="docutils literal notranslate"><span class="pre">IS</span></code> is generated automatically when comparing to avalue of <code class="docutils literal notranslate"><span class="pre">None</span></code>, which resolves to <code class="docutils literal notranslate"><span class="pre">NULL</span></code>. However, explicitusage of <code class="docutils literal notranslate"><span class="pre">IS</span></code> may be desirable if comparing to boolean valueson certain platforms.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not" title="sqlalchemy.sql.expression.ColumnOperators.is\_not"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_not()</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.is\_clause\_element"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">is\_clause\_element</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">True</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.is\_clause\_element" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.is\_distinct\_from"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">is\_distinct\_from</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.is\_distinct\_from" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from" title="sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_distinct\_from()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" 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class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.is\_not" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not" title="sqlalchemy.sql.expression.ColumnOperators.is\_not"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_not()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> operator.</p><p>Normally, <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> is generated automatically when comparing to avalue of <code class="docutils literal notranslate"><span class="pre">None</span></code>, which resolves to <code class="docutils literal notranslate"><span class="pre">NULL</span></code>. However, explicitusage of <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> may be desirable if comparing to boolean valueson certain platforms.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">is\_not()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">isnot()</span></code> in previous releases. The previous name remainsavailable for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.is\_not\_distinct\_from"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">is\_not\_distinct\_from</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.is\_not\_distinct\_from" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from" title="sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_not\_distinct\_from()</span></code></a> <em>method 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class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.is\_selectable"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">is\_selectable</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">False</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.is\_selectable" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.isnot"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">isnot</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.isnot" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.isnot" title="sqlalchemy.sql.expression.ColumnOperators.isnot"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.isnot()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> operator.</p><p>Normally, <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> is generated automatically when comparing to avalue of <code class="docutils literal notranslate"><span class="pre">None</span></code>, which resolves to <code class="docutils literal notranslate"><span class="pre">NULL</span></code>. 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class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.isnot\_distinct\_from" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from" title="sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.isnot\_distinct\_from()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span> <span class="pre">DISTINCT</span> <span class="pre">FROM</span></code> operator.</p><p>Renders “a IS NOT DISTINCT FROM b” on most platforms;on some such as SQLite may render “a IS b”.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">is\_not\_distinct\_from()</span></code> operator isrenamed from <code class="docutils literal notranslate"><span class="pre">isnot\_distinct\_from()</span></code> in previous releases.The previous name remains available for backwards compatibility.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.istartswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">istartswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.istartswith" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.istartswith()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">istartswith</span></code> operator, e.g. case insensitiveversion of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a>.</p><p>Produces a LIKE expression that tests against an insensitivematch for the start of a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">column</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(</span><span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.escape</span></code></a> parameter willestablish a given character as an escape character which can be ofuse when the target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.istartswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.istartswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.istartswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.istartswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.istartswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.istartswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.key"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">key</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">None</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.key" title="Link to this definition">¶</a></dt><dd><p>The ‘key’ that in some circumstances refers to this object in aPython namespace.</p><p>This typically refers to the “key” of the column as present in the<code class="docutils literal notranslate"><span class="pre">.c</span></code> collection of a selectable, e.g. <code class="docutils literal notranslate"><span class="pre">sometable.c[&quot;somekey&quot;]</span></code> wouldreturn a <a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> with a <code class="docutils literal notranslate"><span class="pre">.key</span></code> of “somekey”.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.label"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">label</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">name</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Label" title="sqlalchemy.sql.elements.Label"><span class="pre">Label</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.label" title="Link to this definition">¶</a></dt><dd><p>Produce a column label, i.e. <code class="docutils literal notranslate"><span class="pre">&lt;columnname&gt;</span> <span class="pre">AS</span> <span class="pre">&lt;name&gt;</span></code>.</p><p>This is a shortcut to the <a class="reference internal" href="#sqlalchemy.sql.expression.label" title="sqlalchemy.sql.expression.label"><code class="xref py py-func docutils literal notranslate"><span class="pre">label()</span></code></a> function.</p><p>If ‘name’ is <code class="docutils literal notranslate"><span class="pre">None</span></code>, an anonymous label name will be generated.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.like"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">like</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.like" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">like</span></code> operator.</p><p>In a column context, produces the expression:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="n">LIKE</span> <span class="n">other</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">like</span><span class="p">(</span><span class="s2">&quot;</span><span class="si">%f</span><span class="s2">oobar%&quot;</span><span class="p">))</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.like.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.like.params.other">¶</a> – expression to be compared</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.like.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.like.params.escape">¶</a> – <p>optional escape character, renders the <code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code>keyword, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">like</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;/&quot;</span><span class="p">)</span></pre></div></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.match"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">match</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.match" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.match" title="sqlalchemy.sql.expression.ColumnOperators.match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.match()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implements a database-specific ‘match’ operator.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.match" title="sqlalchemy.sql.expression.ColumnOperators.match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.match()</span></code></a> attempts to resolve toa MATCH-like function or operator provided by the backend.Examples include:</p><ul><li><p>PostgreSQL - renders <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">&#64;&#64;</span> <span class="pre">plainto\_tsquery(y)</span></code></p><blockquote><div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 2.0: </span><code class="docutils literal notranslate"><span class="pre">plainto\_tsquery()</span></code> is used insteadof <code class="docutils literal notranslate"><span class="pre">to\_tsquery()</span></code> for PostgreSQL now; for compatibility withother forms, see <a class="reference internal" href="../dialects/postgresql.html#postgresql-match"><span class="std std-ref">Full Text Search</span></a>.</p></div></div></blockquote></li><li><p>MySQL - renders <code class="docutils literal notranslate"><span class="pre">MATCH</span> <span class="pre">(x)</span> <span class="pre">AGAINST</span> <span class="pre">(y</span> <span class="pre">IN</span> <span class="pre">BOOLEAN</span> <span class="pre">MODE)</span></code></p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../dialects/mysql.html#sqlalchemy.dialects.mysql.match" title="sqlalchemy.dialects.mysql.match"><code class="xref py py-class docutils literal notranslate"><span class="pre">match</span></code></a> - MySQL specific construct withadditional features.</p></div></li><li><p>Oracle - renders <code class="docutils literal notranslate"><span class="pre">CONTAINS(x,</span> <span class="pre">y)</span></code></p></li><li><p>other backends may provide special implementations.</p></li><li><p>Backends without any special implementation will emitthe operator as “MATCH”. This is compatible with SQLite, forexample.</p></li></ul></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.negation\_clause"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">negation\_clause</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.negation\_clause" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.not\_ilike"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">not\_ilike</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.not\_ilike" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_ilike" title="sqlalchemy.sql.expression.ColumnOperators.not\_ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.not\_ilike()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>implement the <code class="docutils literal notranslate"><span class="pre">NOT</span> <span class="pre">ILIKE</span></code> operator.</p><p>This is equivalent to using negation with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a>, i.e. <code class="docutils literal notranslate"><span class="pre">~x.ilike(y)</span></code>.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">not\_ilike()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">notilike()</span></code> in previous releases. The previous name remainsavailable for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.not\_in"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">not\_in</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.not\_in" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_in" title="sqlalchemy.sql.expression.ColumnOperators.not\_in"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.not\_in()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>implement the <code class="docutils literal notranslate"><span class="pre">NOT</span> <span class="pre">IN</span></code> operator.</p><p>This is equivalent to using negation with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a>, i.e. <code class="docutils literal notranslate"><span class="pre">~x.in\_(y)</span></code>.</p><p>In the case that <code class="docutils literal notranslate"><span class="pre">other</span></code> is an empty sequence, the compilerproduces an “empty not in” expression. This defaults to theexpression “1 = 1” to produce true in all cases. The<a class="reference internal" href="engines.html#sqlalchemy.create\_engine.params.empty\_in\_strategy" title="sqlalchemy.create\_engine"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">create\_engine.empty\_in\_strategy</span></code></a> may be used toalter this behavior.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">not\_in()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">notin\_()</span></code> in previous releases. The previous name remainsavailable for backwards compatibility.</p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.2: </span>The <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a> and<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_in" title="sqlalchemy.sql.expression.ColumnOperators.not\_in"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.not\_in()</span></code></a> operatorsnow produce a “static” expression for an empty IN sequenceby default.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.not\_like"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">not\_like</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.not\_like" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_like" title="sqlalchemy.sql.expression.ColumnOperators.not\_like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.not\_like()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>implement the <code class="docutils literal notranslate"><span class="pre">NOT</span> <span class="pre">LIKE</span></code> operator.</p><p>This is equivalent to using negation with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a>, i.e. <code class="docutils literal notranslate"><span class="pre">~x.like(y)</span></code>.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">not\_like()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">notlike()</span></code> in previous releases. 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class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">opstring</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">precedence</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">int</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">0</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">is\_comparison</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">return\_type</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Type</span><span class="p"><span class="pre">[</span></span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">python\_impl</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><span class="pre">Operators</span></a><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.op" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Produce a generic operator function.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s2">&quot;\*&quot;</span><span class="p">)(</span><span class="mi">5</span><span class="p">)</span></pre></div></div><p>produces:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="o">\*</span> <span class="mi">5</span></pre></div></div><p>This function can also be used to make bitwise operators explicit. Forexample:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s1">&#39;&amp;&#39;</span><span class="p">)(</span><span class="mh">0xff</span><span class="p">)</span></pre></div></div><p>is a bitwise AND of the value in <code class="docutils literal notranslate"><span class="pre">somecolumn</span></code>.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.op.params.opstring"></span><strong>opstring</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op.params.opstring">¶</a> – a string which will be output as the infix operatorbetween this element and the expression passed to thegenerated function.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.op.params.precedence"></span><strong>precedence</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op.params.precedence">¶</a> – <p>precedence which the database is expected to applyto the operator in SQL expressions. This integer value acts as a hintfor the SQL compiler to know when explicit parenthesis should berendered around a particular operation. A lower number will cause theexpression to be parenthesized when applied against another operatorwith higher precedence. The default value of <code class="docutils literal notranslate"><span class="pre">0</span></code> is lower than alloperators except for the comma (<code class="docutils literal notranslate"><span class="pre">,</span></code>) and <code class="docutils literal notranslate"><span class="pre">AS</span></code> operators. A valueof 100 will be higher or equal to all operators, and -100 will belower than or equal to all operators.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../faq/sqlexpressions.html#faq-sql-expression-op-parenthesis"><span class="std std-ref">I’m using op() to generate a custom operator and my parenthesis are not coming out correctly</span></a> - detailed descriptionof how the SQLAlchemy SQL compiler renders parenthesis</p></div></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.op.params.is\_comparison"></span><strong>is\_comparison</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op.params.is\_comparison">¶</a> – <p>legacy; if True, the operator will be consideredas a “comparison” operator, that is which evaluates to a booleantrue/false value, like <code class="docutils literal notranslate"><span class="pre">==</span></code>, <code class="docutils literal notranslate"><span class="pre">&gt;</span></code>, etc. This flag is providedso that ORM relationships can establish that the operator is acomparison operator when used in a custom join condition.</p><p>Using the <code class="docutils literal notranslate"><span class="pre">is\_comparison</span></code> parameter is superseded by using the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a> method instead; this more succinctoperator sets this parameter automatically, but also providescorrect <span class="target" id="index-1"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a> typing support as the returned object willexpress a “boolean” datatype, i.e. <code class="docutils literal notranslate"><span class="pre">BinaryExpression[bool]</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.op.params.return\_type"></span><strong>return\_type</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op.params.return\_type">¶</a> – a <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or object that willforce the return type of an expression produced by this operatorto be of that type. By default, operators that specify<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Operators.op.is\_comparison</span></code></a> will resolve to<a class="reference internal" href="type\_basics.html#sqlalchemy.types.Boolean" title="sqlalchemy.types.Boolean"><code class="xref py py-class docutils literal notranslate"><span class="pre">Boolean</span></code></a>, and those that do not will be of the sametype as the left-hand operand.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.op.params.python\_impl"></span><strong>python\_impl</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.op.params.python\_impl">¶</a> – <p>an optional Python function that can evaluatetwo Python values in the same way as this operator works whenrun on the database server. Useful for in-Python SQL expressionevaluation functions, such as for ORM hybrid attributes, and theORM “evaluator” used to match objects in a session after a multi-rowupdate or delete.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s1">&#39;+&#39;</span><span class="p">,</span> <span class="n">python\_impl</span><span class="o">=</span><span class="k">lambda</span> <span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">:</span> <span class="n">a</span> <span class="o">+</span> <span class="n">b</span><span class="p">)(</span><span class="s1">&#39;y&#39;</span><span class="p">)</span></pre></div></div><p>The operator for the above expression will also work for non-SQLleft and right objects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span><span class="o">.</span><span class="n">operator</span><span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">10</span><span class="p">)</span><span class="go">15</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.</span></p></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a></p><p><a class="reference internal" href="custom\_types.html#types-operators"><span class="std std-ref">Redefining and Creating New Operators</span></a></p><p><a class="reference internal" href="../orm/join\_conditions.html#relationship-custom-operator"><span class="std std-ref">Using custom operators in join conditions</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.operate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">operate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.elements.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.operate" title="Link to this definition">¶</a></dt><dd><p>Operate on an argument.</p><p>This is the lowest level of operation, raises<code class="xref py py-class docutils literal notranslate"><span class="pre">NotImplementedError</span></code> by default.</p><p>Overriding this on a subclass can allow commonbehavior to be applied to all operations.For example, overriding <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a>to apply <code class="docutils literal notranslate"><span class="pre">func.lower()</span></code> to the left and rightside:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">class</span> <span class="nc">MyComparator</span><span class="p">(</span><span class="n">ColumnOperators</span><span class="p">):</span> <span class="k">def</span> <span class="nf">operate</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">op</span><span class="p">,</span> <span class="n">other</span><span class="p">,</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">):</span> <span class="k">return</span> <span class="n">op</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="bp">self</span><span class="p">),</span> <span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">),</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">)</span></pre><div class="code-non-annotations-key"></div></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.operate.params.op"></span><strong>op</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.operate.params.op">¶</a> – Operator callable.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.operate.params.\*other"></span><strong>\*other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.operate.params.\*other">¶</a> – the ‘other’ side of the operation. Willbe a single scalar for most operations.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.operate.params.\*\*kwargs"></span><strong>\*\*kwargs</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.operate.params.\*\*kwargs">¶</a> – modifiers. These may be passed by specialoperators such as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p></li></ul></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.params"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">params</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">\_ClauseElement\_\_optionaldict</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Mapping</span><span class="p"><span class="pre">[</span></span><span class="pre">str</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Self</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.params" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement.params" title="sqlalchemy.sql.expression.ClauseElement.params"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ClauseElement.params()</span></code></a> <em>method of</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a></p></div><p>Return a copy with <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> elementsreplaced.</p><p>Returns a copy of this ClauseElement with<a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>elements replaced with values taken from the given dictionary:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">clause</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">)</span> <span class="o">+</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;foo&#39;</span><span class="p">)</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">clause</span><span class="o">.</span><span class="n">compile</span><span class="p">()</span><span class="o">.</span><span class="n">params</span><span class="p">)</span><span class="go">{&#39;foo&#39;:None}</span><span class="gp">&gt;&gt;&gt; </span><span class="n">print</span><span class="p">(</span><span class="n">clause</span><span class="o">.</span><span class="n">params</span><span class="p">({</span><span class="s1">&#39;foo&#39;</span><span class="p">:</span><span class="mi">7</span><span class="p">})</span><span class="o">.</span><span class="n">compile</span><span class="p">()</span><span class="o">.</span><span class="n">params</span><span class="p">)</span><span class="go">{&#39;foo&#39;:7}</span></pre></div></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.primary\_key"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">primary\_key</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">bool</span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">False</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.primary\_key" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.proxy\_set"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">proxy\_set</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">util.generic\_fn\_descriptor</span><span class="p"><span class="pre">[</span></span><span class="pre">FrozenSet</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.proxy\_set" title="Link to this definition">¶</a></dt><dd><p>set of all columns we are proxying</p><p>as of 2.0 this is explicitly deannotated columns. previously it waseffectively deannotated columns but wasn’t enforced. annotatedcolumns should basically not go into sets if at all possible becausetheir hashing behavior is very non-performant.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.regexp\_match"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">regexp\_match</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">pattern</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">flags</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_match" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_match()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implements a database-specific ‘regexp match’ operator.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="o">.</span><span class="n">regexp\_match</span><span class="p">(</span><span class="s1">&#39;^(b|c)&#39;</span><span class="p">)</span><span class="p">)</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_match()</span></code></a> attempts to resolve toa REGEXP-like function or operator provided by the backend, howeverthe specific regular expression syntax and flags available are<strong>not backend agnostic</strong>.</p><p>Examples include:</p><ul class="simple"><li><p>PostgreSQL - renders <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">~</span> <span class="pre">y</span></code> or <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">!~</span> <span class="pre">y</span></code> when negated.</p></li><li><p>Oracle - renders <code class="docutils literal notranslate"><span class="pre">REGEXP\_LIKE(x,</span> <span class="pre">y)</span></code></p></li><li><p>SQLite - uses SQLite’s <code class="docutils literal notranslate"><span class="pre">REGEXP</span></code> placeholder operator and calls intothe Python <code class="docutils literal notranslate"><span class="pre">re.match()</span></code> builtin.</p></li><li><p>other backends may provide special implementations.</p></li><li><p>Backends without any special implementation will emitthe operator as “REGEXP” or “NOT REGEXP”. This is compatible withSQLite and MySQL, for example.</p></li></ul><p>Regular expression support is currently implemented for Oracle,PostgreSQL, MySQL and MariaDB. Partial support is available forSQLite. Support among third-party dialects may vary.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.regexp\_match.params.pattern"></span><strong>pattern</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_match.params.pattern">¶</a> – The regular expression pattern string or columnclause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.regexp\_match.params.flags"></span><strong>flags</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_match.params.flags">¶</a> – Any regular expression string flags to apply, passed asplain Python string only. These flags are backend specific.Some backends, like PostgreSQL and MariaDB, may alternativelyspecify the flags as part of the pattern.When using the ignore case flag ‘i’ in PostgreSQL, the ignore caseregexp match operator <code class="docutils literal notranslate"><span class="pre">~\*</span></code> or <code class="docutils literal notranslate"><span class="pre">!~\*</span></code> will be used.</p></li></ul></dd></dl><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.</span></p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4.48,: </span>2.0.18 Note that due to an implementationerror, the “flags” parameter previously accepted SQL expressionobjects such as column expressions in addition to plain Pythonstrings. This implementation did not work correctly with cachingand was removed; strings only should be passed for the “flags”parameter, as these flags are rendered as literal inline valueswithin SQL expressions.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_replace()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.regexp\_replace"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">regexp\_replace</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">pattern</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">replacement</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">flags</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_replace()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implements a database-specific ‘regexp replace’ operator.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span> <span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="o">.</span><span class="n">regexp\_replace</span><span class="p">(</span> <span class="s1">&#39;b(..)&#39;</span><span class="p">,</span> <span class="s1">&#39;XY&#39;</span><span class="p">,</span> <span class="n">flags</span><span class="o">=</span><span class="s1">&#39;g&#39;</span> <span class="p">)</span><span class="p">)</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_replace()</span></code></a> attempts to resolve toa REGEXP\_REPLACE-like function provided by the backend, thatusually emit the function <code class="docutils literal notranslate"><span class="pre">REGEXP\_REPLACE()</span></code>. However,the specific regular expression syntax and flags available are<strong>not backend agnostic</strong>.</p><p>Regular expression replacement support is currently implemented forOracle, PostgreSQL, MySQL 8 or greater and MariaDB. Support amongthird-party dialects may vary.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.regexp\_replace.params.pattern"></span><strong>pattern</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace.params.pattern">¶</a> – The regular expression pattern string or columnclause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.regexp\_replace.params.pattern"></span><strong>pattern</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace.params.pattern">¶</a> – The replacement string or column clause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.regexp\_replace.params.flags"></span><strong>flags</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.regexp\_replace.params.flags">¶</a> – Any regular expression string flags to apply, passed asplain Python string only. These flags are backend specific.Some backends, like PostgreSQL and MariaDB, may alternativelyspecify the flags as part of the pattern.</p></li></ul></dd></dl><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.</span></p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4.48,: </span>2.0.18 Note that due to an implementationerror, the “flags” parameter previously accepted SQL expressionobjects such as column expressions in addition to plain Pythonstrings. This implementation did not work correctly with cachingand was removed; strings only should be passed for the “flags”parameter, as these flags are rendered as literal inline valueswithin SQL expressions.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_match()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.reverse\_operate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">reverse\_operate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.elements.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.reverse\_operate" title="Link to this definition">¶</a></dt><dd><p>Reverse operate on an argument.</p><p>Usage is the same as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.operate" title="sqlalchemy.sql.expression.ColumnElement.operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">operate()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.self\_group" title="sqlalchemy.sql.expression.ColumnElement.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement.self\_group" title="sqlalchemy.sql.expression.ColumnElement.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.shares\_lineage"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">shares\_lineage</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">othercolumn</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.elements.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">bool</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.shares\_lineage" title="Link to this definition">¶</a></dt><dd><p>Return True if the given <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>has a common ancestor to this <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.startswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">startswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.startswith" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">startswith</span></code> operator.</p><p>Produces a LIKE expression that tests against a match for the startof a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">column</span> <span class="n">LIKE</span> <span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.startswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.startswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.startswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.startswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnElement.startswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnElement.startswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.stringify\_dialect"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">stringify\_dialect</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">'default'</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.stringify\_dialect" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.supports\_execution"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">supports\_execution</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">False</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.supports\_execution" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.timetuple"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">timetuple</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">Literal</span><span class="p"><span class="pre">[</span></span><span class="pre">None</span><span class="p"><span class="pre">]</span></span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">None</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.timetuple" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.timetuple" title="sqlalchemy.sql.expression.ColumnOperators.timetuple"><code class="xref py py-attr docutils literal notranslate"><span class="pre">ColumnOperators.timetuple</span></code></a> <em>attribute of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p></div><p>Hack, allows datetime objects to be compared on the LHS.</p></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.type"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">type</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.type" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.unique\_params"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">unique\_params</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">\_ClauseElement\_\_optionaldict</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Dict</span><span class="p"><span class="pre">[</span></span><span class="pre">str</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Self</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.unique\_params" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement.unique\_params" title="sqlalchemy.sql.expression.ClauseElement.unique\_params"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ClauseElement.unique\_params()</span></code></a> <em>method of</em> <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a></p></div><p>Return a copy with <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> elementsreplaced.</p><p>Same functionality as <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement.params" title="sqlalchemy.sql.expression.ClauseElement.params"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ClauseElement.params()</span></code></a>,except adds <cite>unique=True</cite>to affected bind parameters so that multiple statements can beused.</p></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnElement.uses\_inspection"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement.</span></code></a><span class="sig-name descname"><span class="pre">uses\_inspection</span></span><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">True</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnElement.uses\_inspection" title="Link to this definition">¶</a></dt><dd></dd></dl></dd></dl><dl class="py data"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnExpressionArgument"><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">ColumnExpressionArgument</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnExpressionArgument" title="Link to this definition">¶</a></dt><dd><p>General purpose “column expression” argument.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.13.</span></p></div><p>This type is used for “column” kinds of expressions that typically representa single SQL column expression, including <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>, aswell as ORM-mapped attributes that will have a <code class="docutils literal notranslate"><span class="pre">\_\_clause\_element\_\_()</span></code>method.</p></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">ColumnOperators</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators" title="Link to this definition">¶</a></dt><dd><p>Defines boolean, comparison, and other operators for<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> expressions.</p><p>By default, all methods call down to<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate" title="sqlalchemy.sql.expression.ColumnOperators.operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">operate()</span></code></a> or <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.reverse\_operate" title="sqlalchemy.sql.expression.ColumnOperators.reverse\_operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">reverse\_operate()</span></code></a>,passing in the appropriate operator function from thePython builtin <code class="docutils literal notranslate"><span class="pre">operator</span></code> module ora SQLAlchemy-specific operator function from<code class="xref py py-mod docutils literal notranslate"><span class="pre">sqlalchemy.expression.operators</span></code>. For examplethe <code class="docutils literal notranslate"><span class="pre">\_\_eq\_\_</span></code> function:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">def</span> <span class="fm">\_\_eq\_\_</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">other</span><span class="p">):</span> <span class="k">return</span> <span class="bp">self</span><span class="o">.</span><span class="n">operate</span><span class="p">(</span><span class="n">operators</span><span class="o">.</span><span class="n">eq</span><span class="p">,</span> <span class="n">other</span><span class="p">)</span></pre></div></div><p>Where <code class="docutils literal notranslate"><span class="pre">operators.eq</span></code> is essentially:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">def</span> <span class="nf">eq</span><span class="p">(</span><span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">):</span> <span class="k">return</span> <span class="n">a</span> <span class="o">==</span> <span class="n">b</span></pre></div></div><p>The core column expression unit <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>overrides <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.operate" title="sqlalchemy.sql.expression.Operators.operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.operate()</span></code></a> and othersto return further <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> constructs,so that the <code class="docutils literal notranslate"><span class="pre">==</span></code> operation above is replaced by a clauseconstruct.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="custom\_types.html#types-operators"><span class="std std-ref">Redefining and Creating New Operators</span></a></p><p><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine.comparator\_factory" title="sqlalchemy.types.TypeEngine.comparator\_factory"><code class="xref py py-attr docutils literal notranslate"><span class="pre">TypeEngine.comparator\_factory</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a></p><p><a class="reference internal" href="../orm/internals.html#sqlalchemy.orm.PropComparator" title="sqlalchemy.orm.PropComparator"><code class="xref py py-class docutils literal notranslate"><span class="pre">PropComparator</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_add\_\_"><span class="sig-name descname">\_\_add\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_and\_\_"><span class="sig-name descname">\_\_and\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_eq\_\_"><span class="sig-name descname">\_\_eq\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_floordiv\_\_"><span class="sig-name descname">\_\_floordiv\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ge\_\_"><span class="sig-name descname">\_\_ge\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_getitem\_\_"><span class="sig-name descname">\_\_getitem\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_gt\_\_"><span class="sig-name descname">\_\_gt\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_hash\_\_"><span class="sig-name descname">\_\_hash\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_invert\_\_"><span class="sig-name descname">\_\_invert\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_le\_\_"><span class="sig-name descname">\_\_le\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_lshift\_\_"><span class="sig-name descname">\_\_lshift\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_lt\_\_"><span class="sig-name descname">\_\_lt\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mod\_\_"><span class="sig-name descname">\_\_mod\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mul\_\_"><span class="sig-name descname">\_\_mul\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ne\_\_"><span class="sig-name descname">\_\_ne\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_neg\_\_"><span class="sig-name descname">\_\_neg\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_or\_\_"><span class="sig-name descname">\_\_or\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_radd\_\_"><span class="sig-name descname">\_\_radd\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rfloordiv\_\_"><span class="sig-name descname">\_\_rfloordiv\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rmod\_\_"><span class="sig-name descname">\_\_rmod\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rmul\_\_"><span class="sig-name descname">\_\_rmul\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rshift\_\_"><span class="sig-name descname">\_\_rshift\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rsub\_\_"><span class="sig-name descname">\_\_rsub\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rtruediv\_\_"><span class="sig-name descname">\_\_rtruediv\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_"><span class="sig-name descname">\_\_sa\_operate\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_"><span class="sig-name descname">\_\_sub\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_"><span class="sig-name descname">\_\_truediv\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.all\_"><span class="sig-name descname">all\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.any\_"><span class="sig-name descname">any\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.asc"><span class="sig-name descname">asc()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.between"><span class="sig-name descname">between()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_and"><span class="sig-name descname">bitwise\_and()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift"><span class="sig-name descname">bitwise\_lshift()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_not"><span class="sig-name descname">bitwise\_not()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_or"><span class="sig-name descname">bitwise\_or()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift"><span class="sig-name descname">bitwise\_rshift()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor"><span class="sig-name descname">bitwise\_xor()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.bool\_op"><span class="sig-name descname">bool\_op()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.collate"><span class="sig-name descname">collate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.concat"><span class="sig-name descname">concat()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains"><span class="sig-name descname">contains()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.desc"><span class="sig-name descname">desc()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.distinct"><span class="sig-name descname">distinct()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith"><span class="sig-name descname">endswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains"><span class="sig-name descname">icontains()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith"><span class="sig-name descname">iendswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike"><span class="sig-name descname">ilike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_"><span class="sig-name descname">in\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_"><span class="sig-name descname">is\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from"><span class="sig-name descname">is\_distinct\_from()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not"><span class="sig-name descname">is\_not()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from"><span class="sig-name descname">is\_not\_distinct\_from()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.isnot"><span class="sig-name descname">isnot()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from"><span class="sig-name descname">isnot\_distinct\_from()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith"><span class="sig-name descname">istartswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like"><span class="sig-name descname">like()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.match"><span class="sig-name descname">match()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_ilike"><span class="sig-name descname">not\_ilike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_in"><span class="sig-name descname">not\_in()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.not\_like"><span class="sig-name descname">not\_like()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.notilike"><span class="sig-name descname">notilike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.notin\_"><span class="sig-name descname">notin\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.notlike"><span class="sig-name descname">notlike()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_first"><span class="sig-name descname">nulls\_first()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_last"><span class="sig-name descname">nulls\_last()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nullsfirst"><span class="sig-name descname">nullsfirst()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.nullslast"><span class="sig-name descname">nullslast()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op"><span class="sig-name descname">op()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate"><span class="sig-name descname">operate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><span class="sig-name descname">regexp\_match()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><span class="sig-name descname">regexp\_replace()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.reverse\_operate"><span class="sig-name descname">reverse\_operate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith"><span class="sig-name descname">startswith()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.timetuple"><span class="sig-name descname">timetuple</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators</span></code></a>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_add\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_add\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_add\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">+</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">+</span> <span class="pre">b</span></code>if the parent object has non-string affinity.If the parent object has a string affinity,produces the concatenation operator, <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">||</span> <span class="pre">b</span></code> -see <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.concat" title="sqlalchemy.sql.expression.ColumnOperators.concat"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.concat()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_and\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_and\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_and\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.\_\_and\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> operator.</p><p>When used with SQL expressions, results in anAND operation, equivalent to<a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a>, that is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="o">&amp;</span> <span class="n">b</span></pre></div></div><p>is equivalent to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">and\_</span><span class="n">and\_</span><span class="p">(</span><span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">)</span></pre></div></div><p>Care should be taken when using <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> regardingoperator precedence; the <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> operator has the highest precedence.The operands should be enclosed in parenthesis if they containfurther sub expressions:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">(</span><span class="n">a</span> <span class="o">==</span> <span class="mi">2</span><span class="p">)</span> <span class="o">&amp;</span> <span class="p">(</span><span class="n">b</span> <span class="o">==</span> <span class="mi">4</span><span class="p">)</span></pre></div></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_eq\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_eq\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_eq\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">==</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">=</span> <span class="pre">b</span></code>.If the target is <code class="docutils literal notranslate"><span class="pre">None</span></code>, produces <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">IS</span> <span class="pre">NULL</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_floordiv\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_floordiv\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_floordiv\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">//</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">/</span> <span class="pre">b</span></code>,which is the same as “truediv”, but considers the resulttype to be integer.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.</span></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_ge\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_ge\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ge\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">&gt;=</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">&gt;=</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_getitem\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_getitem\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">index</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_getitem\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the [] operator.</p><p>This can be used by some database-specific typessuch as PostgreSQL ARRAY and HSTORE.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_gt\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_gt\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_gt\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">&gt;</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">&gt;</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_hash\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_hash\_\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_hash\_\_" title="Link to this definition">¶</a></dt><dd><p>Return hash(self).</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_invert\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_invert\_\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_invert\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.\_\_invert\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">~</span></code> operator.</p><p>When used with SQL expressions, results in aNOT operation, equivalent to<a class="reference internal" href="#sqlalchemy.sql.expression.not\_" title="sqlalchemy.sql.expression.not\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">not\_()</span></code></a>, that is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="o">~</span><span class="n">a</span></pre></div></div><p>is equivalent to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">not\_</span><span class="n">not\_</span><span class="p">(</span><span class="n">a</span><span class="p">)</span></pre></div></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_le\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_le\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_le\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">&lt;=</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">&lt;=</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_lshift\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_lshift\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_lshift\_\_" title="Link to this definition">¶</a></dt><dd><p>implement the &lt;&lt; operator.</p><p>Not used by SQLAlchemy core, this is providedfor custom operator systems which want to use&lt;&lt; as an extension point.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_lt\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_lt\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_lt\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">&lt;</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">&lt;</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_mod\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_mod\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mod\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">%</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">%</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_mul\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_mul\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mul\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">\*</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">\*</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_ne\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_ne\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_ne\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">!=</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">!=</span> <span class="pre">b</span></code>.If the target is <code class="docutils literal notranslate"><span class="pre">None</span></code>, produces <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">IS</span> <span class="pre">NOT</span> <span class="pre">NULL</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_neg\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_neg\_\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_neg\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">-</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">-a</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_or\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_or\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_or\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.\_\_or\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Implement the <code class="docutils literal notranslate"><span class="pre">|</span></code> operator.</p><p>When used with SQL expressions, results in anOR operation, equivalent to<a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a>, that is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="o">|</span> <span class="n">b</span></pre></div></div><p>is equivalent to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">or\_</span><span class="n">or\_</span><span class="p">(</span><span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">)</span></pre></div></div><p>Care should be taken when using <code class="docutils literal notranslate"><span class="pre">|</span></code> regardingoperator precedence; the <code class="docutils literal notranslate"><span class="pre">|</span></code> operator has the highest precedence.The operands should be enclosed in parenthesis if they containfurther sub expressions:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">(</span><span class="n">a</span> <span class="o">==</span> <span class="mi">2</span><span class="p">)</span> <span class="o">|</span> <span class="p">(</span><span class="n">b</span> <span class="o">==</span> <span class="mi">4</span><span class="p">)</span></pre></div></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_radd\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_radd\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_radd\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">+</span></code> operator in reverse.</p><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_add\_\_" title="sqlalchemy.sql.expression.ColumnOperators.\_\_add\_\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.\_\_add\_\_()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_rfloordiv\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_rfloordiv\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rfloordiv\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">//</span></code> operator in reverse.</p><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_floordiv\_\_" title="sqlalchemy.sql.expression.ColumnOperators.\_\_floordiv\_\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.\_\_floordiv\_\_()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_rmod\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_rmod\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rmod\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">%</span></code> operator in reverse.</p><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mod\_\_" title="sqlalchemy.sql.expression.ColumnOperators.\_\_mod\_\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.\_\_mod\_\_()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_rmul\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_rmul\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rmul\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">\*</span></code> operator in reverse.</p><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_mul\_\_" title="sqlalchemy.sql.expression.ColumnOperators.\_\_mul\_\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.\_\_mul\_\_()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_rshift\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_rshift\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rshift\_\_" title="Link to this definition">¶</a></dt><dd><p>implement the &gt;&gt; operator.</p><p>Not used by SQLAlchemy core, this is providedfor custom operator systems which want to use&gt;&gt; as an extension point.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_rsub\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_rsub\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rsub\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">-</span></code> operator in reverse.</p><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_" title="sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.\_\_sub\_\_()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_rtruediv\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_rtruediv\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_rtruediv\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">/</span></code> operator in reverse.</p><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_" title="sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.\_\_truediv\_\_()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_sa\_operate\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_</span></code> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Operate on an argument.</p><p>This is the lowest level of operation, raises<code class="xref py py-class docutils literal notranslate"><span class="pre">NotImplementedError</span></code> by default.</p><p>Overriding this on a subclass can allow commonbehavior to be applied to all operations.For example, overriding <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a>to apply <code class="docutils literal notranslate"><span class="pre">func.lower()</span></code> to the left and rightside:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">class</span> <span class="nc">MyComparator</span><span class="p">(</span><span class="n">ColumnOperators</span><span class="p">):</span> <span class="k">def</span> <span class="nf">operate</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">op</span><span class="p">,</span> <span class="n">other</span><span class="p">,</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">):</span> <span class="k">return</span> <span class="n">op</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="bp">self</span><span class="p">),</span> <span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">),</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">)</span></pre><div class="code-non-annotations-key"></div></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_.params.op"></span><strong>op</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_.params.op">¶</a> – Operator callable.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_.params.\*other"></span><strong>\*other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_.params.\*other">¶</a> – the ‘other’ side of the operation. Willbe a single scalar for most operations.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_.params.\*\*kwargs"></span><strong>\*\*kwargs</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sa\_operate\_\_.params.\*\*kwargs">¶</a> – modifiers. These may be passed by specialoperators such as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p></li></ul></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_sub\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_sub\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">-</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">-</span> <span class="pre">b</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_truediv\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.\_\_truediv\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">/</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">/</span> <span class="pre">b</span></code>, andconsiders the result type to be numeric.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 2.0: </span>The truediv operator against two integersis now considered to return a numeric value. Behavior on specificbackends may vary.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.all\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">all\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.all\_" title="Link to this definition">¶</a></dt><dd><p>Produce an <a class="reference internal" href="#sqlalchemy.sql.expression.all\_" title="sqlalchemy.sql.expression.all\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">all\_()</span></code></a> clause against theparent object.</p><p>See the documentation for <a class="reference internal" href="#sqlalchemy.sql.expression.all\_" title="sqlalchemy.sql.expression.all\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">all\_()</span></code></a> for examples.</p><div class="admonition note"><p class="admonition-title">Note</p><p>be sure to not confuse the newer<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.all\_" title="sqlalchemy.sql.expression.ColumnOperators.all\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.all\_()</span></code></a> method with its older<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a>-specific counterpart, the<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY.Comparator.all" title="sqlalchemy.types.ARRAY.Comparator.all"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Comparator.all()</span></code></a> method, which a differentcalling syntax and usage pattern.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.any\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">any\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.any\_" title="Link to this definition">¶</a></dt><dd><p>Produce an <a class="reference internal" href="#sqlalchemy.sql.expression.any\_" title="sqlalchemy.sql.expression.any\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">any\_()</span></code></a> clause against theparent object.</p><p>See the documentation for <a class="reference internal" href="#sqlalchemy.sql.expression.any\_" title="sqlalchemy.sql.expression.any\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">any\_()</span></code></a> for examples.</p><div class="admonition note"><p class="admonition-title">Note</p><p>be sure to not confuse the newer<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.any\_" title="sqlalchemy.sql.expression.ColumnOperators.any\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.any\_()</span></code></a> method with its older<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY" title="sqlalchemy.types.ARRAY"><code class="xref py py-class docutils literal notranslate"><span class="pre">ARRAY</span></code></a>-specific counterpart, the<a class="reference internal" href="type\_basics.html#sqlalchemy.types.ARRAY.Comparator.any" title="sqlalchemy.types.ARRAY.Comparator.any"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Comparator.any()</span></code></a> method, which a differentcalling syntax and usage pattern.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.asc"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">asc</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.asc" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a> clause against theparent object.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.between"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">between</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">cleft</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">cright</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">symmetric</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.between" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.between" title="sqlalchemy.sql.expression.between"><code class="xref py py-func docutils literal notranslate"><span class="pre">between()</span></code></a> clause againstthe parent object, given the lower and upper range.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bitwise\_and"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_and</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_and" title="Link to this definition">¶</a></dt><dd><p>Produce a bitwise AND operation, typically via the <code class="docutils literal notranslate"><span class="pre">&amp;</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_lshift</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_lshift" title="Link to this definition">¶</a></dt><dd><p>Produce a bitwise LSHIFT operation, typically via the <code class="docutils literal notranslate"><span class="pre">&lt;&lt;</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bitwise\_not"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_not</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_not" title="Link to this definition">¶</a></dt><dd><p>Produce a bitwise NOT operation, typically via the <code class="docutils literal notranslate"><span class="pre">~</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bitwise\_or"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_or</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_or" title="Link to this definition">¶</a></dt><dd><p>Produce a bitwise OR operation, typically via the <code class="docutils literal notranslate"><span class="pre">|</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_rshift</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_rshift" title="Link to this definition">¶</a></dt><dd><p>Produce a bitwise RSHIFT operation, typically via the <code class="docutils literal notranslate"><span class="pre">&gt;&gt;</span></code>operator.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bitwise\_xor</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bitwise\_xor" title="Link to this definition">¶</a></dt><dd><p>Produce a bitwise XOR operation, typically via the <code class="docutils literal notranslate"><span class="pre">^</span></code>operator, or <code class="docutils literal notranslate"><span class="pre">#</span></code> for PostgreSQL.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.2.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="operators.html#operators-bitwise"><span class="std std-ref">Bitwise Operators</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.bool\_op"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">bool\_op</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">opstring</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">precedence</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">int</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">0</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">python\_impl</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.bool\_op" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Return a custom boolean operator.</p><p>This method is shorthand for calling<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a> and passing the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Operators.op.is\_comparison</span></code></a>flag with True. A key advantage to using <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a>is that when using column constructs, the “boolean” nature of thereturned expression will be present for <span class="target" id="index-2"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a> purposes.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.collate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">collate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">collation</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.collate" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.collate" title="sqlalchemy.sql.expression.collate"><code class="xref py py-func docutils literal notranslate"><span class="pre">collate()</span></code></a> clause againstthe parent object, given the collation string.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.collate" title="sqlalchemy.sql.expression.collate"><code class="xref py py-func docutils literal notranslate"><span class="pre">collate()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.concat"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">concat</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.concat" title="Link to this definition">¶</a></dt><dd><p>Implement the ‘concat’ operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">a</span> <span class="pre">||</span> <span class="pre">b</span></code>,or uses the <code class="docutils literal notranslate"><span class="pre">concat()</span></code> operator on MySQL.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.contains"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">contains</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="Link to this definition">¶</a></dt><dd><p>Implement the ‘contains’ operator.</p><p>Produces a LIKE expression that tests against a match for the middleof a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">column</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.contains.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.contains.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">contains</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.desc"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">desc</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.desc" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a> clause against theparent object.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.distinct"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">distinct</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.distinct" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.distinct" title="sqlalchemy.sql.expression.distinct"><code class="xref py py-func docutils literal notranslate"><span class="pre">distinct()</span></code></a> clause against theparent object.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.endswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">endswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="Link to this definition">¶</a></dt><dd><p>Implement the ‘endswith’ operator.</p><p>Produces a LIKE expression that tests against a match for the endof a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">column</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.endswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.endswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="p">:</span><span class="n">param</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.endswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.icontains"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">icontains</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kw</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.icontains" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">icontains</span></code> operator, e.g. case insensitiveversion of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p><p>Produces a LIKE expression that tests against an insensitive matchfor the middle of a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">column</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(</span><span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.icontains.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.icontains.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.icontains.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.icontains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.icontains.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.icontains.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.icontains.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.icontains.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. 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class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.contains.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">icontains</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.iendswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">iendswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">iendswith</span></code> operator, e.g. case insensitiveversion of <a class="reference internal" 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class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">iendswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. 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LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.iendswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">iendswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.iendswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">iendswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="s1">&#39;%&#39;</span> <span class="o">||</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.iendswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.iendswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.iendswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">endswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.ilike"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">ilike</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">ilike</span></code> operator, e.g. case insensitive LIKE.</p><p>In a column context, produces an expression either of the form:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">a</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">)</span></pre></div></div><p>Or on backends that support the ILIKE operator:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="n">ILIKE</span> <span class="n">other</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">ilike</span><span class="p">(</span><span class="s2">&quot;</span><span class="si">%f</span><span class="s2">oobar%&quot;</span><span class="p">))</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.ilike.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike.params.other">¶</a> – expression to be compared</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.ilike.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike.params.escape">¶</a> – <p>optional escape character, renders the <code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code>keyword, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">ilike</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;/&quot;</span><span class="p">)</span></pre></div></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.in\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">in\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">in</span></code> operator.</p><p>In a column context, produces the clause <code class="docutils literal notranslate"><span class="pre">column</span> <span class="pre">IN</span> <span class="pre">&lt;other&gt;</span></code>.</p><p>The given parameter <code class="docutils literal notranslate"><span class="pre">other</span></code> may be:</p><ul><li><p>A list of literal values, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">([</span><span class="mi">1</span><span class="p">,</span> <span class="mi">2</span><span class="p">,</span> <span class="mi">3</span><span class="p">]))</span></pre></div></div><p>In this calling form, the list of items is converted to a set ofbound parameters the same length as the list given:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">)</span></pre></div></div></li><li><p>A list of tuples may be provided if the comparison is against a<a class="reference internal" href="#sqlalchemy.sql.expression.tuple\_" title="sqlalchemy.sql.expression.tuple\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">tuple\_()</span></code></a> containing multiple expressions:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">tuple\_</span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">tuple\_</span><span class="p">(</span><span class="n">col1</span><span class="p">,</span> <span class="n">col2</span><span class="p">)</span><span class="o">.</span><span class="n">in\_</span><span class="p">([(</span><span class="mi">1</span><span class="p">,</span> <span class="mi">10</span><span class="p">),</span> <span class="p">(</span><span class="mi">2</span><span class="p">,</span> <span class="mi">20</span><span class="p">),</span> <span class="p">(</span><span class="mi">3</span><span class="p">,</span> <span class="mi">30</span><span class="p">)]))</span></pre></div></div></li><li><p>An empty list, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">([]))</span></pre></div></div><p>In this calling form, the expression renders an “empty set”expression. These expressions are tailored to individual backendsand are generally trying to get an empty SELECT statement as asubquery. Such as on SQLite, the expression is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">col</span> <span class="n">IN</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span> <span class="n">FROM</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span><span class="p">)</span> <span class="n">WHERE</span> <span class="mi">1</span><span class="o">!=</span><span class="mi">1</span><span class="p">)</span></pre></div></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>empty IN expressions now use anexecution-time generated SELECT subquery in all cases.</p></div></li><li><p>A bound parameter, e.g. <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>, may be used if itincludes the <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.expanding" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.expanding</span></code></a> flag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">(</span><span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;value&#39;</span><span class="p">,</span> <span class="n">expanding</span><span class="o">=</span><span class="kc">True</span><span class="p">)))</span></pre></div></div><p>In this calling form, the expression renders a special non-SQLplaceholder expression that looks like:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">([</span><span class="n">EXPANDING\_value</span><span class="p">])</span></pre></div></div><p>This placeholder expression is intercepted at statement executiontime to be converted into the variable number of bound parameterform illustrated earlier. If the statement were executed as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">,</span> <span class="p">{</span><span class="s2">&quot;value&quot;</span><span class="p">:</span> <span class="p">[</span><span class="mi">1</span><span class="p">,</span> <span class="mi">2</span><span class="p">,</span> <span class="mi">3</span><span class="p">]})</span></pre></div></div><p>The database would be passed a bound parameter for each value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">,</span> <span class="err">?</span><span class="p">)</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.2: </span>added “expanding” bound parameters</p></div><p>If an empty list is passed, a special “empty list” expression,which is specific to the database in use, is rendered. OnSQLite this would be:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span> <span class="n">FROM</span> <span class="p">(</span><span class="n">SELECT</span> <span class="mi">1</span><span class="p">)</span> <span class="n">WHERE</span> <span class="mi">1</span><span class="o">!=</span><span class="mi">1</span><span class="p">)</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.3: </span>“expanding” bound parameters now supportempty lists</p></div></li><li><p>a <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a> construct, which is usually acorrelated scalar select:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">column</span><span class="o">.</span><span class="n">in\_</span><span class="p">(</span> <span class="n">select</span><span class="p">(</span><span class="n">othertable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">y</span><span class="p">)</span><span class="o">.</span> <span class="n">where</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span> <span class="o">==</span> <span class="n">othertable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">x</span><span class="p">)</span> <span class="p">)</span><span class="p">)</span></pre></div></div><p>In this calling form, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a> renders as given:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">WHERE</span> <span class="n">COL</span> <span class="n">IN</span> <span class="p">(</span><span class="n">SELECT</span> <span class="n">othertable</span><span class="o">.</span><span class="n">y</span><span class="n">FROM</span> <span class="n">othertable</span> <span class="n">WHERE</span> <span class="n">othertable</span><span class="o">.</span><span class="n">x</span> <span class="o">=</span> <span class="n">table</span><span class="o">.</span><span class="n">x</span><span class="p">)</span></pre></div></div></li></ul><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.in\_.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_.params.other">¶</a> – a list of literals, a <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>construct, or a <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> construct that includes the<a class="reference internal" href="#sqlalchemy.sql.expression.bindparam.params.expanding" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">bindparam.expanding</span></code></a> flag set to True.</p></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.is\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">is\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span></code> operator.</p><p>Normally, <code class="docutils literal notranslate"><span class="pre">IS</span></code> is generated automatically when comparing to avalue of <code class="docutils literal notranslate"><span class="pre">None</span></code>, which resolves to <code class="docutils literal notranslate"><span class="pre">NULL</span></code>. However, explicitusage of <code class="docutils literal notranslate"><span class="pre">IS</span></code> may be desirable if comparing to boolean valueson certain platforms.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not" title="sqlalchemy.sql.expression.ColumnOperators.is\_not"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_not()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">is\_distinct\_from</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.is\_distinct\_from" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">DISTINCT</span> <span class="pre">FROM</span></code> operator.</p><p>Renders “a IS DISTINCT FROM b” on most platforms;on some such as SQLite may render “a IS NOT b”.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.is\_not"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">is\_not</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> operator.</p><p>Normally, <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> is generated automatically when comparing to avalue of <code class="docutils literal notranslate"><span class="pre">None</span></code>, which resolves to <code class="docutils literal notranslate"><span class="pre">NULL</span></code>. However, explicitusage of <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> may be desirable if comparing to boolean valueson certain platforms.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">is\_not()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">isnot()</span></code> in previous releases. The previous name remainsavailable for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">is\_not\_distinct\_from</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.is\_not\_distinct\_from" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span> <span class="pre">DISTINCT</span> <span class="pre">FROM</span></code> operator.</p><p>Renders “a IS NOT DISTINCT FROM b” on most platforms;on some such as SQLite may render “a IS b”.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">is\_not\_distinct\_from()</span></code> operator isrenamed from <code class="docutils literal notranslate"><span class="pre">isnot\_distinct\_from()</span></code> in previous releases.The previous name remains available for backwards compatibility.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.isnot"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">isnot</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.isnot" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> operator.</p><p>Normally, <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> is generated automatically when comparing to avalue of <code class="docutils literal notranslate"><span class="pre">None</span></code>, which resolves to <code class="docutils literal notranslate"><span class="pre">NULL</span></code>. However, explicitusage of <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span></code> may be desirable if comparing to boolean valueson certain platforms.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">is\_not()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">isnot()</span></code> in previous releases. The previous name remainsavailable for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.is\_" title="sqlalchemy.sql.expression.ColumnOperators.is\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.is\_()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">isnot\_distinct\_from</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.isnot\_distinct\_from" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">IS</span> <span class="pre">NOT</span> <span class="pre">DISTINCT</span> <span class="pre">FROM</span></code> operator.</p><p>Renders “a IS NOT DISTINCT FROM b” on most platforms;on some such as SQLite may render “a IS b”.</p><div class="versionchanged"><p><span class="versionmodified 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</span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">istartswith</span></code> operator, e.g. case insensitiveversion of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a>.</p><p>Produces a LIKE expression that tests against an insensitivematch for the start of a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">column</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(</span><span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.escape</span></code></a> parameter willestablish a given character as an escape character which can be ofuse when the target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.istartswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.istartswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">lower</span><span class="p">(</span><span class="n">somecolumn</span><span class="p">)</span> <span class="n">LIKE</span> <span class="n">lower</span><span class="p">(:</span><span class="n">param</span><span class="p">)</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.istartswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.istartswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.istartswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">istartswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.startswith()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.like"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">like</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">like</span></code> operator.</p><p>In a column context, produces the expression:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="n">LIKE</span> <span class="n">other</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">like</span><span class="p">(</span><span class="s2">&quot;</span><span class="si">%f</span><span class="s2">oobar%&quot;</span><span class="p">))</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.like.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like.params.other">¶</a> – expression to be compared</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.like.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like.params.escape">¶</a> – <p>optional escape character, renders the <code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code>keyword, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">like</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;/&quot;</span><span class="p">)</span></pre></div></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.match"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">match</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.match" title="Link to this definition">¶</a></dt><dd><p>Implements a database-specific ‘match’ operator.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.match" title="sqlalchemy.sql.expression.ColumnOperators.match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.match()</span></code></a> attempts to resolve toa MATCH-like function or operator provided by the backend.Examples include:</p><ul><li><p>PostgreSQL - renders <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">&#64;&#64;</span> <span class="pre">plainto\_tsquery(y)</span></code></p><blockquote><div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 2.0: </span><code class="docutils literal notranslate"><span class="pre">plainto\_tsquery()</span></code> is used insteadof <code class="docutils literal notranslate"><span class="pre">to\_tsquery()</span></code> for PostgreSQL now; for compatibility withother forms, see <a class="reference internal" href="../dialects/postgresql.html#postgresql-match"><span class="std std-ref">Full Text Search</span></a>.</p></div></div></blockquote></li><li><p>MySQL - renders <code class="docutils literal notranslate"><span class="pre">MATCH</span> <span class="pre">(x)</span> <span class="pre">AGAINST</span> <span class="pre">(y</span> <span class="pre">IN</span> <span class="pre">BOOLEAN</span> <span class="pre">MODE)</span></code></p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../dialects/mysql.html#sqlalchemy.dialects.mysql.match" title="sqlalchemy.dialects.mysql.match"><code class="xref py py-class docutils literal notranslate"><span class="pre">match</span></code></a> - MySQL specific construct withadditional features.</p></div></li><li><p>Oracle - renders <code class="docutils literal notranslate"><span class="pre">CONTAINS(x,</span> <span class="pre">y)</span></code></p></li><li><p>other backends may provide special implementations.</p></li><li><p>Backends without any special implementation will emitthe operator as “MATCH”. This is compatible with SQLite, forexample.</p></li></ul></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.not\_ilike"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">not\_ilike</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.not\_ilike" title="Link to this definition">¶</a></dt><dd><p>implement the <code class="docutils literal notranslate"><span class="pre">NOT</span> <span class="pre">ILIKE</span></code> operator.</p><p>This is equivalent to using negation with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a>, i.e. <code class="docutils literal notranslate"><span class="pre">~x.ilike(y)</span></code>.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">not\_ilike()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">notilike()</span></code> in previous releases. The previous name remainsavailable for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.ilike" title="sqlalchemy.sql.expression.ColumnOperators.ilike"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.ilike()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.not\_in"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">not\_in</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.not\_in" title="Link to this definition">¶</a></dt><dd><p>implement the <code class="docutils literal notranslate"><span class="pre">NOT</span> <span class="pre">IN</span></code> operator.</p><p>This is equivalent to using negation with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.in\_" title="sqlalchemy.sql.expression.ColumnOperators.in\_"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.in\_()</span></code></a>, i.e. <code class="docutils literal notranslate"><span class="pre">~x.in\_(y)</span></code>.</p><p>In the case that <code class="docutils literal notranslate"><span class="pre">other</span></code> is an empty sequence, the compilerproduces an “empty not in” expression. This defaults to theexpression “1 = 1” to produce true in all cases. The<a class="reference internal" href="engines.html#sqlalchemy.create\_engine.params.empty\_in\_strategy" title="sqlalchemy.create\_engine"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">create\_engine.empty\_in\_strategy</span></code></a> may be used toalter this behavior.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">not\_in()</span></code> operator is renamed from<code class="docutils literal notranslate"><span class="pre">notin\_()</span></code> in previous releases. 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The previous name remainsavailable for backwards compatibility.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.nulls\_first"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">nulls\_first</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_first" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> clause against theparent object.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">nulls\_first()</span></code> operator isrenamed from <code class="docutils literal notranslate"><span class="pre">nullsfirst()</span></code> in previous releases.The previous name remains available for backwards compatibility.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.nulls\_last"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">nulls\_last</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.nulls\_last" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> clause against theparent object.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">nulls\_last()</span></code> operator isrenamed from <code class="docutils literal notranslate"><span class="pre">nullslast()</span></code> in previous releases.The previous name remains available for backwards compatibility.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.nullsfirst"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">nullsfirst</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.nullsfirst" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> clause against theparent object.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">nulls\_first()</span></code> operator isrenamed from <code class="docutils literal notranslate"><span class="pre">nullsfirst()</span></code> in previous releases.The previous name remains available for backwards compatibility.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.nullslast"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">nullslast</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.nullslast" title="Link to this definition">¶</a></dt><dd><p>Produce a <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a> clause against theparent object.</p><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4: </span>The <code class="docutils literal notranslate"><span class="pre">nulls\_last()</span></code> operator isrenamed from <code class="docutils literal notranslate"><span class="pre">nullslast()</span></code> in previous releases.The previous name remains available for backwards compatibility.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.op"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">op</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">opstring</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">precedence</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">int</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">0</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">is\_comparison</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">return\_type</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Type</span><span class="p"><span class="pre">[</span></span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">python\_impl</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><span class="pre">Operators</span></a><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.op" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Produce a generic operator function.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s2">&quot;\*&quot;</span><span class="p">)(</span><span class="mi">5</span><span class="p">)</span></pre></div></div><p>produces:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="o">\*</span> <span class="mi">5</span></pre></div></div><p>This function can also be used to make bitwise operators explicit. Forexample:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s1">&#39;&amp;&#39;</span><span class="p">)(</span><span class="mh">0xff</span><span class="p">)</span></pre></div></div><p>is a bitwise AND of the value in <code class="docutils literal notranslate"><span class="pre">somecolumn</span></code>.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.op.params.opstring"></span><strong>opstring</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op.params.opstring">¶</a> – a string which will be output as the infix operatorbetween this element and the expression passed to thegenerated function.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.op.params.precedence"></span><strong>precedence</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op.params.precedence">¶</a> – <p>precedence which the database is expected to applyto the operator in SQL expressions. This integer value acts as a hintfor the SQL compiler to know when explicit parenthesis should berendered around a particular operation. A lower number will cause theexpression to be parenthesized when applied against another operatorwith higher precedence. The default value of <code class="docutils literal notranslate"><span class="pre">0</span></code> is lower than alloperators except for the comma (<code class="docutils literal notranslate"><span class="pre">,</span></code>) and <code class="docutils literal notranslate"><span class="pre">AS</span></code> operators. A valueof 100 will be higher or equal to all operators, and -100 will belower than or equal to all operators.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../faq/sqlexpressions.html#faq-sql-expression-op-parenthesis"><span class="std std-ref">I’m using op() to generate a custom operator and my parenthesis are not coming out correctly</span></a> - detailed descriptionof how the SQLAlchemy SQL compiler renders parenthesis</p></div></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.op.params.is\_comparison"></span><strong>is\_comparison</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op.params.is\_comparison">¶</a> – <p>legacy; if True, the operator will be consideredas a “comparison” operator, that is which evaluates to a booleantrue/false value, like <code class="docutils literal notranslate"><span class="pre">==</span></code>, <code class="docutils literal notranslate"><span class="pre">&gt;</span></code>, etc. This flag is providedso that ORM relationships can establish that the operator is acomparison operator when used in a custom join condition.</p><p>Using the <code class="docutils literal notranslate"><span class="pre">is\_comparison</span></code> parameter is superseded by using the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a> method instead; this more succinctoperator sets this parameter automatically, but also providescorrect <span class="target" id="index-3"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a> typing support as the returned object willexpress a “boolean” datatype, i.e. <code class="docutils literal notranslate"><span class="pre">BinaryExpression[bool]</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.op.params.return\_type"></span><strong>return\_type</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op.params.return\_type">¶</a> – a <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or object that willforce the return type of an expression produced by this operatorto be of that type. By default, operators that specify<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Operators.op.is\_comparison</span></code></a> will resolve to<a class="reference internal" href="type\_basics.html#sqlalchemy.types.Boolean" title="sqlalchemy.types.Boolean"><code class="xref py py-class docutils literal notranslate"><span class="pre">Boolean</span></code></a>, and those that do not will be of the sametype as the left-hand operand.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.op.params.python\_impl"></span><strong>python\_impl</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.op.params.python\_impl">¶</a> – <p>an optional Python function that can evaluatetwo Python values in the same way as this operator works whenrun on the database server. Useful for in-Python SQL expressionevaluation functions, such as for ORM hybrid attributes, and theORM “evaluator” used to match objects in a session after a multi-rowupdate or delete.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s1">&#39;+&#39;</span><span class="p">,</span> <span class="n">python\_impl</span><span class="o">=</span><span class="k">lambda</span> <span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">:</span> <span class="n">a</span> <span class="o">+</span> <span class="n">b</span><span class="p">)(</span><span class="s1">&#39;y&#39;</span><span class="p">)</span></pre></div></div><p>The operator for the above expression will also work for non-SQLleft and right objects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span><span class="o">.</span><span class="n">operator</span><span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">10</span><span class="p">)</span><span class="go">15</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.</span></p></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a></p><p><a class="reference internal" href="custom\_types.html#types-operators"><span class="std std-ref">Redefining and Creating New Operators</span></a></p><p><a class="reference internal" href="../orm/join\_conditions.html#relationship-custom-operator"><span class="std std-ref">Using custom operators in join conditions</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.operate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">operate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.operate" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.operate" title="sqlalchemy.sql.expression.Operators.operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.operate()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Operate on an argument.</p><p>This is the lowest level of operation, raises<code class="xref py py-class docutils literal notranslate"><span class="pre">NotImplementedError</span></code> by default.</p><p>Overriding this on a subclass can allow commonbehavior to be applied to all operations.For example, overriding <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a>to apply <code class="docutils literal notranslate"><span class="pre">func.lower()</span></code> to the left and rightside:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">class</span> <span class="nc">MyComparator</span><span class="p">(</span><span class="n">ColumnOperators</span><span class="p">):</span> <span class="k">def</span> <span class="nf">operate</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">op</span><span class="p">,</span> <span class="n">other</span><span class="p">,</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">):</span> <span class="k">return</span> <span class="n">op</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="bp">self</span><span class="p">),</span> <span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">),</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">)</span></pre><div class="code-non-annotations-key"></div></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.operate.params.op"></span><strong>op</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate.params.op">¶</a> – Operator callable.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.operate.params.\*other"></span><strong>\*other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate.params.\*other">¶</a> – the ‘other’ side of the operation. Willbe a single scalar for most operations.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.operate.params.\*\*kwargs"></span><strong>\*\*kwargs</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate.params.\*\*kwargs">¶</a> – modifiers. These may be passed by specialoperators such as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p></li></ul></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">regexp\_match</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">pattern</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">flags</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match" title="Link to this definition">¶</a></dt><dd><p>Implements a database-specific ‘regexp match’ operator.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span> <span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="o">.</span><span class="n">regexp\_match</span><span class="p">(</span><span class="s1">&#39;^(b|c)&#39;</span><span class="p">)</span><span class="p">)</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_match()</span></code></a> attempts to resolve toa REGEXP-like function or operator provided by the backend, howeverthe specific regular expression syntax and flags available are<strong>not backend agnostic</strong>.</p><p>Examples include:</p><ul class="simple"><li><p>PostgreSQL - renders <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">~</span> <span class="pre">y</span></code> or <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">!~</span> <span class="pre">y</span></code> when negated.</p></li><li><p>Oracle - renders <code class="docutils literal notranslate"><span class="pre">REGEXP\_LIKE(x,</span> <span class="pre">y)</span></code></p></li><li><p>SQLite - uses SQLite’s <code class="docutils literal notranslate"><span class="pre">REGEXP</span></code> placeholder operator and calls intothe Python <code class="docutils literal notranslate"><span class="pre">re.match()</span></code> builtin.</p></li><li><p>other backends may provide special implementations.</p></li><li><p>Backends without any special implementation will emitthe operator as “REGEXP” or “NOT REGEXP”. This is compatible withSQLite and MySQL, for example.</p></li></ul><p>Regular expression support is currently implemented for Oracle,PostgreSQL, MySQL and MariaDB. Partial support is available forSQLite. Support among third-party dialects may vary.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_match.params.pattern"></span><strong>pattern</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match.params.pattern">¶</a> – The regular expression pattern string or columnclause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_match.params.flags"></span><strong>flags</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match.params.flags">¶</a> – Any regular expression string flags to apply, passed asplain Python string only. These flags are backend specific.Some backends, like PostgreSQL and MariaDB, may alternativelyspecify the flags as part of the pattern.When using the ignore case flag ‘i’ in PostgreSQL, the ignore caseregexp match operator <code class="docutils literal notranslate"><span class="pre">~\*</span></code> or <code class="docutils literal notranslate"><span class="pre">!~\*</span></code> will be used.</p></li></ul></dd></dl><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.</span></p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4.48,: </span>2.0.18 Note that due to an implementationerror, the “flags” parameter previously accepted SQL expressionobjects such as column expressions in addition to plain Pythonstrings. This implementation did not work correctly with cachingand was removed; strings only should be passed for the “flags”parameter, as these flags are rendered as literal inline valueswithin SQL expressions.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_replace()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">regexp\_replace</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">pattern</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">replacement</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">flags</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace" title="Link to this definition">¶</a></dt><dd><p>Implements a database-specific ‘regexp replace’ operator.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span> <span class="n">table</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">some\_column</span><span class="o">.</span><span class="n">regexp\_replace</span><span class="p">(</span> <span class="s1">&#39;b(..)&#39;</span><span class="p">,</span> <span class="s1">&#39;XY&#39;</span><span class="p">,</span> <span class="n">flags</span><span class="o">=</span><span class="s1">&#39;g&#39;</span> <span class="p">)</span><span class="p">)</span></pre></div></div><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_replace()</span></code></a> attempts to resolve toa REGEXP\_REPLACE-like function provided by the backend, thatusually emit the function <code class="docutils literal notranslate"><span class="pre">REGEXP\_REPLACE()</span></code>. However,the specific regular expression syntax and flags available are<strong>not backend agnostic</strong>.</p><p>Regular expression replacement support is currently implemented forOracle, PostgreSQL, MySQL 8 or greater and MariaDB. Support amongthird-party dialects may vary.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace.params.pattern"></span><strong>pattern</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace.params.pattern">¶</a> – The regular expression pattern string or columnclause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace.params.pattern"></span><strong>pattern</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace.params.pattern">¶</a> – The replacement string or column clause.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.regexp\_replace.params.flags"></span><strong>flags</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_replace.params.flags">¶</a> – Any regular expression string flags to apply, passed asplain Python string only. These flags are backend specific.Some backends, like PostgreSQL and MariaDB, may alternativelyspecify the flags as part of the pattern.</p></li></ul></dd></dl><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.</span></p></div><div class="versionchanged"><p><span class="versionmodified changed">Changed in version 1.4.48,: </span>2.0.18 Note that due to an implementationerror, the “flags” parameter previously accepted SQL expressionobjects such as column expressions in addition to plain Pythonstrings. This implementation did not work correctly with cachingand was removed; strings only should be passed for the “flags”parameter, as these flags are rendered as literal inline valueswithin SQL expressions.</p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.regexp\_match" title="sqlalchemy.sql.expression.ColumnOperators.regexp\_match"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.regexp\_match()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.reverse\_operate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">reverse\_operate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.reverse\_operate" title="Link to this definition">¶</a></dt><dd><div class="inherited-member docutils container"><p><em>inherited from the</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.reverse\_operate" title="sqlalchemy.sql.expression.Operators.reverse\_operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.reverse\_operate()</span></code></a> <em>method of</em> <a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><code class="xref py py-class docutils literal notranslate"><span class="pre">Operators</span></code></a></p></div><p>Reverse operate on an argument.</p><p>Usage is the same as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.operate" title="sqlalchemy.sql.expression.ColumnOperators.operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">operate()</span></code></a>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.startswith"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">startswith</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">escape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">autoescape</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.operators.ColumnOperators"><span class="pre">ColumnOperators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.startswith" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">startswith</span></code> operator.</p><p>Produces a LIKE expression that tests against a match for the startof a string value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">column</span> <span class="n">LIKE</span> <span class="o">&lt;</span><span class="n">other</span><span class="o">&gt;</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span></pre></div></div><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">column</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foobar&quot;</span><span class="p">))</span></pre></div></div><p>Since the operator uses <code class="docutils literal notranslate"><span class="pre">LIKE</span></code>, wildcard characters<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code> and <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> that are present inside the &lt;other&gt; expressionwill behave like wildcards as well. For literal stringvalues, the <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.autoescape</span></code></a> flagmay be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> to apply escaping to occurrences of thesecharacters within the string value so that they match as themselvesand not as wildcard characters. Alternatively, the<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.escape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.escape</span></code></a> parameter will establisha given character as an escape character which can be of use whenthe target expression is not a literal string.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.startswith.params.other"></span><strong>other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.other">¶</a> – expression to be compared. This is usually a plainstring value, but can also be an arbitrary SQL expression. LIKEwildcard characters <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> are not escaped by default unlessthe <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.autoescape</span></code></a> flag isset to True.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape"></span><strong>autoescape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape">¶</a> – <p>boolean; when True, establishes an escape characterwithin the LIKE expression, then applies it to all occurrences of<code class="docutils literal notranslate"><span class="pre">&quot;%&quot;</span></code>, <code class="docutils literal notranslate"><span class="pre">&quot;\_&quot;</span></code> and the escape character itself within thecomparison value, which is assumed to be a literal string and not aSQL expression.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foo%bar&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;/&#39;</span></pre></div></div><p>With the value of <code class="docutils literal notranslate"><span class="pre">:param</span></code> as <code class="docutils literal notranslate"><span class="pre">&quot;foo/%bar&quot;</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.ColumnOperators.startswith.params.escape"></span><strong>escape</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.escape">¶</a> – <p>a character which when given will render with the<code class="docutils literal notranslate"><span class="pre">ESCAPE</span></code> keyword to establish that character as the escapecharacter. This character can then be placed preceding occurrencesof <code class="docutils literal notranslate"><span class="pre">%</span></code> and <code class="docutils literal notranslate"><span class="pre">\_</span></code> to allow them to act as themselves and notwildcard characters.</p><p>An expression such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foo/%bar&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">)</span></pre></div></div><p>Will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="n">LIKE</span> <span class="p">:</span><span class="n">param</span> <span class="o">||</span> <span class="s1">&#39;%&#39;</span> <span class="n">ESCAPE</span> <span class="s1">&#39;^&#39;</span></pre></div></div><p>The parameter may also be combined with<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.startswith.params.autoescape" title="sqlalchemy.sql.expression.ColumnOperators.startswith"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">ColumnOperators.startswith.autoescape</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">startswith</span><span class="p">(</span><span class="s2">&quot;foo%bar^bat&quot;</span><span class="p">,</span> <span class="n">escape</span><span class="o">=</span><span class="s2">&quot;^&quot;</span><span class="p">,</span> <span class="n">autoescape</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div><p>Where above, the given literal parameter will be converted to<code class="docutils literal notranslate"><span class="pre">&quot;foo^%bar^^bat&quot;</span></code> before being passed to the database.</p></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.endswith" title="sqlalchemy.sql.expression.ColumnOperators.endswith"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.endswith()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.like" title="sqlalchemy.sql.expression.ColumnOperators.like"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.like()</span></code></a></p></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.ColumnOperators.timetuple"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnOperators.</span></code></a><span class="sig-name descname"><span class="pre">timetuple</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">Literal</span><span class="p"><span class="pre">[</span></span><span class="pre">None</span><span class="p"><span class="pre">]</span></span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">None</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.ColumnOperators.timetuple" title="Link to this definition">¶</a></dt><dd><p>Hack, allows datetime objects to be compared on the LHS.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Extract"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Extract</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Extract" title="Link to this definition">¶</a></dt><dd><p>Represent a SQL EXTRACT clause, <code class="docutils literal notranslate"><span class="pre">extract(field</span> <span class="pre">FROM</span> <span class="pre">expr)</span></code>.</p><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Extract" title="sqlalchemy.sql.expression.Extract"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Extract</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.False\_"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">False\_</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.False\_" title="Link to this definition">¶</a></dt><dd><p>Represent the <code class="docutils literal notranslate"><span class="pre">false</span></code> keyword, or equivalent, in a SQL statement.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.False\_" title="sqlalchemy.sql.expression.False\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">False\_</span></code></a> is accessed as a constant via the<a class="reference internal" href="#sqlalchemy.sql.expression.false" title="sqlalchemy.sql.expression.false"><code class="xref py py-func docutils literal notranslate"><span class="pre">false()</span></code></a> function.</p><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.False\_" title="sqlalchemy.sql.expression.False\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.False\_</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.SingletonConstant</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ConstExprRole</span></code>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.FunctionFilter"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">FunctionFilter</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.FunctionFilter" title="Link to this definition">¶</a></dt><dd><p>Represent a function FILTER clause.</p><p>This is a special operator against aggregate and window functions,which controls which rows are passed to it.It’s supported only by certain database backends.</p><p>Invocation of <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter" title="sqlalchemy.sql.expression.FunctionFilter"><code class="xref py py-class docutils literal notranslate"><span class="pre">FunctionFilter</span></code></a> is via<a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.filter" title="sqlalchemy.sql.functions.FunctionElement.filter"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.filter()</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">count</span><span class="p">(</span><span class="mi">1</span><span class="p">)</span><span class="o">.</span><span class="n">filter</span><span class="p">(</span><span class="kc">True</span><span class="p">)</span></pre></div></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.filter" title="sqlalchemy.sql.functions.FunctionElement.filter"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.filter()</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.filter"><span class="sig-name descname">filter()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.over"><span class="sig-name descname">over()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter" title="sqlalchemy.sql.expression.FunctionFilter"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.FunctionFilter</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.FunctionFilter.filter"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.FunctionFilter.</span></code></a><span class="sig-name descname"><span class="pre">filter</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">criterion</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">bool</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Self</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.FunctionFilter.filter" title="Link to this definition">¶</a></dt><dd><p>Produce an additional FILTER against the function.</p><p>This method adds additional criteria to the initial criteriaset up by <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.filter" title="sqlalchemy.sql.functions.FunctionElement.filter"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.filter()</span></code></a>.</p><p>Multiple criteria are joined together at SQL render timevia <code class="docutils literal notranslate"><span class="pre">AND</span></code>.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.FunctionFilter.over"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.FunctionFilter.</span></code></a><span class="sig-name descname"><span class="pre">over</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">partition\_by</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Iterable</span><span class="p"><span class="pre">[</span></span><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">order\_by</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Iterable</span><span class="p"><span class="pre">[</span></span><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">range\_</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">typing\_Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">rows</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">typing\_Tuple</span><span class="p"><span class="pre">[</span></span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">int</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Over" title="sqlalchemy.sql.expression.Over"><span class="pre">Over</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.FunctionFilter.over" title="Link to this definition">¶</a></dt><dd><p>Produce an OVER clause against this filtered function.</p><p>Used against aggregate or so-called “window” functions,for database backends that support window functions.</p><p>The expression:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">func</span><span class="o">.</span><span class="n">rank</span><span class="p">()</span><span class="o">.</span><span class="n">filter</span><span class="p">(</span><span class="n">MyClass</span><span class="o">.</span><span class="n">y</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">)</span><span class="o">.</span><span class="n">over</span><span class="p">(</span><span class="n">order\_by</span><span class="o">=</span><span class="s1">&#39;x&#39;</span><span class="p">)</span></pre></div></div><p>is shorthand for:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">over</span><span class="p">,</span> <span class="n">funcfilter</span><span class="n">over</span><span class="p">(</span><span class="n">funcfilter</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">rank</span><span class="p">(),</span> <span class="n">MyClass</span><span class="o">.</span><span class="n">y</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">),</span> <span class="n">order\_by</span><span class="o">=</span><span class="s1">&#39;x&#39;</span><span class="p">)</span></pre></div></div><p>See <a class="reference internal" href="#sqlalchemy.sql.expression.over" title="sqlalchemy.sql.expression.over"><code class="xref py py-func docutils literal notranslate"><span class="pre">over()</span></code></a> for a full description.</p></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.FunctionFilter.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.FunctionFilter.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Self</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">Grouping</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.FunctionFilter.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.self\_group" title="sqlalchemy.sql.expression.FunctionFilter.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.FunctionFilter.self\_group" title="sqlalchemy.sql.expression.FunctionFilter.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Label"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Label</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Label" title="Link to this definition">¶</a></dt><dd><p>Represents a column label (AS).</p><p>Represent a label, as typically applied to any column-levelelement using the <code class="docutils literal notranslate"><span class="pre">AS</span></code> sql keyword.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Label.foreign\_keys"><span class="sig-name descname">foreign\_keys</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Label.primary\_key"><span class="sig-name descname">primary\_key</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Label.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Label" title="sqlalchemy.sql.expression.Label"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Label</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.LabeledColumnExprRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.NamedColumn</span></code>)</p></div><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Label.foreign\_keys"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Label"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Label.</span></code></a><span class="sig-name descname"><span class="pre">foreign\_keys</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">AbstractSet</span><span class="p"><span class="pre">[</span></span><a class="reference internal" href="constraints.html#sqlalchemy.schema.ForeignKey" title="sqlalchemy.schema.ForeignKey"><span class="pre">ForeignKey</span></a><span class="p"><span class="pre">]</span></span></em><a class="headerlink" href="#sqlalchemy.sql.expression.Label.foreign\_keys" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Label.primary\_key"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Label"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Label.</span></code></a><span class="sig-name descname"><span class="pre">primary\_key</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">bool</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.Label.primary\_key" title="Link to this definition">¶</a></dt><dd></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Label.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Label"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Label.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.Label.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.Label.self\_group" title="sqlalchemy.sql.expression.Label.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.Label.self\_group" title="sqlalchemy.sql.expression.Label.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Null"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Null</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Null" title="Link to this definition">¶</a></dt><dd><p>Represent the NULL keyword in a SQL statement.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Null" title="sqlalchemy.sql.expression.Null"><code class="xref py py-class docutils literal notranslate"><span class="pre">Null</span></code></a> is accessed as a constant via the<a class="reference internal" href="#sqlalchemy.sql.expression.null" title="sqlalchemy.sql.expression.null"><code class="xref py py-func docutils literal notranslate"><span class="pre">null()</span></code></a> function.</p><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Null" title="sqlalchemy.sql.expression.Null"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Null</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.SingletonConstant</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ConstExprRole</span></code>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Operators</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators" title="Link to this definition">¶</a></dt><dd><p>Base of comparison and logical operators.</p><p>Implements base methods<code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.operate()</span></code> and<code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.reverse\_operate()</span></code>, as well as<code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.\_\_and\_\_()</span></code>,<code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.\_\_or\_\_()</span></code>,<code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.\_\_invert\_\_()</span></code>.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_and\_\_"><span class="sig-name descname">\_\_and\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_invert\_\_"><span class="sig-name descname">\_\_invert\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_or\_\_"><span class="sig-name descname">\_\_or\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_"><span class="sig-name descname">\_\_sa\_operate\_\_()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op"><span class="sig-name descname">bool\_op()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op"><span class="sig-name descname">op()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.operate"><span class="sig-name descname">operate()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.reverse\_operate"><span class="sig-name descname">reverse\_operate()</span></a></p></div><p>Usually is used via its most common subclass<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a>.</p><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.\_\_and\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_and\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.\_\_and\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> operator.</p><p>When used with SQL expressions, results in anAND operation, equivalent to<a class="reference internal" href="#sqlalchemy.sql.expression.and\_" title="sqlalchemy.sql.expression.and\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">and\_()</span></code></a>, that is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="o">&amp;</span> <span class="n">b</span></pre></div></div><p>is equivalent to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">and\_</span><span class="n">and\_</span><span class="p">(</span><span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">)</span></pre></div></div><p>Care should be taken when using <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> regardingoperator precedence; the <code class="docutils literal notranslate"><span class="pre">&amp;</span></code> operator has the highest precedence.The operands should be enclosed in parenthesis if they containfurther sub expressions:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">(</span><span class="n">a</span> <span class="o">==</span> <span class="mi">2</span><span class="p">)</span> <span class="o">&amp;</span> <span class="p">(</span><span class="n">b</span> <span class="o">==</span> <span class="mi">4</span><span class="p">)</span></pre></div></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.\_\_invert\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_invert\_\_</span></span><span class="sig-paren">(</span><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.\_\_invert\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">~</span></code> operator.</p><p>When used with SQL expressions, results in aNOT operation, equivalent to<a class="reference internal" href="#sqlalchemy.sql.expression.not\_" title="sqlalchemy.sql.expression.not\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">not\_()</span></code></a>, that is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="o">~</span><span class="n">a</span></pre></div></div><p>is equivalent to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">not\_</span><span class="n">not\_</span><span class="p">(</span><span class="n">a</span><span class="p">)</span></pre></div></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.\_\_or\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_or\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.\_\_or\_\_" title="Link to this definition">¶</a></dt><dd><p>Implement the <code class="docutils literal notranslate"><span class="pre">|</span></code> operator.</p><p>When used with SQL expressions, results in anOR operation, equivalent to<a class="reference internal" href="#sqlalchemy.sql.expression.or\_" title="sqlalchemy.sql.expression.or\_"><code class="xref py py-func docutils literal notranslate"><span class="pre">or\_()</span></code></a>, that is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a</span> <span class="o">|</span> <span class="n">b</span></pre></div></div><p>is equivalent to:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">or\_</span><span class="n">or\_</span><span class="p">(</span><span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">)</span></pre></div></div><p>Care should be taken when using <code class="docutils literal notranslate"><span class="pre">|</span></code> regardingoperator precedence; the <code class="docutils literal notranslate"><span class="pre">|</span></code> operator has the highest precedence.The operands should be enclosed in parenthesis if they containfurther sub expressions:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">(</span><span class="n">a</span> <span class="o">==</span> <span class="mi">2</span><span class="p">)</span> <span class="o">|</span> <span class="p">(</span><span class="n">b</span> <span class="o">==</span> <span class="mi">4</span><span class="p">)</span></pre></div></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">\_\_sa\_operate\_\_</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_" title="Link to this definition">¶</a></dt><dd><p>Operate on an argument.</p><p>This is the lowest level of operation, raises<code class="xref py py-class docutils literal notranslate"><span class="pre">NotImplementedError</span></code> by default.</p><p>Overriding this on a subclass can allow commonbehavior to be applied to all operations.For example, overriding <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a>to apply <code class="docutils literal notranslate"><span class="pre">func.lower()</span></code> to the left and rightside:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">class</span> <span class="nc">MyComparator</span><span class="p">(</span><span class="n">ColumnOperators</span><span class="p">):</span> <span class="k">def</span> <span class="nf">operate</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">op</span><span class="p">,</span> <span class="n">other</span><span class="p">,</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">):</span> <span class="k">return</span> <span class="n">op</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="bp">self</span><span class="p">),</span> <span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">),</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">)</span></pre><div class="code-non-annotations-key"></div></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_.params.op"></span><strong>op</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_.params.op">¶</a> – Operator callable.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_.params.\*other"></span><strong>\*other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_.params.\*other">¶</a> – the ‘other’ side of the operation. Willbe a single scalar for most operations.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_.params.\*\*kwargs"></span><strong>\*\*kwargs</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.\_\_sa\_operate\_\_.params.\*\*kwargs">¶</a> – modifiers. These may be passed by specialoperators such as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p></li></ul></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.bool\_op"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">bool\_op</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">opstring</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">precedence</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">int</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">0</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">python\_impl</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="Link to this definition">¶</a></dt><dd><p>Return a custom boolean operator.</p><p>This method is shorthand for calling<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a> and passing the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Operators.op.is\_comparison</span></code></a>flag with True. A key advantage to using <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a>is that when using column constructs, the “boolean” nature of thereturned expression will be present for <span class="target" id="index-4"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a> purposes.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.op()</span></code></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.op"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">op</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">opstring</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">str</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">precedence</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">int</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">0</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">is\_comparison</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">bool</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">False</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">return\_type</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Type</span><span class="p"><span class="pre">[</span></span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">python\_impl</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">...</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span><span class="w"> </span><span class="o"><span class="pre">=</span></span><span class="w"> </span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Callable</span><span class="p"><span class="pre">[</span></span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span><span class="p"><span class="pre">,</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.expression.Operators"><span class="pre">Operators</span></a><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.op" title="Link to this definition">¶</a></dt><dd><p>Produce a generic operator function.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s2">&quot;\*&quot;</span><span class="p">)(</span><span class="mi">5</span><span class="p">)</span></pre></div></div><p>produces:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span> <span class="o">\*</span> <span class="mi">5</span></pre></div></div><p>This function can also be used to make bitwise operators explicit. Forexample:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">somecolumn</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s1">&#39;&amp;&#39;</span><span class="p">)(</span><span class="mh">0xff</span><span class="p">)</span></pre></div></div><p>is a bitwise AND of the value in <code class="docutils literal notranslate"><span class="pre">somecolumn</span></code>.</p><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.op.params.opstring"></span><strong>opstring</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.opstring">¶</a> – a string which will be output as the infix operatorbetween this element and the expression passed to thegenerated function.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.op.params.precedence"></span><strong>precedence</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.precedence">¶</a> – <p>precedence which the database is expected to applyto the operator in SQL expressions. This integer value acts as a hintfor the SQL compiler to know when explicit parenthesis should berendered around a particular operation. A lower number will cause theexpression to be parenthesized when applied against another operatorwith higher precedence. The default value of <code class="docutils literal notranslate"><span class="pre">0</span></code> is lower than alloperators except for the comma (<code class="docutils literal notranslate"><span class="pre">,</span></code>) and <code class="docutils literal notranslate"><span class="pre">AS</span></code> operators. A valueof 100 will be higher or equal to all operators, and -100 will belower than or equal to all operators.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../faq/sqlexpressions.html#faq-sql-expression-op-parenthesis"><span class="std std-ref">I’m using op() to generate a custom operator and my parenthesis are not coming out correctly</span></a> - detailed descriptionof how the SQLAlchemy SQL compiler renders parenthesis</p></div></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.op.params.is\_comparison"></span><strong>is\_comparison</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison">¶</a> – <p>legacy; if True, the operator will be consideredas a “comparison” operator, that is which evaluates to a booleantrue/false value, like <code class="docutils literal notranslate"><span class="pre">==</span></code>, <code class="docutils literal notranslate"><span class="pre">&gt;</span></code>, etc. This flag is providedso that ORM relationships can establish that the operator is acomparison operator when used in a custom join condition.</p><p>Using the <code class="docutils literal notranslate"><span class="pre">is\_comparison</span></code> parameter is superseded by using the<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a> method instead; this more succinctoperator sets this parameter automatically, but also providescorrect <span class="target" id="index-5"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a> typing support as the returned object willexpress a “boolean” datatype, i.e. <code class="docutils literal notranslate"><span class="pre">BinaryExpression[bool]</span></code>.</p></p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.op.params.return\_type"></span><strong>return\_type</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.return\_type">¶</a> – a <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> class or object that willforce the return type of an expression produced by this operatorto be of that type. By default, operators that specify<a class="reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.is\_comparison" title="sqlalchemy.sql.expression.Operators.op"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">Operators.op.is\_comparison</span></code></a> will resolve to<a class="reference internal" href="type\_basics.html#sqlalchemy.types.Boolean" title="sqlalchemy.types.Boolean"><code class="xref py py-class docutils literal notranslate"><span class="pre">Boolean</span></code></a>, and those that do not will be of the sametype as the left-hand operand.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.op.params.python\_impl"></span><strong>python\_impl</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.op.params.python\_impl">¶</a> – <p>an optional Python function that can evaluatetwo Python values in the same way as this operator works whenrun on the database server. Useful for in-Python SQL expressionevaluation functions, such as for ORM hybrid attributes, and theORM “evaluator” used to match objects in a session after a multi-rowupdate or delete.</p><p>e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span> <span class="o">=</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;x&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">op</span><span class="p">(</span><span class="s1">&#39;+&#39;</span><span class="p">,</span> <span class="n">python\_impl</span><span class="o">=</span><span class="k">lambda</span> <span class="n">a</span><span class="p">,</span> <span class="n">b</span><span class="p">:</span> <span class="n">a</span> <span class="o">+</span> <span class="n">b</span><span class="p">)(</span><span class="s1">&#39;y&#39;</span><span class="p">)</span></pre></div></div><p>The operator for the above expression will also work for non-SQLleft and right objects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="gp">&gt;&gt;&gt; </span><span class="n">expr</span><span class="o">.</span><span class="n">operator</span><span class="p">(</span><span class="mi">5</span><span class="p">,</span> <span class="mi">10</span><span class="p">)</span><span class="go">15</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.</span></p></div></p></li></ul></dd></dl><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Operators.bool\_op" title="sqlalchemy.sql.expression.Operators.bool\_op"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Operators.bool\_op()</span></code></a></p><p><a class="reference internal" href="custom\_types.html#types-operators"><span class="std std-ref">Redefining and Creating New Operators</span></a></p><p><a class="reference internal" href="../orm/join\_conditions.html#relationship-custom-operator"><span class="std std-ref">Using custom operators in join conditions</span></a></p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.operate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">operate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.operate" title="Link to this definition">¶</a></dt><dd><p>Operate on an argument.</p><p>This is the lowest level of operation, raises<code class="xref py py-class docutils literal notranslate"><span class="pre">NotImplementedError</span></code> by default.</p><p>Overriding this on a subclass can allow commonbehavior to be applied to all operations.For example, overriding <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators" title="sqlalchemy.sql.expression.ColumnOperators"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnOperators</span></code></a>to apply <code class="docutils literal notranslate"><span class="pre">func.lower()</span></code> to the left and rightside:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">class</span> <span class="nc">MyComparator</span><span class="p">(</span><span class="n">ColumnOperators</span><span class="p">):</span> <span class="k">def</span> <span class="nf">operate</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">op</span><span class="p">,</span> <span class="n">other</span><span class="p">,</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">):</span> <span class="k">return</span> <span class="n">op</span><span class="p">(</span><span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="bp">self</span><span class="p">),</span> <span class="n">func</span><span class="o">.</span><span class="n">lower</span><span class="p">(</span><span class="n">other</span><span class="p">),</span> <span class="o">\*\*</span><span class="n">kwargs</span><span class="p">)</span></pre><div class="code-non-annotations-key"></div></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.operate.params.op"></span><strong>op</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.operate.params.op">¶</a> – Operator callable.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.operate.params.\*other"></span><strong>\*other</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.operate.params.\*other">¶</a> – the ‘other’ side of the operation. Willbe a single scalar for most operations.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.Operators.operate.params.\*\*kwargs"></span><strong>\*\*kwargs</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.Operators.operate.params.\*\*kwargs">¶</a> – modifiers. These may be passed by specialoperators such as <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnOperators.contains" title="sqlalchemy.sql.expression.ColumnOperators.contains"><code class="xref py py-meth docutils literal notranslate"><span class="pre">ColumnOperators.contains()</span></code></a>.</p></li></ul></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Operators.reverse\_operate"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Operators"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Operators.</span></code></a><span class="sig-name descname"><span class="pre">reverse\_operate</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">op</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">OperatorType</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">other</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">kwargs</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="#sqlalchemy.sql.expression.Operators" title="sqlalchemy.sql.operators.Operators"><span class="pre">Operators</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Operators.reverse\_operate" title="Link to this definition">¶</a></dt><dd><p>Reverse operate on an argument.</p><p>Usage is the same as <a class="reference internal" href="#sqlalchemy.sql.expression.Operators.operate" title="sqlalchemy.sql.expression.Operators.operate"><code class="xref py py-meth docutils literal notranslate"><span class="pre">operate()</span></code></a>.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Over"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Over</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Over" title="Link to this definition">¶</a></dt><dd><p>Represent an OVER clause.</p><p>This is a special operator against a so-called“window” function, as well as any aggregate function,which produces results relative to the result setitself. Most modern SQL backends now support window functions.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Over.element"><span class="sig-name descname">element</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Over" title="sqlalchemy.sql.expression.Over"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Over</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Over.element"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Over"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Over.</span></code></a><span class="sig-name descname"><span class="pre">element</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><span class="pre">ColumnElement</span></a><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></em><a class="headerlink" href="#sqlalchemy.sql.expression.Over.element" title="Link to this definition">¶</a></dt><dd><p>The underlying expression object to which this <a class="reference internal" href="#sqlalchemy.sql.expression.Over" title="sqlalchemy.sql.expression.Over"><code class="xref py py-class docutils literal notranslate"><span class="pre">Over</span></code></a>object refers.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.SQLColumnExpression"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">SQLColumnExpression</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.SQLColumnExpression" title="Link to this definition">¶</a></dt><dd><p>A type that may be used to indicate any SQL column element or objectthat acts in place of one.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.SQLColumnExpression" title="sqlalchemy.sql.expression.SQLColumnExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">SQLColumnExpression</span></code></a> is a base of<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>, as well as within the bases of ORM elementssuch as <a class="reference internal" href="../orm/internals.html#sqlalchemy.orm.InstrumentedAttribute" title="sqlalchemy.orm.InstrumentedAttribute"><code class="xref py py-class docutils literal notranslate"><span class="pre">InstrumentedAttribute</span></code></a>, and may be used in <span class="target" id="index-6"></span><a class="pep reference external" href="https://peps.python.org/pep-0484/"><strong>PEP 484</strong></a>typing to indicate arguments or return values that should behaveas column expressions.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.0b4.</span></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.SQLColumnExpression" title="sqlalchemy.sql.expression.SQLColumnExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.SQLColumnExpression</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.SQLCoreOperations</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ExpressionElementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.util.langhelpers.TypingOnly</span></code>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TextClause"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">TextClause</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.TextClause" title="Link to this definition">¶</a></dt><dd><p>Represent a literal SQL text fragment.</p><p>E.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">text</span><span class="n">t</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT \* FROM users&quot;</span><span class="p">)</span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">t</span><span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextClause</span></code></a> construct is produced using the<a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a>function; see that function for full documentation.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams"><span class="sig-name descname">bindparams()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns"><span class="sig-name descname">columns()</span></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TextClause</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DDLConstraintColumnRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.DDLExpressionRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.StatementOptionRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.WhereHavingRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.OrderByRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.FromClauseRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.SelectStatementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.InElementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Generative</span></code>, <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Executable" title="sqlalchemy.sql.expression.Executable"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Executable</span></code></a>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.DQLDMLClauseElement</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.BinaryElementRole</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.inspection.Inspectable</span></code>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TextClause.bindparams"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TextClause.</span></code></a><span class="sig-name descname"><span class="pre">bindparams</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">binds</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.elements.BindParameter"><span class="pre">BindParameter</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">names\_to\_values</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">Any</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">Self</span></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.TextClause.bindparams" title="Link to this definition">¶</a></dt><dd><p>Establish the values and/or types of bound parameters withinthis <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextClause</span></code></a> construct.</p><p>Given a text construct such as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">text</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT id, name FROM user WHERE name=:name &quot;</span> <span class="s2">&quot;AND timestamp=:timestamp&quot;</span><span class="p">)</span></pre></div></div><p>the <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams" title="sqlalchemy.sql.expression.TextClause.bindparams"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.bindparams()</span></code></a>method can be used to establishthe initial value of <code class="docutils literal notranslate"><span class="pre">:name</span></code> and <code class="docutils literal notranslate"><span class="pre">:timestamp</span></code>,using simple keyword arguments:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">bindparams</span><span class="p">(</span><span class="n">name</span><span class="o">=</span><span class="s1">&#39;jack&#39;</span><span class="p">,</span> <span class="n">timestamp</span><span class="o">=</span><span class="n">datetime</span><span class="o">.</span><span class="n">datetime</span><span class="p">(</span><span class="mi">2012</span><span class="p">,</span> <span class="mi">10</span><span class="p">,</span> <span class="mi">8</span><span class="p">,</span> <span class="mi">15</span><span class="p">,</span> <span class="mi">12</span><span class="p">,</span> <span class="mi">5</span><span class="p">))</span></pre></div></div><p>Where above, new <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> objectswill be generated with the names <code class="docutils literal notranslate"><span class="pre">name</span></code> and <code class="docutils literal notranslate"><span class="pre">timestamp</span></code>, andvalues of <code class="docutils literal notranslate"><span class="pre">jack</span></code> and <code class="docutils literal notranslate"><span class="pre">datetime.datetime(2012,</span> <span class="pre">10,</span> <span class="pre">8,</span> <span class="pre">15,</span> <span class="pre">12,</span> <span class="pre">5)</span></code>,respectively. The types will beinferred from the values given, in this case <a class="reference internal" href="type\_basics.html#sqlalchemy.types.String" title="sqlalchemy.types.String"><code class="xref py py-class docutils literal notranslate"><span class="pre">String</span></code></a> and<a class="reference internal" href="type\_basics.html#sqlalchemy.types.DateTime" title="sqlalchemy.types.DateTime"><code class="xref py py-class docutils literal notranslate"><span class="pre">DateTime</span></code></a>.</p><p>When specific typing behavior is needed, the positional <code class="docutils literal notranslate"><span class="pre">\*binds</span></code>argument can be used in which to specify <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a> constructsdirectly. These constructs must include at least the <code class="docutils literal notranslate"><span class="pre">key</span></code>argument, then an optional value and type:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy</span> <span class="kn">import</span> <span class="n">bindparam</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">bindparams</span><span class="p">(</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;name&#39;</span><span class="p">,</span> <span class="n">value</span><span class="o">=</span><span class="s1">&#39;jack&#39;</span><span class="p">,</span> <span class="n">type\_</span><span class="o">=</span><span class="n">String</span><span class="p">),</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;timestamp&#39;</span><span class="p">,</span> <span class="n">type\_</span><span class="o">=</span><span class="n">DateTime</span><span class="p">)</span> <span class="p">)</span></pre></div></div><p>Above, we specified the type of <a class="reference internal" href="type\_basics.html#sqlalchemy.types.DateTime" title="sqlalchemy.types.DateTime"><code class="xref py py-class docutils literal notranslate"><span class="pre">DateTime</span></code></a> for the<code class="docutils literal notranslate"><span class="pre">timestamp</span></code> bind, and the type of <a class="reference internal" href="type\_basics.html#sqlalchemy.types.String" title="sqlalchemy.types.String"><code class="xref py py-class docutils literal notranslate"><span class="pre">String</span></code></a> for the <code class="docutils literal notranslate"><span class="pre">name</span></code>bind. In the case of <code class="docutils literal notranslate"><span class="pre">name</span></code> we also set the default value of<code class="docutils literal notranslate"><span class="pre">&quot;jack&quot;</span></code>.</p><p>Additional bound parameters can be supplied at statement executiontime, e.g.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">result</span> <span class="o">=</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">,</span> <span class="n">timestamp</span><span class="o">=</span><span class="n">datetime</span><span class="o">.</span><span class="n">datetime</span><span class="p">(</span><span class="mi">2012</span><span class="p">,</span> <span class="mi">10</span><span class="p">,</span> <span class="mi">8</span><span class="p">,</span> <span class="mi">15</span><span class="p">,</span> <span class="mi">12</span><span class="p">,</span> <span class="mi">5</span><span class="p">))</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams" title="sqlalchemy.sql.expression.TextClause.bindparams"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.bindparams()</span></code></a>method can be called repeatedly,where it will re-use existing <a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-class docutils literal notranslate"><span class="pre">BindParameter</span></code></a> objects to addnew information. For example, we can call<a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams" title="sqlalchemy.sql.expression.TextClause.bindparams"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.bindparams()</span></code></a>first with typing information, and asecond time with value information, and it will be combined:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT id, name FROM user WHERE name=:name &quot;</span> <span class="s2">&quot;AND timestamp=:timestamp&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">bindparams</span><span class="p">(</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;name&#39;</span><span class="p">,</span> <span class="n">type\_</span><span class="o">=</span><span class="n">String</span><span class="p">),</span> <span class="n">bindparam</span><span class="p">(</span><span class="s1">&#39;timestamp&#39;</span><span class="p">,</span> <span class="n">type\_</span><span class="o">=</span><span class="n">DateTime</span><span class="p">)</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">bindparams</span><span class="p">(</span> <span class="n">name</span><span class="o">=</span><span class="s1">&#39;jack&#39;</span><span class="p">,</span> <span class="n">timestamp</span><span class="o">=</span><span class="n">datetime</span><span class="o">.</span><span class="n">datetime</span><span class="p">(</span><span class="mi">2012</span><span class="p">,</span> <span class="mi">10</span><span class="p">,</span> <span class="mi">8</span><span class="p">,</span> <span class="mi">15</span><span class="p">,</span> <span class="mi">12</span><span class="p">,</span> <span class="mi">5</span><span class="p">)</span><span class="p">)</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.bindparams" title="sqlalchemy.sql.expression.TextClause.bindparams"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.bindparams()</span></code></a>method also supports the concept of<strong>unique</strong> bound parameters. These are parameters that are“uniquified” on name at statement compilation time, so that multiple<a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a>constructs may be combined together without the namesconflicting. To use this feature, specify the<a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.params.unique" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">BindParameter.unique</span></code></a> flag on each <a class="reference internal" href="#sqlalchemy.sql.expression.bindparam" title="sqlalchemy.sql.expression.bindparam"><code class="xref py py-func docutils literal notranslate"><span class="pre">bindparam()</span></code></a>object:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt1</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;select id from table where name=:name&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">bindparams</span><span class="p">(</span> <span class="n">bindparam</span><span class="p">(</span><span class="s2">&quot;name&quot;</span><span class="p">,</span> <span class="n">value</span><span class="o">=</span><span class="s1">&#39;name1&#39;</span><span class="p">,</span> <span class="n">unique</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span><span class="p">)</span><span class="n">stmt2</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;select id from table where name=:name&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">bindparams</span><span class="p">(</span> <span class="n">bindparam</span><span class="p">(</span><span class="s2">&quot;name&quot;</span><span class="p">,</span> <span class="n">value</span><span class="o">=</span><span class="s1">&#39;name2&#39;</span><span class="p">,</span> <span class="n">unique</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span><span class="p">)</span><span class="n">union</span> <span class="o">=</span> <span class="n">union\_all</span><span class="p">(</span> <span class="n">stmt1</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span><span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">)),</span> <span class="n">stmt2</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span><span class="n">column</span><span class="p">(</span><span class="s2">&quot;id&quot;</span><span class="p">))</span><span class="p">)</span></pre></div></div><p>The above statement will render as:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">select</span> <span class="n">id</span> <span class="kn">from</span> <span class="nn">table</span> <span class="n">where</span> <span class="n">name</span><span class="o">=</span><span class="p">:</span><span class="n">name\_1</span><span class="n">UNION</span> <span class="n">ALL</span> <span class="n">select</span> <span class="n">id</span> <span class="kn">from</span> <span class="nn">table</span> <span class="n">where</span> <span class="n">name</span><span class="o">=</span><span class="p">:</span><span class="n">name\_2</span></pre></div></div><div class="versionadded"><p><span class="versionmodified added">New in version 1.3.11: </span>Added support for the<a class="reference internal" href="#sqlalchemy.sql.expression.BindParameter.params.unique" title="sqlalchemy.sql.expression.BindParameter"><code class="xref py py-paramref docutils literal notranslate"><span class="pre">BindParameter.unique</span></code></a> flag to work with<a class="reference internal" href="#sqlalchemy.sql.expression.text" title="sqlalchemy.sql.expression.text"><code class="xref py py-func docutils literal notranslate"><span class="pre">text()</span></code></a>constructs.</p></div></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TextClause.columns"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TextClause.</span></code></a><span class="sig-name descname"><span class="pre">columns</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="o"><span class="pre">\*</span></span><span class="n"><span class="pre">cols</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_ColumnExpressionArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em>, <em class="sig-param"><span class="o"><span class="pre">\*\*</span></span><span class="n"><span class="pre">types</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><span class="pre">TypeEngine</span></a><span class="p"><span class="pre">[</span></span><span class="pre">Any</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.TextualSelect" title="sqlalchemy.sql.expression.TextualSelect"><span class="pre">TextualSelect</span></a></span></span><a class="headerlink" href="#sqlalchemy.sql.expression.TextClause.columns" title="Link to this definition">¶</a></dt><dd><p>Turn this <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause" title="sqlalchemy.sql.expression.TextClause"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextClause</span></code></a> object into a<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.TextualSelect" title="sqlalchemy.sql.expression.TextualSelect"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextualSelect</span></code></a>object that serves the same role as a SELECTstatement.</p><p>The <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.TextualSelect" title="sqlalchemy.sql.expression.TextualSelect"><code class="xref py py-class docutils literal notranslate"><span class="pre">TextualSelect</span></code></a> is part of the<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.SelectBase" title="sqlalchemy.sql.expression.SelectBase"><code class="xref py py-class docutils literal notranslate"><span class="pre">SelectBase</span></code></a>hierarchy and can be embedded into another statement by using the<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.TextualSelect.subquery" title="sqlalchemy.sql.expression.TextualSelect.subquery"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextualSelect.subquery()</span></code></a> method to produce a<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Subquery" title="sqlalchemy.sql.expression.Subquery"><code class="xref py py-class docutils literal notranslate"><span class="pre">Subquery</span></code></a>object, which can then be SELECTed from.</p><p>This function essentially bridges the gap between an entirelytextual SELECT statement and the SQL expression language conceptof a “selectable”:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">sqlalchemy.sql</span> <span class="kn">import</span> <span class="n">column</span><span class="p">,</span> <span class="n">text</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT id, name FROM some\_table&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span><span class="n">column</span><span class="p">(</span><span class="s1">&#39;id&#39;</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;name&#39;</span><span class="p">))</span><span class="o">.</span><span class="n">subquery</span><span class="p">(</span><span class="s1">&#39;st&#39;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">mytable</span><span class="p">)</span><span class="o">.</span>\ <span class="n">select\_from</span><span class="p">(</span> <span class="n">mytable</span><span class="o">.</span><span class="n">join</span><span class="p">(</span><span class="n">stmt</span><span class="p">,</span> <span class="n">mytable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span> <span class="o">==</span> <span class="n">stmt</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">name</span><span class="p">)</span> <span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">stmt</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span> <span class="o">&gt;</span> <span class="mi">5</span><span class="p">)</span></pre></div></div><p>Above, we pass a series of <a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a> elements to the<a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns" title="sqlalchemy.sql.expression.TextClause.columns"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a> method positionally. These<a class="reference internal" href="#sqlalchemy.sql.expression.column" title="sqlalchemy.sql.expression.column"><code class="xref py py-func docutils literal notranslate"><span class="pre">column()</span></code></a>elements now become first class elements upon the<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.TextualSelect.selected\_columns" title="sqlalchemy.sql.expression.TextualSelect.selected\_columns"><code class="xref py py-attr docutils literal notranslate"><span class="pre">TextualSelect.selected\_columns</span></code></a> column collection,which thenbecome part of the <code class="xref py py-attr docutils literal notranslate"><span class="pre">Subquery.c</span></code> collection after<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.TextualSelect.subquery" title="sqlalchemy.sql.expression.TextualSelect.subquery"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextualSelect.subquery()</span></code></a> is invoked.</p><p>The column expressions we pass to<a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns" title="sqlalchemy.sql.expression.TextClause.columns"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a> mayalso be typed; when we do so, these <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a> objects becomethe effective return type of the column, so that SQLAlchemy’sresult-set-processing systems may be used on the return values.This is often needed for types such as date or boolean types, as wellas for unicode processing on some dialect configurations:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT id, name, timestamp FROM some\_table&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;id&#39;</span><span class="p">,</span> <span class="n">Integer</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;name&#39;</span><span class="p">,</span> <span class="n">Unicode</span><span class="p">),</span> <span class="n">column</span><span class="p">(</span><span class="s1">&#39;timestamp&#39;</span><span class="p">,</span> <span class="n">DateTime</span><span class="p">)</span> <span class="p">)</span><span class="k">for</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">,</span> <span class="n">timestamp</span> <span class="ow">in</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">):</span> <span class="n">print</span><span class="p">(</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">,</span> <span class="n">timestamp</span><span class="p">)</span></pre></div></div><p>As a shortcut to the above syntax, keyword arguments referring totypes alone may be used, if only type conversion is needed:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT id, name, timestamp FROM some\_table&quot;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span> <span class="n">id</span><span class="o">=</span><span class="n">Integer</span><span class="p">,</span> <span class="n">name</span><span class="o">=</span><span class="n">Unicode</span><span class="p">,</span> <span class="n">timestamp</span><span class="o">=</span><span class="n">DateTime</span> <span class="p">)</span><span class="k">for</span> <span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">,</span> <span class="n">timestamp</span> <span class="ow">in</span> <span class="n">connection</span><span class="o">.</span><span class="n">execute</span><span class="p">(</span><span class="n">stmt</span><span class="p">):</span> <span class="n">print</span><span class="p">(</span><span class="n">id</span><span class="p">,</span> <span class="n">name</span><span class="p">,</span> <span class="n">timestamp</span><span class="p">)</span></pre></div></div><p>The positional form of <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns" title="sqlalchemy.sql.expression.TextClause.columns"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a>also provides theunique feature of <strong>positional column targeting</strong>, which isparticularly useful when using the ORM with complex textual queries. Ifwe specify the columns from our model to<a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns" title="sqlalchemy.sql.expression.TextClause.columns"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a>,the result set will match to those columns positionally, meaning thename or origin of the column in the textual SQL doesn’t matter:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">text</span><span class="p">(</span><span class="s2">&quot;SELECT users.id, addresses.id, users.id, &quot;</span> <span class="s2">&quot;users.name, addresses.email\_address AS email &quot;</span> <span class="s2">&quot;FROM users JOIN addresses ON users.id=addresses.user\_id &quot;</span> <span class="s2">&quot;WHERE users.id = 1&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span> <span class="n">User</span><span class="o">.</span><span class="n">id</span><span class="p">,</span> <span class="n">Address</span><span class="o">.</span><span class="n">id</span><span class="p">,</span> <span class="n">Address</span><span class="o">.</span><span class="n">user\_id</span><span class="p">,</span> <span class="n">User</span><span class="o">.</span><span class="n">name</span><span class="p">,</span> <span class="n">Address</span><span class="o">.</span><span class="n">email\_address</span> <span class="p">)</span><span class="n">query</span> <span class="o">=</span> <span class="n">session</span><span class="o">.</span><span class="n">query</span><span class="p">(</span><span class="n">User</span><span class="p">)</span><span class="o">.</span><span class="n">from\_statement</span><span class="p">(</span><span class="n">stmt</span><span class="p">)</span><span class="o">.</span><span class="n">options</span><span class="p">(</span> <span class="n">contains\_eager</span><span class="p">(</span><span class="n">User</span><span class="o">.</span><span class="n">addresses</span><span class="p">))</span></pre></div></div><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.columns" title="sqlalchemy.sql.expression.TextClause.columns"><code class="xref py py-meth docutils literal notranslate"><span class="pre">TextClause.columns()</span></code></a> method provides a directroute to calling <code class="xref py py-meth docutils literal notranslate"><span class="pre">FromClause.subquery()</span></code> as well as<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.SelectBase.cte" title="sqlalchemy.sql.expression.SelectBase.cte"><code class="xref py py-meth docutils literal notranslate"><span class="pre">SelectBase.cte()</span></code></a>against a textual SELECT statement:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">stmt</span><span class="o">.</span><span class="n">columns</span><span class="p">(</span><span class="n">id</span><span class="o">=</span><span class="n">Integer</span><span class="p">,</span> <span class="n">name</span><span class="o">=</span><span class="n">String</span><span class="p">)</span><span class="o">.</span><span class="n">cte</span><span class="p">(</span><span class="s1">&#39;st&#39;</span><span class="p">)</span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">sometable</span><span class="p">)</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">sometable</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span> <span class="o">==</span> <span class="n">stmt</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">id</span><span class="p">)</span></pre></div></div><dl class="field-list simple"><dt class="field-odd">Parameters<span class="colon">:</span></dt><dd class="field-odd"><ul class="simple"><li><p><span class="target" id="sqlalchemy.sql.expression.TextClause.columns.params.\*cols"></span><strong>\*cols</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.TextClause.columns.params.\*cols">¶</a> – A series of <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a> objects,typically<a class="reference internal" href="metadata.html#sqlalchemy.schema.Column" title="sqlalchemy.schema.Column"><code class="xref py py-class docutils literal notranslate"><span class="pre">Column</span></code></a> objects from a <a class="reference internal" href="metadata.html#sqlalchemy.schema.Table" title="sqlalchemy.schema.Table"><code class="xref py py-class docutils literal notranslate"><span class="pre">Table</span></code></a>or ORM levelcolumn-mapped attributes, representing a set of columns that thistextual string will SELECT from.</p></li><li><p><span class="target" id="sqlalchemy.sql.expression.TextClause.columns.params.\*\*types"></span><strong>\*\*types</strong><a class="paramlink headerlink reference internal" href="#sqlalchemy.sql.expression.TextClause.columns.params.\*\*types">¶</a> – A mapping of string names to <a class="reference internal" href="type\_api.html#sqlalchemy.types.TypeEngine" title="sqlalchemy.types.TypeEngine"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeEngine</span></code></a>type objects indicating the datatypes to use for names that areSELECTed from the textual string. Prefer to use the <code class="docutils literal notranslate"><span class="pre">\*cols</span></code>argument as it also indicates positional ordering.</p></li></ul></dd></dl></dd></dl><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TextClause.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.TextClause"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TextClause.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.TextClause.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.self\_group" title="sqlalchemy.sql.expression.TextClause.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.TextClause.self\_group" title="sqlalchemy.sql.expression.TextClause.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TryCast"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">TryCast</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.TryCast" title="Link to this definition">¶</a></dt><dd><p>Represent a TRY\_CAST expression.</p><p>Details on <a class="reference internal" href="#sqlalchemy.sql.expression.TryCast" title="sqlalchemy.sql.expression.TryCast"><code class="xref py py-class docutils literal notranslate"><span class="pre">TryCast</span></code></a> usage is at <a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a>.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.try\_cast" title="sqlalchemy.sql.expression.try\_cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">try\_cast()</span></code></a></p><p><a class="reference internal" href="../tutorial/data\_select.html#tutorial-casts"><span class="std std-ref">Data Casts and Type Coercion</span></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.TryCast.inherit\_cache"><span class="sig-name descname">inherit\_cache</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.TryCast" title="sqlalchemy.sql.expression.TryCast"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TryCast</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.Cast" title="sqlalchemy.sql.expression.Cast"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Cast</span></code></a>)</p></div><dl class="py attribute"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TryCast.inherit\_cache"><em class="property"><span class="pre">attribute</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.TryCast"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TryCast.</span></code></a><span class="sig-name descname"><span class="pre">inherit\_cache</span></span><em class="property"><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="pre">bool</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></em><em class="property"><span class="w"> </span><span class="p"><span class="pre">=</span></span><span class="w"> </span><span class="pre">True</span></em><a class="headerlink" href="#sqlalchemy.sql.expression.TryCast.inherit\_cache" title="Link to this definition">¶</a></dt><dd><p>Indicate if this <a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey" title="sqlalchemy.sql.traversals.HasCacheKey"><code class="xref py py-class docutils literal notranslate"><span class="pre">HasCacheKey</span></code></a> instance should make use of thecache key generation scheme used by its immediate superclass.</p><p>The attribute defaults to <code class="docutils literal notranslate"><span class="pre">None</span></code>, which indicates that a construct hasnot yet taken into account whether or not its appropriate for it toparticipate in caching; this is functionally equivalent to setting thevalue to <code class="docutils literal notranslate"><span class="pre">False</span></code>, except that a warning is also emitted.</p><p>This flag can be set to <code class="docutils literal notranslate"><span class="pre">True</span></code> on a particular class, if the SQL thatcorresponds to the object does not change based on attributes whichare local to this class, and not its superclass.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="compiler.html#compilerext-caching"><span class="std std-ref">Enabling Caching Support for Custom Constructs</span></a> - General guideslines for setting the<a class="reference internal" href="foundation.html#sqlalchemy.sql.traversals.HasCacheKey.inherit\_cache" title="sqlalchemy.sql.traversals.HasCacheKey.inherit\_cache"><code class="xref py py-attr docutils literal notranslate"><span class="pre">HasCacheKey.inherit\_cache</span></code></a> attribute for third-party or userdefined SQL constructs.</p></div></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Tuple"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">Tuple</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.Tuple" title="Link to this definition">¶</a></dt><dd><p>Represent a SQL tuple.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.Tuple.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.Tuple" title="sqlalchemy.sql.expression.Tuple"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Tuple</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ClauseList" title="sqlalchemy.sql.expression.ClauseList"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ClauseList</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.Tuple.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.Tuple"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.Tuple.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.Tuple.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.Tuple.self\_group" title="sqlalchemy.sql.expression.Tuple.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.Tuple.self\_group" title="sqlalchemy.sql.expression.Tuple.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.WithinGroup"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">WithinGroup</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.WithinGroup" title="Link to this definition">¶</a></dt><dd><p>Represent a WITHIN GROUP (ORDER BY) clause.</p><p>This is a special operator against so-called“ordered set aggregate” and “hypotheticalset aggregate” functions, including <code class="docutils literal notranslate"><span class="pre">percentile\_cont()</span></code>,<code class="docutils literal notranslate"><span class="pre">rank()</span></code>, <code class="docutils literal notranslate"><span class="pre">dense\_rank()</span></code>, etc.</p><p>It’s supported only by certain database backends, such as PostgreSQL,Oracle and MS SQL Server.</p><p>The <a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><code class="xref py py-class docutils literal notranslate"><span class="pre">WithinGroup</span></code></a> construct extracts its type from themethod <a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.within\_group\_type" title="sqlalchemy.sql.functions.FunctionElement.within\_group\_type"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.within\_group\_type()</span></code></a>. If this returns<code class="docutils literal notranslate"><span class="pre">None</span></code>, the function’s <code class="docutils literal notranslate"><span class="pre">.type</span></code> is used.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup.over"><span class="sig-name descname">over()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.WithinGroup</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.WithinGroup.over"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.WithinGroup.</span></code></a><span class="sig-name descname"><span class="pre">over</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">partition\_by</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">order\_by</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">range\_</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em>, <em class="sig-param"><span class="n"><span class="pre">rows</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.WithinGroup.over" title="Link to this definition">¶</a></dt><dd><p>Produce an OVER clause against this <a class="reference internal" href="#sqlalchemy.sql.expression.WithinGroup" title="sqlalchemy.sql.expression.WithinGroup"><code class="xref py py-class docutils literal notranslate"><span class="pre">WithinGroup</span></code></a>construct.</p><p>This function has the same signature as that of<a class="reference internal" href="functions.html#sqlalchemy.sql.functions.FunctionElement.over" title="sqlalchemy.sql.functions.FunctionElement.over"><code class="xref py py-meth docutils literal notranslate"><span class="pre">FunctionElement.over()</span></code></a>.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.elements.WrapsColumnExpression"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.elements.</span></span><span class="sig-name descname"><span class="pre">WrapsColumnExpression</span></span><a class="headerlink" href="#sqlalchemy.sql.elements.WrapsColumnExpression" title="Link to this definition">¶</a></dt><dd><p>Mixin that defines a <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ColumnElement</span></code></a>as a wrapper with speciallabeling behavior for an expression that already has a name.</p><div class="versionadded"><p><span class="versionmodified added">New in version 1.4.</span></p></div><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="../changelog/migration\_14.html#change-4449"><span class="std std-ref">Improved column labeling for simple column expressions using CAST or similar</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.WrapsColumnExpression</span></code> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.True\_"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">True\_</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.True\_" title="Link to this definition">¶</a></dt><dd><p>Represent the <code class="docutils literal notranslate"><span class="pre">true</span></code> keyword, or equivalent, in a SQL statement.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.True\_" title="sqlalchemy.sql.expression.True\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">True\_</span></code></a> is accessed as a constant via the<a class="reference internal" href="#sqlalchemy.sql.expression.true" title="sqlalchemy.sql.expression.true"><code class="xref py py-func docutils literal notranslate"><span class="pre">true()</span></code></a> function.</p><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.True\_" title="sqlalchemy.sql.expression.True\_"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.True\_</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.SingletonConstant</span></code>, <code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.roles.ConstExprRole</span></code>, <a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TypeCoerce"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">TypeCoerce</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.TypeCoerce" title="Link to this definition">¶</a></dt><dd><p>Represent a Python-side type-coercion wrapper.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce" title="sqlalchemy.sql.expression.TypeCoerce"><code class="xref py py-class docutils literal notranslate"><span class="pre">TypeCoerce</span></code></a> supplies the <a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a>function; see that function for usage details.</p><div class="admonition seealso"><p class="admonition-title">See also</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.type\_coerce" title="sqlalchemy.sql.expression.type\_coerce"><code class="xref py py-func docutils literal notranslate"><span class="pre">type\_coerce()</span></code></a></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.cast" title="sqlalchemy.sql.expression.cast"><code class="xref py py-func docutils literal notranslate"><span class="pre">cast()</span></code></a></p></div><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce" title="sqlalchemy.sql.expression.TypeCoerce"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TypeCoerce</span></code></a> (<code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.WrapsColumnExpression</span></code>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.TypeCoerce.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.TypeCoerce.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group" title="sqlalchemy.sql.expression.TypeCoerce.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.TypeCoerce.self\_group" title="sqlalchemy.sql.expression.TypeCoerce.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.UnaryExpression"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.sql.expression.</span></span><span class="sig-name descname"><span class="pre">UnaryExpression</span></span><a class="headerlink" href="#sqlalchemy.sql.expression.UnaryExpression" title="Link to this definition">¶</a></dt><dd><p>Define a ‘unary’ expression.</p><p>A unary expression has a single column expressionand an operator. The operator can be placed on the left(where it is called the ‘operator’) or right (where it is called the‘modifier’) of the column expression.</p><p><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">UnaryExpression</span></code></a> is the basis for several unary operatorsincluding those used by <a class="reference internal" href="#sqlalchemy.sql.expression.desc" title="sqlalchemy.sql.expression.desc"><code class="xref py py-func docutils literal notranslate"><span class="pre">desc()</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.asc" title="sqlalchemy.sql.expression.asc"><code class="xref py py-func docutils literal notranslate"><span class="pre">asc()</span></code></a>, <a class="reference internal" href="#sqlalchemy.sql.expression.distinct" title="sqlalchemy.sql.expression.distinct"><code class="xref py py-func docutils literal notranslate"><span class="pre">distinct()</span></code></a>,<a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_first" title="sqlalchemy.sql.expression.nulls\_first"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_first()</span></code></a> and <a class="reference internal" href="#sqlalchemy.sql.expression.nulls\_last" title="sqlalchemy.sql.expression.nulls\_last"><code class="xref py py-func docutils literal notranslate"><span class="pre">nulls\_last()</span></code></a>.</p><div class="class-members docutils container"><p><strong>Members</strong></p><p><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression.self\_group"><span class="sig-name descname">self\_group()</span></a></p></div><div class="class-bases docutils container"><p><strong>Class signature</strong></p><p>class <a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression" title="sqlalchemy.sql.expression.UnaryExpression"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.UnaryExpression</span></code></a> (<a class="reference internal" href="#sqlalchemy.sql.expression.ColumnElement" title="sqlalchemy.sql.expression.ColumnElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.ColumnElement</span></code></a>)</p></div><dl class="py method"><dt class="sig sig-object py" id="sqlalchemy.sql.expression.UnaryExpression.self\_group"><em class="property"><span class="pre">method</span> </em><a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression"><code class="docutils literal notranslate"><span class="pre">sqlalchemy.sql.expression.UnaryExpression.</span></code></a><span class="sig-name descname"><span class="pre">self\_group</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">against</span></span><span class="o"><span class="pre">=</span></span><span class="default\_value"><span class="pre">None</span></span></em><span class="sig-paren">)</span><a class="headerlink" href="#sqlalchemy.sql.expression.UnaryExpression.self\_group" title="Link to this definition">¶</a></dt><dd><p>Apply a ‘grouping’ to this <a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>.</p><p>This method is overridden by subclasses to return a “grouping”construct, i.e. parenthesis. In particular it’s used by “binary”expressions to provide a grouping around themselves when placed into alarger expression, as well as by <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>constructs when placed into the FROM clause of another<a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.select" title="sqlalchemy.sql.expression.select"><code class="xref py py-func docutils literal notranslate"><span class="pre">select()</span></code></a>. (Note that subqueries should benormally created using the <a class="reference internal" href="selectable.html#sqlalchemy.sql.expression.Select.alias" title="sqlalchemy.sql.expression.Select.alias"><code class="xref py py-meth docutils literal notranslate"><span class="pre">Select.alias()</span></code></a> method,as manyplatforms require nested SELECT statements to be named).</p><p>As expressions are composed together, the application of<a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression.self\_group" title="sqlalchemy.sql.expression.UnaryExpression.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> is automatic - end-user code should neverneed to use this method directly. Note that SQLAlchemy’sclause constructs take operator precedence into account -so parenthesis might not be needed, for example, inan expression like <code class="docutils literal notranslate"><span class="pre">x</span> <span class="pre">OR</span> <span class="pre">(y</span> <span class="pre">AND</span> <span class="pre">z)</span></code> - AND takes precedenceover OR.</p><p>The base <a class="reference internal" href="#sqlalchemy.sql.expression.UnaryExpression.self\_group" title="sqlalchemy.sql.expression.UnaryExpression.self\_group"><code class="xref py py-meth docutils literal notranslate"><span class="pre">self\_group()</span></code></a> method of<a class="reference internal" href="foundation.html#sqlalchemy.sql.expression.ClauseElement" title="sqlalchemy.sql.expression.ClauseElement"><code class="xref py py-class docutils literal notranslate"><span class="pre">ClauseElement</span></code></a>just returns self.</p></dd></dl></dd></dl></section><section id="column-element-typing-utilities"><h2>Column Element Typing Utilities<a class="headerlink" href="#column-element-typing-utilities" title="Link to this heading">¶</a></h2><p>Standalone utility functions imported from the <code class="docutils literal notranslate"><span class="pre">sqlalchemy</span></code> namespaceto improve support by type checkers.</p><table class="longtable docutils align-default"><thead><tr class="row-odd"><th class="head">Object Name</th><th class="head">Description</th></tr></thead><tbody><tr class="row-even"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.NotNullable"><span class="sig-name descname">NotNullable</span></a>(val)</p></td><td><p>Types a column or ORM class as not nullable.</p></td></tr><tr class="row-odd"><td class="autosummary-name"><p><a class="reference internal" href="#sqlalchemy.Nullable"><span class="sig-name descname">Nullable</span></a>(val)</p></td><td><p>Types a column or ORM class as nullable.</p></td></tr></tbody></table><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.NotNullable"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.</span></span><span class="sig-name descname"><span class="pre">NotNullable</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">val</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypedColumnClauseArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">Type</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">\_TypedColumnClauseArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.NotNullable" title="Link to this definition">¶</a></dt><dd><p>Types a column or ORM class as not nullable.</p><p>This can be used in select and other contexts to express that the value ofa column cannot be null, for example due to a where condition on anullable column:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">NotNullable</span><span class="p">(</span><span class="n">A</span><span class="o">.</span><span class="n">value</span><span class="p">))</span><span class="o">.</span><span class="n">where</span><span class="p">(</span><span class="n">A</span><span class="o">.</span><span class="n">value</span><span class="o">.</span><span class="n">is\_not</span><span class="p">(</span><span class="kc">None</span><span class="p">))</span></pre></div></div><p>At runtime this method returns the input unchanged.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.20.</span></p></div></dd></dl><dl class="py function"><dt class="sig sig-object py" id="sqlalchemy.Nullable"><em class="property"><span class="pre">function</span> </em><span class="sig-prename descclassname"><span class="pre">sqlalchemy.</span></span><span class="sig-name descname"><span class="pre">Nullable</span></span><span class="sig-paren">(</span><em class="sig-param"><span class="n"><span class="pre">val</span></span><span class="p"><span class="pre">:</span></span><span class="w"> </span><span class="n"><span class="pre">\_TypedColumnClauseArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="p"><span class="pre">]</span></span></span></em><span class="sig-paren">)</span> <span class="sig-return"><span class="sig-return-icon">&#x2192;</span> <span class="sig-return-typehint"><span class="pre">\_TypedColumnClauseArgument</span><span class="p"><span class="pre">[</span></span><span class="pre">\_T</span><span class="w"> </span><span class="p"><span class="pre">|</span></span><span class="w"> </span><span class="pre">None</span><span class="p"><span class="pre">]</span></span></span></span><a class="headerlink" href="#sqlalchemy.Nullable" title="Link to this definition">¶</a></dt><dd><p>Types a column or ORM class as nullable.</p><p>This can be used in select and other contexts to express that the value ofa column can be null, for example due to an outer join:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">stmt1</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">A</span><span class="p">,</span> <span class="n">Nullable</span><span class="p">(</span><span class="n">B</span><span class="p">))</span><span class="o">.</span><span class="n">outerjoin</span><span class="p">(</span><span class="n">A</span><span class="o">.</span><span class="n">bs</span><span class="p">)</span><span class="n">stmt2</span> <span class="o">=</span> <span class="n">select</span><span class="p">(</span><span class="n">A</span><span class="o">.</span><span class="n">data</span><span class="p">,</span> <span class="n">Nullable</span><span class="p">(</span><span class="n">B</span><span class="o">.</span><span class="n">data</span><span class="p">))</span><span class="o">.</span><span class="n">outerjoin</span><span class="p">(</span><span class="n">A</span><span class="o">.</span><span class="n">bs</span><span class="p">)</span></pre></div></div><p>At runtime this method returns the input unchanged.</p><div class="versionadded"><p><span class="versionmodified added">New in version 2.0.20.</span></p></div></dd></dl></section></section> </div></div><div id="docs-bottom-navigation" class="docs-navigation-links, withsidebar"> Previous: <a href="expression\_api.html" title="previous chapter">SQL Statements and Expressions API</a> Next: <a href="operators.html" title="next chapter">Operator Reference</a> <div id="docs-copyright"> &copy; <a href="../copyright.html">Copyright</a> 2007-2023, the SQLAlchemy authors and contributors. <p><b>flambé!</b> the dragon and <b><i>The Alchemist</i></b> image designs created and generously donated by <a href="https://github.com/vmalloc">Rotem Yaari</a>.</p> Created using <a href="http://sphinx.pocoo.org/">Sphinx</a> 7.2.6. Documentation last generated: Tue 28 Nov 2023 08:41:52 AM </div></div></div></div></div> <!-- end #main-body --> <div id="footer" class="footer"> <div class="snd-ad"> </div> <div class="pypowered"> <a href="http://www.python.org/" title="The Python Language Site"> <img src="//www.sqlalchemy.org/img/python-logo.gif" width="88" height="30" alt="Python" class="pypowered" /> </a> </div> <div class="copyright"> <p>Website content copyright &copy; by SQLAlchemy authors and contributors. 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File Path: N/A

Links: /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, ,, , #, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, p, h, i, l, o, s, o, p, h, y, ., h, t, m, l, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, f, e, a, t, u, r, e, s, ., h, t, m, l, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, q, u, o, t, e, s, ., h, t, m, l, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, b, l, o, g, /, ,, , #, ,, , /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, l, i, b, r, a, r, y, ., h, t, m, l, #, r, e, f, e, r, e, n, c, e, ,, , /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 2, 1, /, ,, , /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 2, 0, /, ,, , /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 1, 4, /, ,, , /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 1, 3, /, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, l, i, b, r, a, r, y, ., h, t, m, l, #, t, a, l, k, s, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, l, i, b, r, a, r, y, ., h, t, m, l, ,, , #, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, s, u, p, p, o, r, t, ., h, t, m, l, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, p, a, r, t, i, c, i, p, a, t, e, ., h, t, m, l, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, d, e, v, e, l, o, p, ., h, t, m, l, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, c, o, d, e, o, f, c, o, n, d, u, c, t, ., h, t, m, l, ,, , h, t, t, p, s, :, /, /, g, i, t, h, u, b, ., c, o, m, /, s, q, l, a, l, c, h, e, m, y, /, s, q, l, a, l, c, h, e, m, y, ,, , #, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, d, 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o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, 2, 0, /, s, q, l, a, l, c, h, e, m, y, \_, 2, 0, ., z, i, p, ,, , i, n, d, e, x, ., h, t, m, l, ,, , e, x, p, r, e, s, s, i, o, n, \_, a, p, i, ., h, t, m, l, ,, , #, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, f, o, u, n, d, a, t, i, o, n, a, l, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, 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m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, u, t, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, u, p, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ., q, u, o, t, e, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, m, o, d, i, f, i, e, r, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, 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s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., e, f, f, e, c, t, i, v, e, \_, v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., r, e, n, d, e, r, \_, l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ., g, e, t, \_, c, h, i, l, d, r, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, d, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, s, \_, r, e, a, d, o, n, l, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, l, e, a, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, n, t, a, i, n, s, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, r, r, e, s, p, o, n, d, i, n, g, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., g, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., i, t, e, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, 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y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, o, w, s, \_, l, a, m, b, d, a, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, k, e, y, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, a, s, e, \_, c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, a, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, r, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, x, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, 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l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, t, i, t, y, \_, n, a, m, e, s, p, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., g, e, t, \_, c, h, i, l, d, r, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, 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e, n, t, ., i, s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, e, g, a, t, i, o, n, \_, c, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, \_, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, \_, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, r, o, x, y, \_, s, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, h, a, r, e, s, \_, l, i, n, e, a, g, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, r, i, n, g, i, f, y, \_, d, i, a, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, u, p, p, o, r, t, s, \_, e, x, e, c, u, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., t, y, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., u, n, i, q, u, e, \_, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., u, s, e, s, \_, i, n, s, p, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, A, r, g, u, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, e, q, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, t, i, t, e, m, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, h, a, s, h, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, e, \_, \_, ,, , #, s, q, l, a, l, c, 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s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, h, i, f, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, a, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, r, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, x, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, f, i, r, s, t, ,, 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l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ., e, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, Q, L, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, l, e, m, e, n, t, s, ., W, r, a, p, s, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, t, y, p, i, n, g, -, u, t, i, l, i, t, i, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, o, t, N, u, l, l, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, u, l, l, a, b, l, e, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, ,, , d, m, l, ., h, t, m, l, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, ,, , c, o, m, p, i, l, e, r, ., h, t, m, l, ,, , s, e, r, i, a, l, i, z, e, r, ., h, t, m, l, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, ,, , v, i, s, i, t, o, r, s, ., h, t, m, l, ,, , s, c, h, e, m, a, ., h, t, m, l, ,, , t, y, p, e, s, ., h, t, m, l, ,, , e, n, g, i, n, e, s, \_, c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, ,, , a, p, i, \_, b, a, s, i, c, s, ., h, t, m, l, ,, , ., ., /, i, n, d, e, x, ., h, t, m, l, ,, , ., ., /, i, n, d, e, x, ., h, t, m, l, ,, , /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, 2, 0, /, s, q, l, a, l, c, h, e, m, y, \_, 2, 0, ., z, i, p, ,, , e, x, p, r, e, s, s, i, o, n, \_, a, p, i, ., h, t, m, l, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, ,, , ., ., /, i, n, d, e, x, ., h, t, m, l, ,, , i, n, d, e, x, ., h, t, m, l, ,, , e, x, p, r, e, s, s, i, o, n, \_, a, p, i, ., h, t, m, l, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, s, -, a, n, d, -, e, x, p, r, e, s, s, i, o, n, s, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, f, o, u, n, d, a, t, i, o, n, a, l, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, u, s, t, o, m, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, o, t, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, u, t, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, u, p, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ., q, u, o, t, e, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, m, o, d, i, f, i, e, r, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, c, l, a, s, s, -, d, o, c, u, m, e, n, t, a, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., e, f, f, e, c, t, i, v, e, \_, v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., r, e, n, d, e, r, \_, l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ., g, e, t, \_, c, h, i, l, d, r, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, d, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, s, \_, r, e, a, d, o, n, l, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, l, e, a, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, n, t, a, i, n, s, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, r, r, e, s, p, o, n, d, i, n, g, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., g, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., i, t, e, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., u, p, d, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., v, a, l, u, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, e, q, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, l, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, l, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, n, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, o, w, s, \_, l, a, m, b, d, a, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, k, e, y, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, a, s, e, \_, c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, a, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, r, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, x, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, i, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, r, i, p, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, t, i, t, y, \_, n, a, m, e, s, p, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., g, e, t, \_, c, h, i, l, d, r, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, c, l, a, u, s, e, \_, e, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, d, m, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, s, e, l, e, c, t, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, 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#, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, r, o, x, y, \_, s, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, h, a, r, e, s, \_, l, i, n, e, a, g, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, r, i, n, g, i, f, y, \_, d, i, a, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, u, p, p, o, r, t, s, \_, e, x, e, c, u, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., t, y, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., u, n, i, q, u, e, \_, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., u, s, e, s, \_, i, n, s, p, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, A, r, g, u, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, e, q, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, t, i, t, e, m, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, 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l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, h, i, f, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, 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l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ., e, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, Q, L, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., 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#, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, l, e, m, e, n, t, s, ., W, r, a, p, s, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, t, y, p, i, n, g, -, u, t, i, l, i, t, i, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, o, t, N, u, l, l, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, u, l, l, a, b, l, e, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, s, -, a, n, d, -, e, x, p, r, e, s, s, i, o, n, s, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, r, o, m, C, l, a, u, s, e, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, f, o, u, n, d, a, t, i, o, n, a, l, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, u, s, t, o, m, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ., p, a, r, a, m, s, ., i, s, \_, l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, o, t, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, u, t, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, u, p, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., w, h, e, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , ., ., /, g, l, o, s, s, a, r, y, ., h, t, m, l, #, t, e, r, m, -, D, B, A, P, I, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., C, o, n, n, e, c, t, i, o, n, ., e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , ., ., /, g, l, o, s, s, a, r, y, ., h, t, m, l, #, t, e, r, m, -, C, R, U, D, ,, , d, m, l, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., i, n, s, e, r, t, ,, , d, m, l, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., I, n, s, e, r, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., C, o, n, n, e, c, t, i, o, n, ., e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., u, n, i, q, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., c, a, l, l, a, b, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., t, y, p, e, \_, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., S, t, r, i, n, g, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., I, n, t, e, g, e, r, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., B, o, o, l, e, a, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., D, a, t, e, T, i, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., u, n, i, q, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., r, e, q, u, i, r, e, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., c, a, l, l, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., r, e, q, u, i, r, e, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., q, u, o, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., i, s, o, u, t, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., e, x, p, a, n, d, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , ., ., /, o, r, m, /, e, x, t, e, n, s, i, o, n, s, /, b, a, k, e, d, ., h, t, m, l, #, b, a, k, e, d, -, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , ., ., /, c, h, a, n, g, e, l, o, g, /, m, i, g, r, a, t, i, o, n, \_, 1, 4, ., h, t, m, l, #, c, h, a, n, g, e, -, 4, 8, 0, 8, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, b, a, p, i, \_, t, r, a, n, s, a, c, t, i, o, n, s, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, s, e, n, d, i, n, g, -, p, a, r, a, m, e, t, e, r, s, ,, , ., ., /, t, u, t, o, r, i, a, l, /, i, n, d, e, x, ., h, t, m, l, #, u, n, i, f, i, e, d, -, t, u, t, o, r, i, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, o, t, \_, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., w, h, e, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., w, h, e, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., e, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., \*, w, h, e, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., w, h, e, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., w, h, e, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., e, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ., p, a, r, a, m, s, ., w, h, e, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ., p, a, r, a, m, s, ., e, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ., p, a, r, a, m, s, ., t, y, p, e, \_, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, c, a, s, t, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, r, o, m, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ., p, a, r, a, m, s, ., i, s, \_, l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, a, b, l, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., T, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, a, b, l, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., M, e, t, a, D, a, t, a, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., T, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ., p, a, r, a, m, s, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ., p, a, r, a, m, s, ., t, y, p, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ., p, a, r, a, m, s, ., i, s, \_, l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, s, e, l, e, c, t, -, a, r, b, i, t, r, a, r, y, -, t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, u, s, t, o, m, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, u, s, t, o, m, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, u, s, t, o, m, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, 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l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ., p, a, r, a, m, s, ., f, i, e, l, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ., p, a, r, a, m, s, ., e, x, p, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., U, n, i, c, o, d, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., C, o, n, n, e, c, t, i, o, n, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., e, x, t, r, a, c, t, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, g, e, n, e, r, i, c, -, f, u, n, c, t, i, o, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, t, o, r, e, d, -, p, r, o, c, e, d, u, r, e, s, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, f, u, n, c, t, i, o, n, s, ,, , ., ., /, t, u, t, o, r, i, a, l, /, i, n, d, e, x, ., h, t, m, l, #, u, n, i, f, i, e, d, -, t, u, t, o, r, i, a, l, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, t, a, t, e, m, e, n, t, L, a, m, b, d, a, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, t, a, t, e, m, e, n, t, L, a, m, b, d, a, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ., p, a, r, a, m, s, ., l, m, b, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ., p, a, r, a, m, s, ., e, n, a, b, l, e, \_, t, r, a, c, k, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ., p, a, r, a, m, s, ., t, r, a, c, k, \_, c, l, o, s, u, r, e, \_, v, a, r, i, a, b, l, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ., p, a, r, a, m, s, ., t, r, a, c, k, \_, b, o, u, n, d, \_, v, a, l, u, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ., p, a, r, a, m, s, ., g, l, o, b, a, l, \_, t, r, a, c, k, \_, b, o, u, n, d, \_, v, a, l, u, e, s, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, t, a, t, e, m, e, n, t, L, a, m, b, d, a, E, l, e, m, e, n, t, ., a, d, d, \_, c, r, i, t, e, r, i, a, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, m, b, d, a, \_, s, t, m, t, ., p, a, r, a, m, s, ., l, a, m, b, d, a, \_, c, a, c, h, e, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., C, o, n, n, e, c, t, i, o, n, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, e, n, g, i, n, e, -, l, a, m, b, d, a, -, c, a, c, h, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ., p, a, r, a, m, s, ., v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ., p, a, r, a, m, s, ., t, y, p, e, \_, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, ., p, a, r, a, m, s, ., l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ., p, a, r, a, m, s, ., i, s, \_, l, i, t, e, r, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ., p, a, r, a, m, s, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, i, t, e, r, a, l, \_, c, o, l, u, m, n, ., p, a, r, a, m, s, ., t, y, p, e, \_, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., N, u, l, l, T, y, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, s, e, l, e, c, t, -, a, r, b, i, t, r, a, r, y, -, t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, o, t, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, u, t, p, a, r, a, m, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., C, u, r, s, o, r, R, e, s, u, l, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, e, c, u, t, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ., p, a, r, a, m, s, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ., p, a, r, a, m, s, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, s, e, l, e, c, t, -, a, r, b, i, t, r, a, r, y, -, t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , e, x, c, e, p, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, x, c, ., C, o, m, p, i, l, e, E, r, r, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , d, e, f, a, u, l, t, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., S, e, q, u, e, n, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, u, p, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , e, x, c, e, p, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, x, c, ., D, B, A, P, I, E, r, r, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ., b, i, n, d, \_, e, x, p, r, e, s, s, i, o, n, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ., b, i, n, d, \_, p, r, o, c, e, s, s, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ., p, a, r, a, m, s, ., e, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ., p, a, r, a, m, s, ., t, y, p, e, \_, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, c, a, s, t, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., T, a, b, l, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ., q, u, o, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., q, u, o, t, e, d, \_, n, a, m, e, ., q, u, o, t, e, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, m, o, d, i, f, i, e, r, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ., C, o, m, p, a, r, a, t, o, r, ., a, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, y, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ., C, o, m, p, a, r, a, t, o, r, ., a, n, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ., p, a, r, a, m, s, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., o, r, d, e, r, \_, b, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ., p, a, r, a, m, s, ., e, x, p, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ., p, a, r, a, m, s, ., l, o, w, e, r, \_, b, o, u, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ., p, a, r, a, m, s, ., u, p, p, e, r, \_, b, o, u, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ., p, a, r, a, m, s, ., s, y, m, m, e, t, r, i, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ., p, a, r, a, m, s, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., o, r, d, e, r, \_, b, y, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., f, i, l, t, e, r, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, f, u, n, c, t, i, o, n, s, -, w, i, t, h, i, n, -, g, r, o, u, p, ,, , ., ., /, t, u, t, o, r, i, a, l, /, i, n, d, e, x, ., h, t, m, l, #, u, n, i, f, i, e, d, -, t, u, t, o, r, i, a, l, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, ., p, a, r, a, m, s, ., n, a, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., l, a, b, e, l, ., p, a, r, a, m, s, ., o, b, j, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., o, r, d, e, r, \_, b, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., o, r, d, e, r, \_, b, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, l, a, s, t, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., r, a, n, g, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., r, o, w, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., e, l, e, m, e, n, t, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., p, a, r, t, i, t, i, o, n, \_, b, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., o, r, d, e, r, \_, b, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., r, a, n, g, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ., p, a, r, a, m, s, ., r, o, w, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., o, v, e, r, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, w, i, n, d, o, w, -, f, u, n, c, t, i, o, n, s, ,, , ., ., /, t, u, t, o, r, i, a, l, /, i, n, d, e, x, ., h, t, m, l, #, u, n, i, f, i, e, d, -, t, u, t, o, r, i, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., p, e, r, c, e, n, t, i, l, e, \_, c, o, n, t, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., r, a, n, k, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., d, e, n, s, e, \_, r, a, n, k, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., w, i, t, h, i, n, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ., p, a, r, a, m, s, ., e, l, e, m, e, n, t, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., w, i, t, h, i, n, \_, g, r, o, u, p, ., p, a, r, a, m, s, ., \*, o, r, d, e, r, \_, b, y, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, f, u, n, c, t, i, o, n, s, -, w, i, t, h, i, n, -, g, r, o, u, p, ,, , ., ., /, t, u, t, o, r, i, a, l, /, i, n, d, e, x, ., h, t, m, l, #, u, n, i, f, i, e, d, -, t, u, t, o, r, i, a, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, u, n, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, c, l, a, s, s, -, d, o, c, u, m, e, n, t, a, t, i, o, n, ,, , #, s, q, l, e, l, e, m, e, n, t, -, f, o, u, n, d, a, t, i, o, n, a, l, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, e, l, e, m, e, n, t, -, m, o, d, i, f, i, e, r, -, c, o, n, s, t, r, u, c, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, r, o, m, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, A, r, g, u, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, Q, L, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, l, e, m, e, n, t, s, ., W, r, a, p, s, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., e, f, f, e, c, t, i, v, e, \_, v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., r, e, n, d, e, r, \_, l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., e, f, f, e, c, t, i, v, e, \_, v, a, l, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., t, r, a, v, e, r, s, a, l, s, ., H, a, s, C, a, c, h, e, K, e, y, ,, , c, o, m, p, i, l, e, r, ., h, t, m, l, #, c, o, m, p, i, l, e, r, e, x, t, -, c, a, c, h, i, n, g, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., t, r, a, v, e, r, s, a, l, s, ., H, a, s, C, a, c, h, e, K, e, y, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., r, e, n, d, e, r, \_, l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., p, a, r, a, m, s, ., l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., p, a, r, a, m, s, ., l, i, t, e, r, a, l, \_, e, x, e, c, u, t, e, ,, , c, o, n, n, e, c, t, i, o, n, s, ., h, t, m, l, #, e, n, g, i, n, e, -, t, h, i, r, d, p, a, r, t, y, -, c, a, c, h, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, c, a, s, t, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, 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o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., v, a, l, u, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., i, t, e, m, s, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ., p, a, r, a, m, s, ., k, e, y, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., s, e, t, \_, l, a, b, e, l, \_, s, t, y, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., T, a, b, l, e, ,, , c, o, n, s, t, r, a, i, n, t, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., P, r, i, m, a, r, y, K, e, y, C, o, n, s, t, r, a, i, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, d, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, s, \_, r, e, a, d, o, n, l, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, l, e, a, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, n, t, a, i, n, s, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, r, r, e, s, p, o, n, d, i, n, g, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., g, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., i, t, e, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., u, p, d, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., v, a, l, u, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., a, d, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, 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s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, l, e, a, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, n, t, a, i, n, s, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., c, o, r, r, e, s, p, o, n, d, i, n, g, \_, c, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, 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., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, a, b, l, e, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, a, b, l, e, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, a, b, l, e, ., c, o, r, r, e, s, p, o, n, d, i, n, g, \_, c, o, l, u, m, n, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, a, b, l, e, ., e, x, p, o, r, t, e, d, \_, c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., g, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., i, t, e, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., u, p, d, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, o, l, l, e, c, t, i, o, n, ., v, a, l, u, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, 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n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, B, a, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, a, r, y, E, x, p, 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i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, l, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, n, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, o, w, s, \_, l, a, m, b, d, a, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, k, e, y, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, a, s, e, \_, c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, a, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, 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e, n, t, ., c, o, m, p, a, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, i, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, r, i, p, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, t, i, t, y, \_, n, a, m, e, s, p, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., g, e, t, \_, c, h, i, l, d, r, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, c, l, a, u, s, e, \_, e, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, d, m, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, s, e, l, e, c, t, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, e, g, a, t, i, o, n, \_, c, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, \_, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, \_, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, a, r, 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,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, l, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, l, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., \_, \_, n, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ., C, o, m, p, a, r, a, t, o, r, ., a, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, l, l, o, w, s, \_, l, a, m, b, d, a, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, k, e, y, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, k, e, y, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, o, n, \_, l, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ., C, o, m, p, a, r, a, t, o, r, ., a, n, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, 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n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., b, i, t, w, i, s, e, \_, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, 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, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , h, t, t, p, s, :, /, /, p, e, p, s, ., p, y, t, h, o, n, ., o, r, g, /, p, e, p, -, 0, 4, 8, 4, /, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, c, a, s, t, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, a, r, e, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ., c, o, m, p, a, r, e, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., 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o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, i, l, e, ., p, a, r, a, m, s, ., d, i, a, l, e, c, t, ,, , i, n, t, e, r, n, a, l, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., D, i, a, l, e, c, t, ,, , i, n, t, e, r, n, a, l, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., e, n, g, i, n, e, ., C, o, m, p, i, l, e, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, m, p, i, l, e, ., p, a, r, a, m, s, ., c, o, m, p, i, l, e, \_, k, w, a, r, g, s, ,, , ., ., /, f, a, q, /, s, q, l, e, x, p, r, e, s, s, i, o, n, s, ., h, t, m, l, #, f, a, q, -, s, q, l, -, e, x, p, r, e, s, s, i, o, n, -, s, t, r, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, e, s, c, r, i, p, t, i, o, n, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., e, n, t, i, t, y, \_, n, a, m, e, s, p, a, c, e, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, 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h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, l, i, k, e, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, l, i, k, e, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, u, p, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., e, x, p, a, n, d, i, n, g, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, n, \_, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, 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., t, r, a, v, e, r, s, a, l, s, ., H, a, s, C, a, c, h, e, K, e, y, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, 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q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, d, m, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, \_, s, e, l, e, c, t, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, 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l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., l, i, k, e, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , 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O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, 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f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, 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x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, ., p, a, r, a, m, s, ., r, e, t, u, r, n, \_, t, y, p, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., B, o, o, l, e, a, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, ., p, a, r, a, m, s, ., p, y, t, h, o, n, \_, i, m, p, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , c, u, s, t, o, m, \_, t, y, p, e, s, ., h, t, m, l, #, t, y, p, e, s, -, o, p, e, r, a, t, o, r, s, ,, , ., ., /, o, r, m, /, j, o, i, n, \_, c, o, n, d, i, t, i, o, n, s, ., h, t, m, l, #, r, e, l, a, t, i, o, n, s, h, i, p, -, c, u, s, t, o, m, -, o, p, e, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ., p, a, r, a, m, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ., p, a, r, a, m, s, ., \*, o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ., p, a, r, a, m, s, ., \*, \*, k, w, a, r, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, a, r, a, m, s, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ., p, a, r, a, m, s, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., p, r, o, x, y, \_, s, e, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, m, a, t, c, h, ., p, a, r, a, m, s, ., p, a, t, t, e, r, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, m, a, t, c, h, ., p, a, r, a, m, s, ., f, l, a, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ., p, a, r, a, m, s, ., p, a, t, t, e, r, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ., p, a, r, a, m, s, ., p, a, t, t, e, r, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ., p, a, r, a, m, s, ., f, l, a, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, h, a, r, e, s, \_, l, i, n, e, a, g, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, t, r, i, n, g, i, f, y, \_, d, i, a, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., s, u, p, p, o, r, t, s, \_, e, x, e, c, u, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., t, y, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., u, n, i, q, u, e, \_, p, a, r, a, m, s, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ., u, n, i, q, u, e, \_, p, a, r, a, m, s, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ., p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ., u, s, e, s, \_, i, n, s, p, e, c, t, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, A, r, g, u, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , c, u, s, t, o, m, \_, t, y, p, e, s, ., h, t, m, l, #, t, y, p, e, s, -, o, p, e, r, a, t, o, r, s, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ., c, o, m, p, a, r, a, t, o, r, \_, f, a, c, t, o, r, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , ., ., /, o, r, m, /, i, n, t, e, r, n, a, l, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., o, r, m, ., P, r, o, p, C, o, m, p, a, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, e, q, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, t, i, t, e, m, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, h, a, s, h, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, s, h, i, f, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, n, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, n, e, g, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, h, i, f, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, a, n, d, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, 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#, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., 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a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, e, q, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, e, t, i, t, e, m, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, g, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, h, a, s, h, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, o, t, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, s, h, i, f, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, l, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, n, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, n, e, g, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, a, d, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, f, l, o, o, r, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, m, o, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, m, u, l, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, h, i, f, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, r, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ., p, a, r, a, m, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ., p, a, r, a, m, s, ., \*, o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ., p, a, r, a, m, s, ., \*, \*, k, w, a, r, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, s, u, b, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., \_, \_, t, r, u, e, d, i, v, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, l, l, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, l, l, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ., C, o, m, p, a, r, a, t, o, r, ., a, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, y, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, n, y, \_, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., A, R, R, A, Y, ., C, o, m, p, a, r, a, t, o, r, ., a, n, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, e, t, w, e, e, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, a, n, d, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, l, s, h, i, f, t, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, n, o, t, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, o, r, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, r, s, h, i, f, t, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, i, t, w, i, s, e, \_, x, o, r, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, #, o, p, e, r, a, t, o, r, s, -, b, i, t, w, i, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , h, t, t, p, s, :, /, /, p, e, p, s, ., p, y, t, h, o, n, ., o, r, g, /, p, e, p, -, 0, 4, 8, 4, /, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, o, l, l, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, c, a, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, 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l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, 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n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, e, n, d, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, u, p, l, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., e, x, p, a, n, d, i, n, g, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ., p, a, r, a, m, s, ., e, x, p, a, n, d, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, n, o, t, \_, d, i, s, t, i, n, c, t, \_, f, r, o, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., m, a, t, c, h, ,, , ., ., /, d, i, a, l, e, c, t, s, /, p, o, s, t, g, r, e, s, q, l, ., h, t, m, l, #, p, o, s, t, g, r, e, s, q, l, -, m, a, t, c, h, ,, , ., ., /, d, i, a, l, e, c, t, s, /, m, y, s, q, l, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., d, i, a, l, e, c, t, s, ., m, y, s, q, l, ., m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , e, n, g, i, n, e, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., c, r, e, a, t, e, \_, e, n, g, i, n, e, ., p, a, r, a, m, s, ., e, m, p, t, y, \_, i, n, \_, s, t, r, a, t, e, g, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, 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e, m, y, ., c, r, e, a, t, e, \_, e, n, g, i, n, e, ., p, a, r, a, m, s, ., e, m, p, t, y, \_, i, n, \_, s, t, r, a, t, e, g, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, \_, i, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., i, n, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, o, t, l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., n, u, l, l, s, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, 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s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., o, p, s, t, r, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., p, r, e, c, e, d, e, n, c, e, ,, , ., ., /, f, a, q, /, s, q, l, e, x, p, r, e, s, s, i, o, n, s, ., h, t, m, l, #, f, a, q, -, s, q, l, -, e, x, p, r, e, s, s, i, o, n, -, o, p, -, p, a, r, e, n, t, h, e, s, i, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , h, t, t, p, s, :, /, /, p, e, p, s, ., p, y, t, h, o, n, ., o, r, g, /, p, e, p, -, 0, 4, 8, 4, /, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., r, e, t, u, r, n, \_, t, y, p, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., B, o, o, l, e, a, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., p, y, t, h, o, n, \_, i, m, p, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , c, u, s, t, o, m, \_, t, y, p, e, s, ., h, t, m, l, #, t, y, p, e, s, -, o, p, e, r, a, t, o, r, s, ,, , ., ., /, o, r, m, /, j, o, i, n, \_, c, o, n, d, i, t, i, o, n, s, ., h, t, m, l, #, r, e, l, a, t, i, o, n, s, h, i, p, -, c, u, s, t, o, m, -, o, p, e, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ., p, a, r, a, m, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ., p, a, r, a, m, s, ., \*, o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ., p, a, r, a, m, s, ., \*, \*, k, w, a, r, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ., p, a, r, a, m, s, ., p, a, t, t, e, r, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ., p, a, r, a, m, s, ., f, l, a, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ., p, a, r, a, m, s, ., p, a, t, t, e, r, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ., p, a, r, a, m, s, ., p, a, t, t, e, r, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, r, e, p, l, a, c, e, ., p, a, r, a, m, s, ., f, l, a, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, g, e, x, p, \_, m, a, t, c, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., s, t, a, r, t, s, w, i, t, h, ., p, a, r, a, m, s, ., a, u, t, o, e, s, c, a, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., e, n, d, s, w, i, t, h, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., l, i, k, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., t, i, m, e, t, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, t, r, a, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., f, a, l, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, a, l, s, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., f, i, l, t, e, r, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., f, i, l, t, e, r, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., f, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., F, u, n, c, t, i, o, n, F, i, l, t, e, r, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, 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a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , c, o, n, s, t, r, a, i, n, t, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., F, o, r, e, i, g, n, K, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., f, o, r, e, i, g, n, \_, k, e, y, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., p, r, i, m, a, r, y, \_, k, e, y, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., L, a, b, e, l, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., N, u, l, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, a, n, d, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, n, d, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, i, n, v, e, r, t, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, o, t, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, o, r, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., o, r, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ., p, a, r, a, m, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ., p, a, r, a, m, s, ., \*, o, t, h, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., \_, \_, s, a, \_, o, p, e, r, a, t, e, \_, \_, ., p, a, r, a, m, s, ., \*, \*, k, w, a, r, g, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, O, p, e, r, a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , h, t, t, p, s, :, /, /, p, e, p, s, ., p, y, t, h, o, n, ., o, r, g, /, p, e, p, -, 0, 4, 8, 4, /, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., 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x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., i, s, \_, c, o, m, p, a, r, i, s, o, n, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., B, o, o, l, e, a, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, ., p, a, r, a, m, s, ., p, y, t, h, o, n, \_, i, m, p, l, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., b, o, o, l, \_, o, p, ,, , c, u, s, t, o, m, \_, t, y, p, e, s, ., h, t, m, l, #, t, y, p, e, s, -, o, p, e, r, a, t, o, r, s, ,, , ., ., /, o, r, m, /, j, o, i, n, \_, c, o, n, d, i, t, i, o, n, s, ., h, t, m, l, #, r, e, l, a, t, i, o, n, s, h, i, p, -, c, u, s, t, o, m, -, o, p, e, r, a, t, o, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, 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a, t, o, r, s, ., c, o, n, t, a, i, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., r, e, v, e, r, s, e, \_, o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, p, e, r, a, t, o, r, s, ., o, p, e, r, a, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ., e, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., O, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, 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e, n, t, e, d, A, t, t, r, i, b, u, t, e, ,, , h, t, t, p, s, :, /, /, p, e, p, s, ., p, y, t, h, o, n, ., o, r, g, /, p, e, p, -, 0, 4, 8, 4, /, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, Q, L, C, o, l, u, m, n, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., E, x, e, c, u, t, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., S, t, r, i, n, g, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., D, a, t, e, T, i, m, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., D, a, t, e, T, i, m, e, ,, , t, y, p, e, \_, b, a, s, i, c, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., S, t, r, i, n, g, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., b, i, n, d, p, a, r, a, m, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., p, a, r, a, m, s, ., u, n, i, q, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., b, i, n, d, p, a, r, a, m, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., B, i, n, d, P, a, r, a, m, e, t, e, r, ., p, a, r, a, m, s, ., u, n, i, q, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, e, x, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, u, a, l, S, e, l, e, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., c, o, l, u, m, n, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, u, a, l, S, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, 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u, s, e, ., c, o, l, u, m, n, s, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, B, a, s, e, ., c, t, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., c, o, l, u, m, n, s, ., p, a, r, a, m, s, ., \*, c, o, l, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., C, o, l, u, m, n, ,, , m, e, t, a, d, a, t, a, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, c, h, e, m, a, ., T, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., c, o, l, u, m, n, s, ., p, a, r, a, m, s, ., \*, \*, t, y, p, e, s, ,, , t, y, p, e, \_, a, p, i, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., t, y, p, e, s, ., T, y, p, e, E, n, g, i, n, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, e, x, t, C, l, a, u, s, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, y, \_, c, a, s, t, ,, , ., ., /, t, u, t, o, r, i, a, l, /, d, a, t, a, \_, s, e, l, e, c, t, ., h, t, m, l, #, t, u, t, o, r, i, a, l, -, c, a, s, t, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, y, C, a, s, t, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., t, r, a, v, e, r, s, a, l, s, ., H, a, s, C, a, c, h, e, K, e, y, ,, , c, o, m, p, i, l, e, r, ., h, t, m, l, #, c, o, m, p, i, l, e, r, e, x, t, -, c, a, c, h, i, n, g, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., t, r, a, v, e, r, s, a, l, s, ., H, a, s, C, a, c, h, e, K, e, y, ., i, n, h, e, r, i, t, \_, c, a, c, h, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, L, i, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, u, p, l, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , f, u, n, c, t, i, o, n, s, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., f, u, n, c, t, i, o, n, s, ., F, u, n, c, t, i, o, n, E, l, e, m, e, n, t, ., w, i, t, h, i, n, \_, g, r, o, u, p, \_, t, y, p, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ., o, v, e, r, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., W, i, t, h, i, n, G, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, 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u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, r, u, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, r, u, e, \_, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., t, y, p, e, \_, c, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., c, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., T, y, p, e, C, o, e, r, c, e, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, e, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., a, s, c, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., d, i, s, t, i, n, c, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, f, i, r, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., n, u, l, l, s, \_, l, a, s, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, o, l, u, m, n, E, l, e, m, e, n, t, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., s, e, l, e, c, t, ,, , s, e, l, e, c, t, a, b, l, e, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., S, e, l, e, c, t, ., a, l, i, a, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ., s, e, l, f, \_, g, r, o, u, p, ,, , #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., U, n, a, r, y, E, x, p, r, e, s, s, i, o, n, ., s, e, l, f, \_, g, r, o, u, p, ,, , f, o, u, n, d, a, t, i, o, n, ., h, t, m, l, #, s, q, l, a, l, c, h, e, m, y, ., s, q, l, ., e, x, p, r, e, s, s, i, o, n, ., C, l, a, u, s, e, E, l, e, m, e, n, t, ,, , #, c, o, l, u, m, n, -, e, l, e, m, e, n, t, -, t, y, p, i, n, g, -, u, t, i, l, i, t, i, e, s, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, o, t, N, u, l, l, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, u, l, l, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, o, t, N, u, l, l, a, b, l, e, ,, , #, s, q, l, a, l, c, h, e, m, y, ., N, u, l, l, a, b, l, e, ,, , e, x, p, r, e, s, s, i, o, n, \_, a, p, i, ., h, t, m, l, ,, , o, p, e, r, a, t, o, r, s, ., h, t, m, l, ,, , ., ., /, c, o, p, y, r, i, g, h, t, ., h, t, m, l, ,, , h, t, t, p, s, :, /, /, g, i, t, h, u, b, ., c, o, m, /, v, m, a, l, l, o, c, ,, , h, t, t, p, :, /, /, s, p, h, i, n, x, ., p, o, c, o, o, ., o, r, g, /, ,, , h, t, t, p, :, /, /, w, w, w, ., p, y, t, h, o, n, ., o, r, g, /, ,, , h, t, t, p, s, :, /, /, g, i, t, h, u, b, ., c, o, m, /, s, q, l, a, l, c, h, e, m, y, o, r, g, /, z, e, e, k, o, f, i, l, e, /, ,, , h, t, t, p, s, :, /, /, g, i, t, h, u, b, ., c, o, m, /, E, n, i, g, m, a, C, u, r, r, y, /, b, l, o, g, o, f, i, l, e, ,, , h, t, t, p, s, :, /, /, h, a, c, h, y, d, e, r, m, ., i, o, /, @, z, z, z, e, e, k, ,, , h, t, t, p, s, :, /, /, f, o, s, s, t, o, d, o, n, ., o, r, g, /, @, z, z, z, e, e, k, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, i, m, g, /, s, q, l, a, \_, l, o, g, o, ., p, n, g, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, i, m, g, /, d, b, t, o, o, l, k, i, t, 6, ., g, i, f, ,, , /, /, w, w, w, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, i, m, g, /, p, y, t, h, o, n, -, l, o, g, o, ., g, i, f, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 2, 1, /, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 2, 0, /, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 1, 4, /, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, e, n, /, 1, 3, /, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, 2, 0, /, s, q, l, a, l, c, h, e, m, y, \_, 2, 0, ., z, i, p, ,, , h, t, t, p, s, :, /, /, d, o, c, s, ., s, q, l, a, l, c, h, e, m, y, ., o, r, g, /, 2, 0, /, s, q, l, a, l, c, h, e, m, y, \_, 2, 0, ., z, i, p

# URL: https://www.crummy.com/software/BeautifulSoup/bs4/doc/

Title: Beautiful Soup Documentation — Beautiful Soup 4.12.0 documentation

Content: <!DOCTYPE html><html lang="en"> <head> <meta charset="utf-8" /> <meta name="viewport" content="width=device-width, initial-scale=1.0" /><meta name="generator" content="Docutils 0.19: https://docutils.sourceforge.io/" /> <title>Beautiful Soup Documentation &#8212; Beautiful Soup 4.12.0 documentation</title> <link rel="stylesheet" type="text/css" href="\_static/pygments.css" /> <link rel="stylesheet" type="text/css" href="\_static/classic.css" /> <script data-url\_root="./" id="documentation\_options" src="\_static/documentation\_options.js"></script> <script src="\_static/doctools.js"></script> <script src="\_static/sphinx\_highlight.js"></script> <link rel="index" title="Index" href="genindex.html" /> <link rel="search" title="Search" href="search.html" /> </head><body> <div class="related" role="navigation" aria-label="related navigation"> <h3>Navigation</h3> <ul> <li class="right" style="margin-right: 10px"> <a href="genindex.html" title="General Index" accesskey="I">index</a></li> <li class="right" > <a href="py-modindex.html" title="Python Module Index" >modules</a> |</li> <li class="nav-item nav-item-0"><a href="#">Beautiful Soup 4.12.0 documentation</a> &#187;</li> <li class="nav-item nav-item-this"><a href="">Beautiful Soup Documentation</a></li> </ul> </div> <div class="document"> <div class="documentwrapper"> <div class="bodywrapper"> <div class="body" role="main"> <section id="module-bs4"><span id="beautiful-soup-documentation"></span><span id="manual"></span><h1>Beautiful Soup Documentation<a class="headerlink" href="#module-bs4" title="Permalink to this heading">¶</a></h1><img alt="&quot;The Fish-Footman began by producing from under his arm a great letter, nearly as large as himself.&quot;" class="align-right" src="\_images/6.1.jpg" /><p><a class="reference external" href="http://www.crummy.com/software/BeautifulSoup/">Beautiful Soup</a> is aPython library for pulling data out of HTML and XML files. It workswith your favorite parser to provide idiomatic ways of navigating,searching, and modifying the parse tree. It commonly saves programmershours or days of work.</p><p>These instructions illustrate all major features of Beautiful Soup 4,with examples. I show you what the library is good for, how it works,how to use it, how to make it do what you want, and what to do when itviolates your expectations.</p><p>This document covers Beautiful Soup version 4.12.1. The examples inthis documentation were written for Python 3.8.</p><p>You might be looking for the documentation for <a class="reference external" href="http://www.crummy.com/software/BeautifulSoup/bs3/documentation.html">Beautiful Soup 3</a>.If so, you should know that Beautiful Soup 3 is no longer beingdeveloped and that all support for it was dropped on December31, 2020. If you want to learn about the differences between BeautifulSoup 3 and Beautiful Soup 4, see <a class="reference internal" href="#porting-code-to-bs4">Porting code to BS4</a>.</p><p>This documentation has been translated into other languages byBeautiful Soup users:</p><ul class="simple"><li><p><a class="reference external" href="https://www.crummy.com/software/BeautifulSoup/bs4/doc.zh/">这篇文档当然还有中文版.</a></p></li><li><p>このページは日本語で利用できます(<a class="reference external" href="http://kondou.com/BS4/">外部リンク</a>)</p></li><li><p><a class="reference external" href="https://www.crummy.com/software/BeautifulSoup/bs4/doc.ko/">이 문서는 한국어 번역도 가능합니다.</a></p></li><li><p><a class="reference external" href="https://www.crummy.com/software/BeautifulSoup/bs4/doc.ptbr">Este documento também está disponível em Português do Brasil.</a></p></li><li><p><a class="reference external" href="https://www.crummy.com/software/BeautifulSoup/bs4/doc.ru/">Эта документация доступна на русском языке.</a></p></li></ul><section id="getting-help"><h2>Getting help<a class="headerlink" href="#getting-help" title="Permalink to this heading">¶</a></h2><p>If you have questions about Beautiful Soup, or run into problems,<a class="reference external" href="https://groups.google.com/forum/?fromgroups#!forum/beautifulsoup">send mail to the discussion group</a>. Ifyour problem involves parsing an HTML document, be sure to mention<a class="reference internal" href="#diagnose"><span class="std std-ref">what the diagnose() function says</span></a> aboutthat document.</p><p>When reporting an error in this documentation, please mention whichtranslation you’re reading.</p></section></section><section id="quick-start"><h1>Quick Start<a class="headerlink" href="#quick-start" title="Permalink to this heading">¶</a></h1><p>Here’s an HTML document I’ll be using as an example throughout thisdocument. It’s part of a story from <cite>Alice in Wonderland</cite>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">html\_doc</span> <span class="o">=</span> <span class="s2">&quot;&quot;&quot;&lt;html&gt;&lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="s2">&lt;body&gt;</span><span class="s2">&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; and their names were</span><span class="s2">&lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="s2">&lt;a href=&quot;http://example.com/lacie&quot; class=&quot;sister&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="s2">&lt;a href=&quot;http://example.com/tillie&quot; class=&quot;sister&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span><span class="s2">and they lived at the bottom of a well.&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span><span class="s2">&quot;&quot;&quot;</span></pre></div></div><p>Running the “three sisters” document through Beautiful Soup gives us a<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object, which represents the document as a nesteddata structure:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;html&gt;</span><span class="c1"># &lt;head&gt;</span><span class="c1"># &lt;title&gt;</span><span class="c1"># The Dormouse&#39;s story</span><span class="c1"># &lt;/title&gt;</span><span class="c1"># &lt;/head&gt;</span><span class="c1"># &lt;body&gt;</span><span class="c1"># &lt;p class=&quot;title&quot;&gt;</span><span class="c1"># &lt;b&gt;</span><span class="c1"># The Dormouse&#39;s story</span><span class="c1"># &lt;/b&gt;</span><span class="c1"># &lt;/p&gt;</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;</span><span class="c1"># Once upon a time there were three little sisters; and their names were</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;</span><span class="c1"># Elsie</span><span class="c1"># &lt;/a&gt;</span><span class="c1"># ,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;</span><span class="c1"># Lacie</span><span class="c1"># &lt;/a&gt;</span><span class="c1"># and</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;</span><span class="c1"># Tillie</span><span class="c1"># &lt;/a&gt;</span><span class="c1"># ; and they lived at the bottom of a well.</span><span class="c1"># &lt;/p&gt;</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;</span><span class="c1"># ...</span><span class="c1"># &lt;/p&gt;</span><span class="c1"># &lt;/body&gt;</span><span class="c1"># &lt;/html&gt;</span></pre></div></div><p>Here are some simple ways to navigate that data structure:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="o">.</span><span class="n">name</span><span class="c1"># u&#39;title&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="o">.</span><span class="n">string</span><span class="c1"># u&#39;The Dormouse&#39;s story&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="o">.</span><span class="n">parent</span><span class="o">.</span><span class="n">name</span><span class="c1"># u&#39;head&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="c1"># &lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># u&#39;title&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="nb">id</span><span class="o">=</span><span class="s2">&quot;link3&quot;</span><span class="p">)</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;</span></pre></div></div><p>One common task is extracting all the URLs found within a page’s &lt;a&gt; tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">link</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">):</span> <span class="nb">print</span><span class="p">(</span><span class="n">link</span><span class="o">.</span><span class="n">get</span><span class="p">(</span><span class="s1">&#39;href&#39;</span><span class="p">))</span><span class="c1"># http://example.com/elsie</span><span class="c1"># http://example.com/lacie</span><span class="c1"># http://example.com/tillie</span></pre></div></div><p>Another common task is extracting all the text from a page:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">get\_text</span><span class="p">())</span><span class="c1"># The Dormouse&#39;s story</span><span class="c1">#</span><span class="c1"># The Dormouse&#39;s story</span><span class="c1">#</span><span class="c1"># Once upon a time there were three little sisters; and their names were</span><span class="c1"># Elsie,</span><span class="c1"># Lacie and</span><span class="c1"># Tillie;</span><span class="c1"># and they lived at the bottom of a well.</span><span class="c1">#</span><span class="c1"># ...</span></pre></div></div><p>Does this look like what you need? If so, read on.</p></section><section id="installing-beautiful-soup"><h1>Installing Beautiful Soup<a class="headerlink" href="#installing-beautiful-soup" title="Permalink to this heading">¶</a></h1><p>If you’re using a recent version of Debian or Ubuntu Linux, you caninstall Beautiful Soup with the system package manager:</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">apt</kbd>-<kbd class="kbd docutils literal notranslate">get</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">python3</kbd>-<kbd class="kbd docutils literal notranslate">bs4</kbd></kbd></p><p>Beautiful Soup 4 is published through PyPi, so if you can’t install itwith the system packager, you can install it with <code class="docutils literal notranslate"><span class="pre">easy\_install</span></code> or<code class="docutils literal notranslate"><span class="pre">pip</span></code>. The package name is <code class="docutils literal notranslate"><span class="pre">beautifulsoup4</span></code>. Make sure you use theright version of <code class="docutils literal notranslate"><span class="pre">pip</span></code> or <code class="docutils literal notranslate"><span class="pre">easy\_install</span></code> for your Python version(these may be named <code class="docutils literal notranslate"><span class="pre">pip3</span></code> and <code class="docutils literal notranslate"><span class="pre">easy\_install3</span></code> respectively).</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">easy\_install</kbd> <kbd class="kbd docutils literal notranslate">beautifulsoup4</kbd></kbd></p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">pip</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">beautifulsoup4</kbd></kbd></p><p>(The <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> package is <cite>not</cite> what you want. That’sthe previous major release, <a class="reference external" href="http://www.crummy.com/software/BeautifulSoup/bs3/documentation.html">Beautiful Soup 3</a>. Lots of software usesBS3, so it’s still available, but if you’re writing new code youshould install <code class="docutils literal notranslate"><span class="pre">beautifulsoup4</span></code>.)</p><p>If you don’t have <code class="docutils literal notranslate"><span class="pre">easy\_install</span></code> or <code class="docutils literal notranslate"><span class="pre">pip</span></code> installed, you can<a class="reference external" href="http://www.crummy.com/software/BeautifulSoup/download/4.x/">download the Beautiful Soup 4 source tarball</a> andinstall it with <code class="docutils literal notranslate"><span class="pre">setup.py</span></code>.</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">python</kbd> <kbd class="kbd docutils literal notranslate">setup.py</kbd> <kbd class="kbd docutils literal notranslate">install</kbd></kbd></p><p>If all else fails, the license for Beautiful Soup allows you topackage the entire library with your application. You can download thetarball, copy its <code class="docutils literal notranslate"><span class="pre">bs4</span></code> directory into your application’s codebase,and use Beautiful Soup without installing it at all.</p><p>I use Python 3.10 to develop Beautiful Soup, but it should work withother recent versions.</p><section id="installing-a-parser"><span id="parser-installation"></span><h2>Installing a parser<a class="headerlink" href="#installing-a-parser" title="Permalink to this heading">¶</a></h2><p>Beautiful Soup supports the HTML parser included in Python’s standardlibrary, but it also supports a number of third-party Python parsers.One is the <a class="reference external" href="http://lxml.de/">lxml parser</a>. Depending on your setup,you might install lxml with one of these commands:</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">apt</kbd>-<kbd class="kbd docutils literal notranslate">get</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">python</kbd>-<kbd class="kbd docutils literal notranslate">lxml</kbd></kbd></p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">easy\_install</kbd> <kbd class="kbd docutils literal notranslate">lxml</kbd></kbd></p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">pip</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">lxml</kbd></kbd></p><p>Another alternative is the pure-Python <a class="reference external" href="http://code.google.com/p/html5lib/">html5lib parser</a>, which parses HTML the way aweb browser does. Depending on your setup, you might install html5libwith one of these commands:</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">apt</kbd>-<kbd class="kbd docutils literal notranslate">get</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">python</kbd>-<kbd class="kbd docutils literal notranslate">html5lib</kbd></kbd></p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">easy\_install</kbd> <kbd class="kbd docutils literal notranslate">html5lib</kbd></kbd></p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">pip</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">html5lib</kbd></kbd></p><p>This table summarizes the advantages and disadvantages of each parser library:</p><table class="docutils align-default"><tbody><tr class="row-odd"><td><p>Parser</p></td><td><p>Typical usage</p></td><td><p>Advantages</p></td><td><p>Disadvantages</p></td></tr><tr class="row-even"><td><p>Python’s html.parser</p></td><td><p><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(markup,</span> <span class="pre">&quot;html.parser&quot;)</span></code></p></td><td><ul class="simple"><li><p>Batteries included</p></li><li><p>Decent speed</p></li><li><p>Lenient (As of Python 3.2)</p></li></ul></td><td><ul class="simple"><li><p>Not as fast as lxml,less lenient thanhtml5lib.</p></li></ul></td></tr><tr class="row-odd"><td><p>lxml’s HTML parser</p></td><td><p><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(markup,</span> <span class="pre">&quot;lxml&quot;)</span></code></p></td><td><ul class="simple"><li><p>Very fast</p></li><li><p>Lenient</p></li></ul></td><td><ul class="simple"><li><p>External C dependency</p></li></ul></td></tr><tr class="row-even"><td><p>lxml’s XML parser</p></td><td><p><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(markup,</span> <span class="pre">&quot;lxml-xml&quot;)</span></code><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(markup,</span> <span class="pre">&quot;xml&quot;)</span></code></p></td><td><ul class="simple"><li><p>Very fast</p></li><li><p>The only currently supportedXML parser</p></li></ul></td><td><ul class="simple"><li><p>External C dependency</p></li></ul></td></tr><tr class="row-odd"><td><p>html5lib</p></td><td><p><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(markup,</span> <span class="pre">&quot;html5lib&quot;)</span></code></p></td><td><ul class="simple"><li><p>Extremely lenient</p></li><li><p>Parses pages the same way aweb browser does</p></li><li><p>Creates valid HTML5</p></li></ul></td><td><ul class="simple"><li><p>Very slow</p></li><li><p>External Pythondependency</p></li></ul></td></tr></tbody></table><p>If you can, I recommend you install and use lxml for speed.</p><p>Note that if a document is invalid, different parsers will generatedifferent Beautiful Soup trees for it. See <a class="reference internal" href="#differences-between-parsers">Differencesbetween parsers</a> for details.</p></section></section><section id="making-the-soup"><h1>Making the soup<a class="headerlink" href="#making-the-soup" title="Permalink to this heading">¶</a></h1><p>To parse a document, pass it into the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a>constructor. You can pass in a string or an open filehandle:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span><span class="k">with</span> <span class="nb">open</span><span class="p">(</span><span class="s2">&quot;index.html&quot;</span><span class="p">)</span> <span class="k">as</span> <span class="n">fp</span><span class="p">:</span> <span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">fp</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;html&gt;a web page&lt;/html&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span></pre></div></div><p>First, the document is converted to Unicode, and HTML entities areconverted to Unicode characters:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;html&gt;&lt;head&gt;&lt;/head&gt;&lt;body&gt;Sacr&amp;eacute; bleu!&lt;/body&gt;&lt;/html&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;html.parser&quot;</span><span class="p">))</span><span class="c1"># &lt;html&gt;&lt;head&gt;&lt;/head&gt;&lt;body&gt;Sacré bleu!&lt;/body&gt;&lt;/html&gt;</span></pre></div></div><p>Beautiful Soup then parses the document using the best availableparser. It will use an HTML parser unless you specifically tell it touse an XML parser. (See <a class="reference internal" href="#id15">Parsing XML</a>.)</p></section><section id="kinds-of-objects"><h1>Kinds of objects<a class="headerlink" href="#kinds-of-objects" title="Permalink to this heading">¶</a></h1><p>Beautiful Soup transforms a complex HTML document into a complex treeof Python objects. But you’ll only ever have to deal with about four<cite>kinds</cite> of objects: <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>, <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>, <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a>,and <a class="reference internal" href="#bs4.Comment" title="bs4.Comment"><code class="xref py py-class docutils literal notranslate"><span class="pre">Comment</span></code></a>.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.Tag"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Tag</span></span><a class="headerlink" href="#bs4.Tag" title="Permalink to this definition">¶</a></dt><dd><p>A <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> object corresponds to an XML or HTML tag in the original document.</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;b class=&quot;boldest&quot;&gt;Extremely bold&lt;/b&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="nb">type</span><span class="p">(</span><span class="n">tag</span><span class="p">)</span><span class="c1"># &lt;class &#39;bs4.element.Tag&#39;&gt;</span></pre></div></div><p>Tags have a lot of attributes and methods, and I’ll cover most of themin <a class="reference internal" href="#navigating-the-tree">Navigating the tree</a> and <a class="reference internal" href="#searching-the-tree">Searching the tree</a>. For now, the mostimportant features of a tag are its name and attributes.</p><dl class="py attribute"><dt class="sig sig-object py" id="bs4.Tag.name"><span class="sig-name descname"><span class="pre">name</span></span><a class="headerlink" href="#bs4.Tag.name" title="Permalink to this definition">¶</a></dt><dd><p>Every tag has a name:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">tag</span><span class="o">.</span><span class="n">name</span><span class="c1"># &#39;b&#39;</span></pre></div></div><p>If you change a tag’s name, the change will be reflected in anymarkup generated by Beautiful Soup down the line:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">tag</span><span class="o">.</span><span class="n">name</span> <span class="o">=</span> <span class="s2">&quot;blockquote&quot;</span><span class="n">tag</span><span class="c1"># &lt;blockquote class=&quot;boldest&quot;&gt;Extremely bold&lt;/blockquote&gt;</span></pre></div></div></dd></dl><dl class="py attribute"><dt class="sig sig-object py" id="bs4.Tag.attrs"><span class="sig-name descname"><span class="pre">attrs</span></span><a class="headerlink" href="#bs4.Tag.attrs" title="Permalink to this definition">¶</a></dt><dd><p>An HTML or XML tag may have any number of attributes. The tag <code class="docutils literal notranslate"><span class="pre">&lt;b</span><span class="pre">id=&quot;boldest&quot;&gt;</span></code> has an attribute “id” whose value is“boldest”. You can access a tag’s attributes by treating the tag likea dictionary:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">tag</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;b id=&quot;boldest&quot;&gt;bold&lt;/b&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">b</span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="c1"># &#39;boldest&#39;</span></pre></div></div><p>You can access the dictionary of attributes directly as <code class="docutils literal notranslate"><span class="pre">.attrs</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">tag</span><span class="o">.</span><span class="n">attrs</span><span class="c1"># {&#39;id&#39;: &#39;boldest&#39;}</span></pre></div></div><p>You can add, remove, and modify a tag’s attributes. Again, this isdone by treating the tag as a dictionary:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span> <span class="o">=</span> <span class="s1">&#39;verybold&#39;</span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;another-attribute&#39;</span><span class="p">]</span> <span class="o">=</span> <span class="mi">1</span><span class="n">tag</span><span class="c1"># &lt;b another-attribute=&quot;1&quot; id=&quot;verybold&quot;&gt;&lt;/b&gt;</span><span class="k">del</span> <span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="k">del</span> <span class="n">tag</span><span class="p">[</span><span class="s1">&#39;another-attribute&#39;</span><span class="p">]</span><span class="n">tag</span><span class="c1"># &lt;b&gt;bold&lt;/b&gt;</span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="c1"># KeyError: &#39;id&#39;</span><span class="n">tag</span><span class="o">.</span><span class="n">get</span><span class="p">(</span><span class="s1">&#39;id&#39;</span><span class="p">)</span><span class="c1"># None</span></pre></div></div><section id="multi-valued-attributes"><span id="multivalue"></span><h2>Multi-valued attributes<a class="headerlink" href="#multi-valued-attributes" title="Permalink to this heading">¶</a></h2><p>HTML 4 defines a few attributes that can have multiple values. HTML 5removes a couple of them, but defines a few more. The most commonmulti-valued attribute is <code class="docutils literal notranslate"><span class="pre">class</span></code> (that is, a tag can have more thanone CSS class). Others include <code class="docutils literal notranslate"><span class="pre">rel</span></code>, <code class="docutils literal notranslate"><span class="pre">rev</span></code>, <code class="docutils literal notranslate"><span class="pre">accept-charset</span></code>,<code class="docutils literal notranslate"><span class="pre">headers</span></code>, and <code class="docutils literal notranslate"><span class="pre">accesskey</span></code>. By default, Beautiful Soup parses the value(s)of a multi-valued attribute into a list:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">css\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p class=&quot;body&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">css\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># [&#39;body&#39;]</span><span class="n">css\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">css\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># [&#39;body&#39;, &#39;strikeout&#39;]</span></pre></div></div><p>If an attribute <cite>looks</cite> like it has more than one value, but it’s nota multi-valued attribute as defined by any version of the HTMLstandard, Beautiful Soup will leave the attribute alone:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">id\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p id=&quot;my id&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">id\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="c1"># &#39;my id&#39;</span></pre></div></div><p>When you turn a tag back into a string, multiple attribute values areconsolidated:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">rel\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p&gt;Back to the &lt;a rel=&quot;index first&quot;&gt;homepage&lt;/a&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">rel\_soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;rel&#39;</span><span class="p">]</span><span class="c1"># [&#39;index&#39;, &#39;first&#39;]</span><span class="n">rel\_soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;rel&#39;</span><span class="p">]</span> <span class="o">=</span> <span class="p">[</span><span class="s1">&#39;index&#39;</span><span class="p">,</span> <span class="s1">&#39;contents&#39;</span><span class="p">]</span><span class="nb">print</span><span class="p">(</span><span class="n">rel\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">)</span><span class="c1"># &lt;p&gt;Back to the &lt;a rel=&quot;index contents&quot;&gt;homepage&lt;/a&gt;&lt;/p&gt;</span></pre></div></div><p>You can force all attributes to be parsed as strings by passing<code class="docutils literal notranslate"><span class="pre">multi\_valued\_attributes=None</span></code> as a keyword argument into the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">no\_list\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">multi\_valued\_attributes</span><span class="o">=</span><span class="kc">None</span><span class="p">)</span><span class="n">no\_list\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># &#39;body strikeout&#39;</span></pre></div></div><p>You can use <code class="docutils literal notranslate"><span class="pre">get\_attribute\_list</span></code> to get a value that’s always alist, whether or not it’s a multi-valued atribute:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">id\_soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">get\_attribute\_list</span><span class="p">(</span><span class="s1">&#39;id&#39;</span><span class="p">)</span><span class="c1"># [&quot;my id&quot;]</span></pre></div></div><p>If you parse a document as XML, there are no multi-valued attributes:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">xml\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;xml&#39;</span><span class="p">)</span><span class="n">xml\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># &#39;body strikeout&#39;</span></pre></div></div><p>Again, you can configure this using the <code class="docutils literal notranslate"><span class="pre">multi\_valued\_attributes</span></code> argument:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">class\_is\_multi</span><span class="o">=</span> <span class="p">{</span> <span class="s1">&#39;\*&#39;</span> <span class="p">:</span> <span class="s1">&#39;class&#39;</span><span class="p">}</span><span class="n">xml\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;xml&#39;</span><span class="p">,</span> <span class="n">multi\_valued\_attributes</span><span class="o">=</span><span class="n">class\_is\_multi</span><span class="p">)</span><span class="n">xml\_soup</span><span class="o">.</span><span class="n">p</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># [&#39;body&#39;, &#39;strikeout&#39;]</span></pre></div></div><p>You probably won’t need to do this, but if you do, use the defaults asa guide. They implement the rules described in the HTML specification:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4.builder</span> <span class="kn">import</span> <span class="n">builder\_registry</span><span class="n">builder\_registry</span><span class="o">.</span><span class="n">lookup</span><span class="p">(</span><span class="s1">&#39;html&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">DEFAULT\_CDATA\_LIST\_ATTRIBUTES</span></pre></div></div></section></dd></dl></dd></dl><dl class="py class"><dt class="sig sig-object py" id="bs4.NavigableString"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">NavigableString</span></span><a class="headerlink" href="#bs4.NavigableString" title="Permalink to this definition">¶</a></dt><dd></dd></dl><hr class="docutils" /><p>A string corresponds to a bit of text within a tag. Beautiful Soupuses the <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> class to contain these bits of text:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;b class=&quot;boldest&quot;&gt;Extremely bold&lt;/b&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="n">tag</span><span class="o">.</span><span class="n">string</span><span class="c1"># &#39;Extremely bold&#39;</span><span class="nb">type</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">string</span><span class="p">)</span><span class="c1"># &lt;class &#39;bs4.element.NavigableString&#39;&gt;</span></pre></div></div><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> is just like a Python Unicode string, exceptthat it also supports some of the features described in <a class="reference internal" href="#navigating-the-tree">Navigatingthe tree</a> and <a class="reference internal" href="#searching-the-tree">Searching the tree</a>. You can convert a<a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> to a Unicode string with <code class="docutils literal notranslate"><span class="pre">str</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">unicode\_string</span> <span class="o">=</span> <span class="nb">str</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">string</span><span class="p">)</span><span class="n">unicode\_string</span><span class="c1"># &#39;Extremely bold&#39;</span><span class="nb">type</span><span class="p">(</span><span class="n">unicode\_string</span><span class="p">)</span><span class="c1"># &lt;type &#39;str&#39;&gt;</span></pre></div></div><p>You can’t edit a string in place, but you can replace one string withanother, using <a class="reference internal" href="#replace-with"><span class="std std-ref">replace\_with()</span></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">tag</span><span class="o">.</span><span class="n">string</span><span class="o">.</span><span class="n">replace\_with</span><span class="p">(</span><span class="s2">&quot;No longer bold&quot;</span><span class="p">)</span><span class="n">tag</span><span class="c1"># &lt;b class=&quot;boldest&quot;&gt;No longer bold&lt;/b&gt;</span></pre></div></div><p><a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> supports most of the features described in<a class="reference internal" href="#navigating-the-tree">Navigating the tree</a> and <a class="reference internal" href="#searching-the-tree">Searching the tree</a>, but not all ofthem. In particular, since a string can’t contain anything (the way atag may contain a string or another tag), strings don’t support the<code class="docutils literal notranslate"><span class="pre">.contents</span></code> or <code class="docutils literal notranslate"><span class="pre">.string</span></code> attributes, or the <code class="docutils literal notranslate"><span class="pre">find()</span></code> method.</p><p>If you want to use a <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> outside of Beautiful Soup,you should call <code class="docutils literal notranslate"><span class="pre">unicode()</span></code> on it to turn it into a normal PythonUnicode string. If you don’t, your string will carry around areference to the entire Beautiful Soup parse tree, even when you’redone using Beautiful Soup. This is a big waste of memory.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.BeautifulSoup"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">BeautifulSoup</span></span><a class="headerlink" href="#bs4.BeautifulSoup" title="Permalink to this definition">¶</a></dt><dd></dd></dl><hr class="docutils" /><p>The <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object represents the parsed document as awhole. For most purposes, you can treat it as a <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>object. This means it supports most of the methods described in<a class="reference internal" href="#navigating-the-tree">Navigating the tree</a> and <a class="reference internal" href="#searching-the-tree">Searching the tree</a>.</p><p>You can also pass a <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object into one of the methodsdefined in <a class="reference internal" href="#modifying-the-tree">Modifying the tree</a>, just as you would a <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>. Thislets you do things like combine two parsed documents:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">doc</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;document&gt;&lt;content/&gt;INSERT FOOTER HERE&lt;/document&quot;</span><span class="p">,</span> <span class="s2">&quot;xml&quot;</span><span class="p">)</span><span class="n">footer</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;footer&gt;Here&#39;s the footer&lt;/footer&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;xml&quot;</span><span class="p">)</span><span class="n">doc</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="n">text</span><span class="o">=</span><span class="s2">&quot;INSERT FOOTER HERE&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">replace\_with</span><span class="p">(</span><span class="n">footer</span><span class="p">)</span><span class="c1"># &#39;INSERT FOOTER HERE&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">doc</span><span class="p">)</span><span class="c1"># &lt;?xml version=&quot;1.0&quot; encoding=&quot;utf-8&quot;?&gt;</span><span class="c1"># &lt;document&gt;&lt;content/&gt;&lt;footer&gt;Here&#39;s the footer&lt;/footer&gt;&lt;/document&gt;</span></pre></div></div><p>Since the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object doesn’t correspond to an actualHTML or XML tag, it has no name and no attributes. But sometimes it’suseful to look at its <code class="docutils literal notranslate"><span class="pre">.name</span></code>, so it’s been given the special<code class="docutils literal notranslate"><span class="pre">.name</span></code> “[document]”:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">name</span><span class="c1"># &#39;[document]&#39;</span></pre></div></div><section id="special-strings"><h2>Special strings<a class="headerlink" href="#special-strings" title="Permalink to this heading">¶</a></h2><p><a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>, <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>, and<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> cover almost everything you’ll see in anHTML or XML file, but there are a few leftover bits. The main oneyou’ll probably encounter is the <a class="reference internal" href="#bs4.Comment" title="bs4.Comment"><code class="xref py py-class docutils literal notranslate"><span class="pre">Comment</span></code></a>.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.Comment"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Comment</span></span><a class="headerlink" href="#bs4.Comment" title="Permalink to this definition">¶</a></dt><dd></dd></dl><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s2">&quot;&lt;b&gt;&lt;!--Hey, buddy. Want to buy a used parser?--&gt;&lt;/b&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">comment</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">string</span><span class="nb">type</span><span class="p">(</span><span class="n">comment</span><span class="p">)</span><span class="c1"># &lt;class &#39;bs4.element.Comment&#39;&gt;</span></pre></div></div><p>The <a class="reference internal" href="#bs4.Comment" title="bs4.Comment"><code class="xref py py-class docutils literal notranslate"><span class="pre">Comment</span></code></a> object is just a special type of <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">comment</span><span class="c1"># &#39;Hey, buddy. Want to buy a used parser&#39;</span></pre></div></div><p>But when it appears as part of an HTML document, a <a class="reference internal" href="#bs4.Comment" title="bs4.Comment"><code class="xref py py-class docutils literal notranslate"><span class="pre">Comment</span></code></a> isdisplayed with special formatting:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;b&gt;</span><span class="c1"># &lt;!--Hey, buddy. Want to buy a used parser?--&gt;</span><span class="c1"># &lt;/b&gt;</span></pre></div></div><section id="for-html-documents"><h3>For HTML documents<a class="headerlink" href="#for-html-documents" title="Permalink to this heading">¶</a></h3><p>Beautiful Soup defines a few <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclasses tocontain strings found inside specific HTML tags. This makes it easierto pick out the main body of the page, by ignoring strings thatprobably represent programming directives found within thepage. <cite>(These classes are new in Beautiful Soup 4.9.0, and thehtml5lib parser doesn’t use them.)</cite></p><dl class="py class"><dt class="sig sig-object py" id="bs4.Stylesheet"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Stylesheet</span></span><a class="headerlink" href="#bs4.Stylesheet" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass that represents embedded CSSstylesheets; that is, any strings found inside a <code class="docutils literal notranslate"><span class="pre">&lt;style&gt;</span></code> tagduring document parsing.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.Script"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Script</span></span><a class="headerlink" href="#bs4.Script" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass that represents embeddedJavascript; that is, any strings found inside a <code class="docutils literal notranslate"><span class="pre">&lt;script&gt;</span></code> tagduring document parsing.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.Template"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Template</span></span><a class="headerlink" href="#bs4.Template" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass that represents embedded HTMLtemplates; that is, any strings found inside a <code class="docutils literal notranslate"><span class="pre">&lt;template&gt;</span></code> tag duringdocument parsing.</p></section><section id="for-xml-documents"><h3>For XML documents<a class="headerlink" href="#for-xml-documents" title="Permalink to this heading">¶</a></h3><p>Beautiful Soup defines some <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> classes forholding special types of strings that can be found in XMLdocuments. Like <a class="reference internal" href="#bs4.Comment" title="bs4.Comment"><code class="xref py py-class docutils literal notranslate"><span class="pre">Comment</span></code></a>, these classes are subclasses of<a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> that add something extra to the string onoutput.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.Declaration"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Declaration</span></span><a class="headerlink" href="#bs4.Declaration" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass representing the <a class="reference external" href="https://www.w3.org/TR/REC-xml/#sec-prolog-dtd">declaration</a> at the beginning ofan XML document.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.Doctype"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">Doctype</span></span><a class="headerlink" href="#bs4.Doctype" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass representing the <a class="reference external" href="https://www.w3.org/TR/REC-xml/#dt-doctype">document typedeclaration</a> which maybe found near the beginning of an XML document.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.CData"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">CData</span></span><a class="headerlink" href="#bs4.CData" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass that represents a <a class="reference external" href="https://www.w3.org/TR/REC-xml/#sec-cdata-sect">CData section</a>.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.ProcessingInstruction"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">ProcessingInstruction</span></span><a class="headerlink" href="#bs4.ProcessingInstruction" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>A <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> subclass that represents the contentsof an <a class="reference external" href="https://www.w3.org/TR/REC-xml/#sec-pi">XML processing instruction</a>.</p></section></section></section><section id="navigating-the-tree"><h1>Navigating the tree<a class="headerlink" href="#navigating-the-tree" title="Permalink to this heading">¶</a></h1><p>Here’s the “Three sisters” HTML document again:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">html\_doc</span> <span class="o">=</span> <span class="s2">&quot;&quot;&quot;</span><span class="s2">&lt;html&gt;&lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="s2">&lt;body&gt;</span><span class="s2">&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; and their names were</span><span class="s2">&lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="s2">&lt;a href=&quot;http://example.com/lacie&quot; class=&quot;sister&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="s2">&lt;a href=&quot;http://example.com/tillie&quot; class=&quot;sister&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span><span class="s2">and they lived at the bottom of a well.&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span><span class="s2">&quot;&quot;&quot;</span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span></pre></div></div><p>I’ll use this as an example to show you how to move from one part ofa document to another.</p><section id="going-down"><h2>Going down<a class="headerlink" href="#going-down" title="Permalink to this heading">¶</a></h2><p>Tags may contain strings and other tags. These elements are the tag’s<cite>children</cite>. Beautiful Soup provides a lot of different attributes fornavigating and iterating over a tag’s children.</p><p>Note that Beautiful Soup strings don’t support any of theseattributes, because a string can’t have children.</p><section id="navigating-using-tag-names"><h3>Navigating using tag names<a class="headerlink" href="#navigating-using-tag-names" title="Permalink to this heading">¶</a></h3><p>The simplest way to navigate the parse tree is to say the name of thetag you want. If you want the &lt;head&gt; tag, just say <code class="docutils literal notranslate"><span class="pre">soup.head</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">head</span><span class="c1"># &lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span></pre></div></div><p>You can do use this trick again and again to zoom in on a certain partof the parse tree. This code gets the first &lt;b&gt; tag beneath the &lt;body&gt; tag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">body</span><span class="o">.</span><span class="n">b</span><span class="c1"># &lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;</span></pre></div></div><p>Using a tag name as an attribute will give you only the <cite>first</cite> tag by thatname:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span></pre></div></div><p>If you need to get <cite>all</cite> the &lt;a&gt; tags, or anything more complicatedthan the first tag with a certain name, you’ll need to use one of themethods described in <a class="reference internal" href="#searching-the-tree">Searching the tree</a>, such as <cite>find\_all()</cite>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div></section><section id="contents-and-children"><h3><code class="docutils literal notranslate"><span class="pre">.contents</span></code> and <code class="docutils literal notranslate"><span class="pre">.children</span></code><a class="headerlink" href="#contents-and-children" title="Permalink to this heading">¶</a></h3><p>A tag’s children are available in a list called <code class="docutils literal notranslate"><span class="pre">.contents</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">head\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">head</span><span class="n">head\_tag</span><span class="c1"># &lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="n">head\_tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">title\_tag</span> <span class="o">=</span> <span class="n">head\_tag</span><span class="o">.</span><span class="n">contents</span><span class="p">[</span><span class="mi">0</span><span class="p">]</span><span class="n">title\_tag</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span><span class="n">title\_tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;The Dormouse&#39;s story&#39;]</span></pre></div></div><p>The <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object itself has children. In this case, the&lt;html&gt; tag is the child of the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">len</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">contents</span><span class="p">)</span><span class="c1"># 1</span><span class="n">soup</span><span class="o">.</span><span class="n">contents</span><span class="p">[</span><span class="mi">0</span><span class="p">]</span><span class="o">.</span><span class="n">name</span><span class="c1"># &#39;html&#39;</span></pre></div></div><p>A string does not have <code class="docutils literal notranslate"><span class="pre">.contents</span></code>, because it can’t containanything:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">text</span> <span class="o">=</span> <span class="n">title\_tag</span><span class="o">.</span><span class="n">contents</span><span class="p">[</span><span class="mi">0</span><span class="p">]</span><span class="n">text</span><span class="o">.</span><span class="n">contents</span><span class="c1"># AttributeError: &#39;NavigableString&#39; object has no attribute &#39;contents&#39;</span></pre></div></div><p>Instead of getting them as a list, you can iterate over a tag’schildren using the <code class="docutils literal notranslate"><span class="pre">.children</span></code> generator:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">child</span> <span class="ow">in</span> <span class="n">title\_tag</span><span class="o">.</span><span class="n">children</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="n">child</span><span class="p">)</span><span class="c1"># The Dormouse&#39;s story</span></pre></div></div><p>If you want to modify a tag’s children, use the methods described in<a class="reference internal" href="#modifying-the-tree">Modifying the tree</a>. Don’t modify the the <code class="docutils literal notranslate"><span class="pre">.contents</span></code> listdirectly: that can lead to problems that are subtle and difficult tospot.</p></section><section id="descendants"><h3><code class="docutils literal notranslate"><span class="pre">.descendants</span></code><a class="headerlink" href="#descendants" title="Permalink to this heading">¶</a></h3><p>The <code class="docutils literal notranslate"><span class="pre">.contents</span></code> and <code class="docutils literal notranslate"><span class="pre">.children</span></code> attributes only consider a tag’s<cite>direct</cite> children. For instance, the &lt;head&gt; tag has a single directchild–the &lt;title&gt; tag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">head\_tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span></pre></div></div><p>But the &lt;title&gt; tag itself has a child: the string “The Dormouse’sstory”. There’s a sense in which that string is also a child of the&lt;head&gt; tag. The <code class="docutils literal notranslate"><span class="pre">.descendants</span></code> attribute lets you iterate over <cite>all</cite>of a tag’s children, recursively: its direct children, the children ofits direct children, and so on:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">child</span> <span class="ow">in</span> <span class="n">head\_tag</span><span class="o">.</span><span class="n">descendants</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="n">child</span><span class="p">)</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span><span class="c1"># The Dormouse&#39;s story</span></pre></div></div><p>The &lt;head&gt; tag has only one child, but it has two descendants: the&lt;title&gt; tag and the &lt;title&gt; tag’s child. The <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> objectonly has one direct child (the &lt;html&gt; tag), but it has a whole lot ofdescendants:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">len</span><span class="p">(</span><span class="nb">list</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">children</span><span class="p">))</span><span class="c1"># 1</span><span class="nb">len</span><span class="p">(</span><span class="nb">list</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">descendants</span><span class="p">))</span><span class="c1"># 26</span></pre></div></div></section><section id="string"><span id="id5"></span><h3><code class="docutils literal notranslate"><span class="pre">.string</span></code><a class="headerlink" href="#string" title="Permalink to this heading">¶</a></h3><p>If a tag has only one child, and that child is a <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>,the child is made available as <code class="docutils literal notranslate"><span class="pre">.string</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">title\_tag</span><span class="o">.</span><span class="n">string</span><span class="c1"># &#39;The Dormouse&#39;s story&#39;</span></pre></div></div><p>If a tag’s only child is another tag, and <cite>that</cite> tag has a<code class="docutils literal notranslate"><span class="pre">.string</span></code>, then the parent tag is considered to have the same<code class="docutils literal notranslate"><span class="pre">.string</span></code> as its child:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">head\_tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">head\_tag</span><span class="o">.</span><span class="n">string</span><span class="c1"># &#39;The Dormouse&#39;s story&#39;</span></pre></div></div><p>If a tag contains more than one thing, then it’s not clear what<code class="docutils literal notranslate"><span class="pre">.string</span></code> should refer to, so <code class="docutils literal notranslate"><span class="pre">.string</span></code> is defined to be<code class="docutils literal notranslate"><span class="pre">None</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">html</span><span class="o">.</span><span class="n">string</span><span class="p">)</span><span class="c1"># None</span></pre></div></div></section><section id="strings-and-stripped-strings"><span id="string-generators"></span><h3><code class="docutils literal notranslate"><span class="pre">.strings</span></code> and <code class="docutils literal notranslate"><span class="pre">stripped\_strings</span></code><a class="headerlink" href="#strings-and-stripped-strings" title="Permalink to this heading">¶</a></h3><p>If there’s more than one thing inside a tag, you can still look atjust the strings. Use the <code class="docutils literal notranslate"><span class="pre">.strings</span></code> generator:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">string</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">strings</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">(</span><span class="n">string</span><span class="p">))</span> <span class="s1">&#39;</span><span class="se">\n</span><span class="s1">&#39;</span><span class="c1"># &quot;The Dormouse&#39;s story&quot;</span><span class="c1"># &#39;\n&#39;</span><span class="c1"># &#39;\n&#39;</span><span class="c1"># &quot;The Dormouse&#39;s story&quot;</span><span class="c1"># &#39;\n&#39;</span><span class="c1"># &#39;Once upon a time there were three little sisters; and their names were\n&#39;</span><span class="c1"># &#39;Elsie&#39;</span><span class="c1"># &#39;,\n&#39;</span><span class="c1"># &#39;Lacie&#39;</span><span class="c1"># &#39; and\n&#39;</span><span class="c1"># &#39;Tillie&#39;</span><span class="c1"># &#39;;\nand they lived at the bottom of a well.&#39;</span><span class="c1"># &#39;\n&#39;</span><span class="c1"># &#39;...&#39;</span><span class="c1"># &#39;\n&#39;</span></pre></div></div><p>These strings tend to have a lot of extra whitespace, which you canremove by using the <code class="docutils literal notranslate"><span class="pre">.stripped\_strings</span></code> generator instead:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">string</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">stripped\_strings</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">(</span><span class="n">string</span><span class="p">))</span><span class="c1"># &quot;The Dormouse&#39;s story&quot;</span><span class="c1"># &quot;The Dormouse&#39;s story&quot;</span><span class="c1"># &#39;Once upon a time there were three little sisters; and their names were&#39;</span><span class="c1"># &#39;Elsie&#39;</span><span class="c1"># &#39;,&#39;</span><span class="c1"># &#39;Lacie&#39;</span><span class="c1"># &#39;and&#39;</span><span class="c1"># &#39;Tillie&#39;</span><span class="c1"># &#39;;\n and they lived at the bottom of a well.&#39;</span><span class="c1"># &#39;...&#39;</span></pre></div></div><p>Here, strings consisting entirely of whitespace are ignored, andwhitespace at the beginning and end of strings is removed.</p></section></section><section id="going-up"><h2>Going up<a class="headerlink" href="#going-up" title="Permalink to this heading">¶</a></h2><p>Continuing the “family tree” analogy, every tag and every string has a<cite>parent</cite>: the tag that contains it.</p><section id="parent"><span id="id6"></span><h3><code class="docutils literal notranslate"><span class="pre">.parent</span></code><a class="headerlink" href="#parent" title="Permalink to this heading">¶</a></h3><p>You can access an element’s parent with the <code class="docutils literal notranslate"><span class="pre">.parent</span></code> attribute. Inthe example “three sisters” document, the &lt;head&gt; tag is the parentof the &lt;title&gt; tag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">title\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="n">title\_tag</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span><span class="n">title\_tag</span><span class="o">.</span><span class="n">parent</span><span class="c1"># &lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span></pre></div></div><p>The title string itself has a parent: the &lt;title&gt; tag that containsit:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">title\_tag</span><span class="o">.</span><span class="n">string</span><span class="o">.</span><span class="n">parent</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span></pre></div></div><p>The parent of a top-level tag like &lt;html&gt; is the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> objectitself:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">html\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">html</span><span class="nb">type</span><span class="p">(</span><span class="n">html\_tag</span><span class="o">.</span><span class="n">parent</span><span class="p">)</span><span class="c1"># &lt;class &#39;bs4.BeautifulSoup&#39;&gt;</span></pre></div></div><p>And the <code class="docutils literal notranslate"><span class="pre">.parent</span></code> of a <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object is defined as None:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">parent</span><span class="p">)</span><span class="c1"># None</span></pre></div></div></section><section id="parents"><span id="id7"></span><h3><code class="docutils literal notranslate"><span class="pre">.parents</span></code><a class="headerlink" href="#parents" title="Permalink to this heading">¶</a></h3><p>You can iterate over all of an element’s parents with<code class="docutils literal notranslate"><span class="pre">.parents</span></code>. This example uses <code class="docutils literal notranslate"><span class="pre">.parents</span></code> to travel from an &lt;a&gt; tagburied deep within the document, to the very top of the document:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">link</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">link</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="k">for</span> <span class="n">parent</span> <span class="ow">in</span> <span class="n">link</span><span class="o">.</span><span class="n">parents</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="n">parent</span><span class="o">.</span><span class="n">name</span><span class="p">)</span><span class="c1"># p</span><span class="c1"># body</span><span class="c1"># html</span><span class="c1"># [document]</span></pre></div></div></section></section><section id="going-sideways"><h2>Going sideways<a class="headerlink" href="#going-sideways" title="Permalink to this heading">¶</a></h2><p>Consider a simple document like this:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">sibling\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;b&gt;text1&lt;/b&gt;&lt;c&gt;text2&lt;/c&gt;&lt;/a&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;a&gt;</span><span class="c1"># &lt;b&gt;</span><span class="c1"># text1</span><span class="c1"># &lt;/b&gt;</span><span class="c1"># &lt;c&gt;</span><span class="c1"># text2</span><span class="c1"># &lt;/c&gt;</span><span class="c1"># &lt;/a&gt;</span></pre></div></div><p>The &lt;b&gt; tag and the &lt;c&gt; tag are at the same level: they’re both directchildren of the same tag. We call them <cite>siblings</cite>. When a document ispretty-printed, siblings show up at the same indentation level. Youcan also use this relationship in the code you write.</p><section id="next-sibling-and-previous-sibling"><h3><code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_sibling</span></code><a class="headerlink" href="#next-sibling-and-previous-sibling" title="Permalink to this heading">¶</a></h3><p>You can use <code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_sibling</span></code> to navigatebetween page elements that are on the same level of the parse tree:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">next\_sibling</span><span class="c1"># &lt;c&gt;text2&lt;/c&gt;</span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">previous\_sibling</span><span class="c1"># &lt;b&gt;text1&lt;/b&gt;</span></pre></div></div><p>The &lt;b&gt; tag has a <code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code>, but no <code class="docutils literal notranslate"><span class="pre">.previous\_sibling</span></code>,because there’s nothing before the &lt;b&gt; tag <cite>on the same level of thetree</cite>. For the same reason, the &lt;c&gt; tag has a <code class="docutils literal notranslate"><span class="pre">.previous\_sibling</span></code>but no <code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">previous\_sibling</span><span class="p">)</span><span class="c1"># None</span><span class="nb">print</span><span class="p">(</span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">c</span><span class="o">.</span><span class="n">next\_sibling</span><span class="p">)</span><span class="c1"># None</span></pre></div></div><p>The strings “text1” and “text2” are <cite>not</cite> siblings, because they don’thave the same parent:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">string</span><span class="c1"># &#39;text1&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">sibling\_soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">string</span><span class="o">.</span><span class="n">next\_sibling</span><span class="p">)</span><span class="c1"># None</span></pre></div></div><p>In real documents, the <code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> or <code class="docutils literal notranslate"><span class="pre">.previous\_sibling</span></code> of atag will usually be a string containing whitespace. Going back to the“three sisters” document:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># &lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a href=&quot;http://example.com/lacie&quot; class=&quot;sister&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="c1"># &lt;a href=&quot;http://example.com/tillie&quot; class=&quot;sister&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span></pre></div></div><p>You might think that the <code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> of the first &lt;a&gt; tag wouldbe the second &lt;a&gt; tag. But actually, it’s a string: the comma andnewline that separate the first &lt;a&gt; tag from the second:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">link</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">link</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="n">link</span><span class="o">.</span><span class="n">next\_sibling</span><span class="c1"># &#39;,\n &#39;</span></pre></div></div><p>The second &lt;a&gt; tag is actually the <code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> of the comma:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">link</span><span class="o">.</span><span class="n">next\_sibling</span><span class="o">.</span><span class="n">next\_sibling</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;</span></pre></div></div></section><section id="next-siblings-and-previous-siblings"><span id="sibling-generators"></span><h3><code class="docutils literal notranslate"><span class="pre">.next\_siblings</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_siblings</span></code><a class="headerlink" href="#next-siblings-and-previous-siblings" title="Permalink to this heading">¶</a></h3><p>You can iterate over a tag’s siblings with <code class="docutils literal notranslate"><span class="pre">.next\_siblings</span></code> or<code class="docutils literal notranslate"><span class="pre">.previous\_siblings</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">sibling</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">next\_siblings</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">(</span><span class="n">sibling</span><span class="p">))</span><span class="c1"># &#39;,\n&#39;</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;</span><span class="c1"># &#39; and\n&#39;</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;</span><span class="c1"># &#39;; and they lived at the bottom of a well.&#39;</span><span class="k">for</span> <span class="n">sibling</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="nb">id</span><span class="o">=</span><span class="s2">&quot;link3&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">previous\_siblings</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">(</span><span class="n">sibling</span><span class="p">))</span><span class="c1"># &#39; and\n&#39;</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;</span><span class="c1"># &#39;,\n&#39;</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="c1"># &#39;Once upon a time there were three little sisters; and their names were\n&#39;</span></pre></div></div></section></section><section id="going-back-and-forth"><h2>Going back and forth<a class="headerlink" href="#going-back-and-forth" title="Permalink to this heading">¶</a></h2><p>Take a look at the beginning of the “three sisters” document:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># &lt;html&gt;&lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="c1"># &lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span></pre></div></div><p>An HTML parser takes this string of characters and turns it into aseries of events: “open an &lt;html&gt; tag”, “open a &lt;head&gt; tag”, “open a&lt;title&gt; tag”, “add a string”, “close the &lt;title&gt; tag”, “open a &lt;p&gt;tag”, and so on. Beautiful Soup offers tools for reconstructing theinitial parse of the document.</p><section id="next-element-and-previous-element"><span id="element-generators"></span><h3><code class="docutils literal notranslate"><span class="pre">.next\_element</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_element</span></code><a class="headerlink" href="#next-element-and-previous-element" title="Permalink to this heading">¶</a></h3><p>The <code class="docutils literal notranslate"><span class="pre">.next\_element</span></code> attribute of a string or tag points to whateverwas parsed immediately afterwards. It might be the same as<code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code>, but it’s usually drastically different.</p><p>Here’s the final &lt;a&gt; tag in the “three sisters” document. Its<code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> is a string: the conclusion of the sentence that wasinterrupted by the start of the &lt;a&gt; tag.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">last\_a\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="nb">id</span><span class="o">=</span><span class="s2">&quot;link3&quot;</span><span class="p">)</span><span class="n">last\_a\_tag</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;</span><span class="n">last\_a\_tag</span><span class="o">.</span><span class="n">next\_sibling</span><span class="c1"># &#39;;\nand they lived at the bottom of a well.&#39;</span></pre></div></div><p>But the <code class="docutils literal notranslate"><span class="pre">.next\_element</span></code> of that &lt;a&gt; tag, the thing that was parsedimmediately after the &lt;a&gt; tag, is <cite>not</cite> the rest of that sentence:it’s the word “Tillie”:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">last\_a\_tag</span><span class="o">.</span><span class="n">next\_element</span><span class="c1"># &#39;Tillie&#39;</span></pre></div></div><p>That’s because in the original markup, the word “Tillie” appearedbefore that semicolon. The parser encountered an &lt;a&gt; tag, then theword “Tillie”, then the closing &lt;/a&gt; tag, then the semicolon and rest ofthe sentence. The semicolon is on the same level as the &lt;a&gt; tag, but theword “Tillie” was encountered first.</p><p>The <code class="docutils literal notranslate"><span class="pre">.previous\_element</span></code> attribute is the exact opposite of<code class="docutils literal notranslate"><span class="pre">.next\_element</span></code>. It points to whatever element was parsedimmediately before this one:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">last\_a\_tag</span><span class="o">.</span><span class="n">previous\_element</span><span class="c1"># &#39; and\n&#39;</span><span class="n">last\_a\_tag</span><span class="o">.</span><span class="n">previous\_element</span><span class="o">.</span><span class="n">next\_element</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;</span></pre></div></div></section><section id="next-elements-and-previous-elements"><h3><code class="docutils literal notranslate"><span class="pre">.next\_elements</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_elements</span></code><a class="headerlink" href="#next-elements-and-previous-elements" title="Permalink to this heading">¶</a></h3><p>You should get the idea by now. You can use these iterators to moveforward or backward in the document as it was parsed:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">element</span> <span class="ow">in</span> <span class="n">last\_a\_tag</span><span class="o">.</span><span class="n">next\_elements</span><span class="p">:</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">(</span><span class="n">element</span><span class="p">))</span><span class="c1"># &#39;Tillie&#39;</span><span class="c1"># &#39;;\nand they lived at the bottom of a well.&#39;</span><span class="c1"># &#39;\n&#39;</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span><span class="c1"># &#39;...&#39;</span><span class="c1"># &#39;\n&#39;</span></pre></div></div></section></section></section><section id="searching-the-tree"><h1>Searching the tree<a class="headerlink" href="#searching-the-tree" title="Permalink to this heading">¶</a></h1><p>Beautiful Soup defines a lot of methods for searching the parse tree,but they’re all very similar. I’m going to spend a lot of time explainingthe two most popular methods: <code class="docutils literal notranslate"><span class="pre">find()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code>. The othermethods take almost exactly the same arguments, so I’ll just coverthem briefly.</p><p>Once again, I’ll be using the “three sisters” document as an example:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">html\_doc</span> <span class="o">=</span> <span class="s2">&quot;&quot;&quot;</span><span class="s2">&lt;html&gt;&lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="s2">&lt;body&gt;</span><span class="s2">&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; and their names were</span><span class="s2">&lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="s2">&lt;a href=&quot;http://example.com/lacie&quot; class=&quot;sister&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="s2">&lt;a href=&quot;http://example.com/tillie&quot; class=&quot;sister&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span><span class="s2">and they lived at the bottom of a well.&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span><span class="s2">&quot;&quot;&quot;</span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span></pre></div></div><p>By passing in a filter to an argument like <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code>, you canzoom in on the parts of the document you’re interested in.</p><section id="kinds-of-filters"><h2>Kinds of filters<a class="headerlink" href="#kinds-of-filters" title="Permalink to this heading">¶</a></h2><p>Before talking in detail about <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> and similar methods, Iwant to show examples of different filters you can pass into thesemethods. These filters show up again and again, throughout thesearch API. You can use them to filter based on a tag’s name,on its attributes, on the text of a string, or on some combination ofthese.</p><section id="a-string"><span id="id8"></span><h3>A string<a class="headerlink" href="#a-string" title="Permalink to this heading">¶</a></h3><p>The simplest filter is a string. Pass a string to a search method andBeautiful Soup will perform a match against that exact string. Thiscode finds all the &lt;b&gt; tags in the document:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;b&#39;</span><span class="p">)</span><span class="c1"># [&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;]</span></pre></div></div><p>If you pass in a byte string, Beautiful Soup will assume the string isencoded as UTF-8. You can avoid this by passing in a Unicode string instead.</p></section><section id="a-regular-expression"><span id="id9"></span><h3>A regular expression<a class="headerlink" href="#a-regular-expression" title="Permalink to this heading">¶</a></h3><p>If you pass in a regular expression object, Beautiful Soup will filteragainst that regular expression using its <code class="docutils literal notranslate"><span class="pre">search()</span></code> method. This codefinds all the tags whose names start with the letter “b”; in thiscase, the &lt;body&gt; tag and the &lt;b&gt; tag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">import</span> <span class="nn">re</span><span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;^b&quot;</span><span class="p">)):</span> <span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">name</span><span class="p">)</span><span class="c1"># body</span><span class="c1"># b</span></pre></div></div><p>This code finds all the tags whose names contain the letter ‘t’:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;t&quot;</span><span class="p">)):</span> <span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">name</span><span class="p">)</span><span class="c1"># html</span><span class="c1"># title</span></pre></div></div></section><section id="a-list"><span id="id10"></span><h3>A list<a class="headerlink" href="#a-list" title="Permalink to this heading">¶</a></h3><p>If you pass in a list, Beautiful Soup will allow a string matchagainst <cite>any</cite> item in that list. This code finds all the &lt;a&gt; tags<cite>and</cite> all the &lt;b&gt; tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">([</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="s2">&quot;b&quot;</span><span class="p">])</span><span class="c1"># [&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div></section><section id="true"><span id="the-value-true"></span><h3><code class="docutils literal notranslate"><span class="pre">True</span></code><a class="headerlink" href="#true" title="Permalink to this heading">¶</a></h3><p>The value <code class="docutils literal notranslate"><span class="pre">True</span></code> matches everything it can. This code finds <cite>all</cite>the tags in the document, but none of the text strings:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="kc">True</span><span class="p">):</span> <span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">name</span><span class="p">)</span><span class="c1"># html</span><span class="c1"># head</span><span class="c1"># title</span><span class="c1"># body</span><span class="c1"># p</span><span class="c1"># b</span><span class="c1"># p</span><span class="c1"># a</span><span class="c1"># a</span><span class="c1"># a</span><span class="c1"># p</span></pre></div></div></section><section id="a-function"><h3>A function<a class="headerlink" href="#a-function" title="Permalink to this heading">¶</a></h3><p>If none of the other matches work for you, define a function thattakes an element as its only argument. The function should return<code class="docutils literal notranslate"><span class="pre">True</span></code> if the argument matches, and <code class="docutils literal notranslate"><span class="pre">False</span></code> otherwise.</p><p>Here’s a function that returns <code class="docutils literal notranslate"><span class="pre">True</span></code> if a tag defines the “class”attribute but doesn’t define the “id” attribute:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">def</span> <span class="nf">has\_class\_but\_no\_id</span><span class="p">(</span><span class="n">tag</span><span class="p">):</span> <span class="k">return</span> <span class="n">tag</span><span class="o">.</span><span class="n">has\_attr</span><span class="p">(</span><span class="s1">&#39;class&#39;</span><span class="p">)</span> <span class="ow">and</span> <span class="ow">not</span> <span class="n">tag</span><span class="o">.</span><span class="n">has\_attr</span><span class="p">(</span><span class="s1">&#39;id&#39;</span><span class="p">)</span></pre></div></div><p>Pass this function into <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> and you’ll pick up all the &lt;p&gt;tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">has\_class\_but\_no\_id</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;,</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;Once upon a time there were…bottom of a well.&lt;/p&gt;,</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;]</span></pre></div></div><p>This function only picks up the &lt;p&gt; tags. It doesn’t pick up the &lt;a&gt;tags, because those tags define both “class” and “id”. It doesn’t pickup tags like &lt;html&gt; and &lt;title&gt;, because those tags don’t define“class”.</p><p>If you pass in a function to filter on a specific attribute like<code class="docutils literal notranslate"><span class="pre">href</span></code>, the argument passed into the function will be the attributevalue, not the whole tag. Here’s a function that finds all <code class="docutils literal notranslate"><span class="pre">a</span></code> tagswhose <code class="docutils literal notranslate"><span class="pre">href</span></code> attribute <em>does not</em> match a regular expression:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">import</span> <span class="nn">re</span><span class="k">def</span> <span class="nf">not\_lacie</span><span class="p">(</span><span class="n">href</span><span class="p">):</span> <span class="k">return</span> <span class="n">href</span> <span class="ow">and</span> <span class="ow">not</span> <span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;lacie&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">search</span><span class="p">(</span><span class="n">href</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">href</span><span class="o">=</span><span class="n">not\_lacie</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div><p>The function can be as complicated as you need it to be. Here’s afunction that returns <code class="docutils literal notranslate"><span class="pre">True</span></code> if a tag is surrounded by stringobjects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">NavigableString</span><span class="k">def</span> <span class="nf">surrounded\_by\_strings</span><span class="p">(</span><span class="n">tag</span><span class="p">):</span> <span class="k">return</span> <span class="p">(</span><span class="nb">isinstance</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">next\_element</span><span class="p">,</span> <span class="n">NavigableString</span><span class="p">)</span> <span class="ow">and</span> <span class="nb">isinstance</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">previous\_element</span><span class="p">,</span> <span class="n">NavigableString</span><span class="p">))</span><span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">surrounded\_by\_strings</span><span class="p">):</span> <span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">name</span><span class="p">)</span><span class="c1"># body</span><span class="c1"># p</span><span class="c1"># a</span><span class="c1"># a</span><span class="c1"># a</span><span class="c1"># p</span></pre></div></div><p>Now we’re ready to look at the search methods in detail.</p></section></section><section id="find-all"><h2><code class="docutils literal notranslate"><span class="pre">find\_all()</span></code><a class="headerlink" href="#find-all" title="Permalink to this heading">¶</a></h2><p>Method signature: find\_all(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#recursive"><span class="std std-ref">recursive</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#limit"><span class="std std-ref">limit</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>The <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> method looks through a tag’s descendants andretrieves <cite>all</cite> descendants that match your filters. I gave severalexamples in <a class="reference internal" href="#kinds-of-filters">Kinds of filters</a>, but here are a few more:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="nb">id</span><span class="o">=</span><span class="s2">&quot;link2&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span><span class="kn">import</span> <span class="nn">re</span><span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;sisters&quot;</span><span class="p">))</span><span class="c1"># &#39;Once upon a time there were three little sisters; and their names were\n&#39;</span></pre></div></div><p>Some of these should look familiar, but others are new. What does itmean to pass in a value for <code class="docutils literal notranslate"><span class="pre">string</span></code>, or <code class="docutils literal notranslate"><span class="pre">id</span></code>? Why does<code class="docutils literal notranslate"><span class="pre">find\_all(&quot;p&quot;,</span> <span class="pre">&quot;title&quot;)</span></code> find a &lt;p&gt; tag with the CSS class “title”?Let’s look at the arguments to <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code>.</p><section id="the-name-argument"><span id="name"></span><h3>The <code class="docutils literal notranslate"><span class="pre">name</span></code> argument<a class="headerlink" href="#the-name-argument" title="Permalink to this heading">¶</a></h3><p>Pass in a value for <code class="docutils literal notranslate"><span class="pre">name</span></code> and you’ll tell Beautiful Soup to onlyconsider tags with certain names. Text strings will be ignored, aswill tags whose names that don’t match.</p><p>This is the simplest usage:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span></pre></div></div><p>Recall from <a class="reference internal" href="#kinds-of-filters">Kinds of filters</a> that the value to <code class="docutils literal notranslate"><span class="pre">name</span></code> can be <a class="reference internal" href="#a-string">astring</a>, <a class="reference internal" href="#a-regular-expression">a regular expression</a>, <a class="reference internal" href="#a-list">a list</a>, <a class="reference internal" href="#a-function">a function</a>, or <a class="reference internal" href="#the-value-true">the valueTrue</a>.</p></section><section id="the-keyword-arguments"><span id="kwargs"></span><h3>The keyword arguments<a class="headerlink" href="#the-keyword-arguments" title="Permalink to this heading">¶</a></h3><p>Any argument that’s not recognized will be turned into a filter on oneof a tag’s attributes. If you pass in a value for an argument called <code class="docutils literal notranslate"><span class="pre">id</span></code>,Beautiful Soup will filter against each tag’s ‘id’ attribute:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="nb">id</span><span class="o">=</span><span class="s1">&#39;link2&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span></pre></div></div><p>If you pass in a value for <code class="docutils literal notranslate"><span class="pre">href</span></code>, Beautiful Soup will filteragainst each tag’s ‘href’ attribute:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">href</span><span class="o">=</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;elsie&quot;</span><span class="p">))</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span></pre></div></div><p>You can filter an attribute based on <a class="reference internal" href="#a-string">a string</a>, <a class="reference internal" href="#a-regular-expression">a regularexpression</a>, <a class="reference internal" href="#a-list">a list</a>, <a class="reference internal" href="#a-function">a function</a>, or <a class="reference internal" href="#the-value-true">the value True</a>.</p><p>This code finds all tags whose <code class="docutils literal notranslate"><span class="pre">id</span></code> attribute has a value,regardless of what the value is:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="nb">id</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div><p>You can filter multiple attributes at once by passing in more than onekeyword argument:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">href</span><span class="o">=</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;elsie&quot;</span><span class="p">),</span> <span class="nb">id</span><span class="o">=</span><span class="s1">&#39;link1&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span></pre></div></div><p>Some attributes, like the data-\* attributes in HTML 5, have names thatcan’t be used as the names of keyword arguments:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">data\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;div data-foo=&quot;value&quot;&gt;foo!&lt;/div&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">data\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">data</span><span class="o">-</span><span class="n">foo</span><span class="o">=</span><span class="s2">&quot;value&quot;</span><span class="p">)</span><span class="c1"># SyntaxError: keyword can&#39;t be an expression</span></pre></div></div><p>You can use these attributes in searches by putting them into adictionary and passing the dictionary into <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> as the<code class="docutils literal notranslate"><span class="pre">attrs</span></code> argument:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">data\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">attrs</span><span class="o">=</span><span class="p">{</span><span class="s2">&quot;data-foo&quot;</span><span class="p">:</span> <span class="s2">&quot;value&quot;</span><span class="p">})</span><span class="c1"># [&lt;div data-foo=&quot;value&quot;&gt;foo!&lt;/div&gt;]</span></pre></div></div><p>You can’t use a keyword argument to search for HTML’s ‘name’ element,because Beautiful Soup uses the <code class="docutils literal notranslate"><span class="pre">name</span></code> argument to contain the nameof the tag itself. Instead, you can give a value to ‘name’ in the<code class="docutils literal notranslate"><span class="pre">attrs</span></code> argument:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">name\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;input name=&quot;email&quot;/&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">name\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">name</span><span class="o">=</span><span class="s2">&quot;email&quot;</span><span class="p">)</span><span class="c1"># []</span><span class="n">name\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">attrs</span><span class="o">=</span><span class="p">{</span><span class="s2">&quot;name&quot;</span><span class="p">:</span> <span class="s2">&quot;email&quot;</span><span class="p">})</span><span class="c1"># [&lt;input name=&quot;email&quot;/&gt;]</span></pre></div></div></section><section id="searching-by-css-class"><span id="attrs"></span><h3>Searching by CSS class<a class="headerlink" href="#searching-by-css-class" title="Permalink to this heading">¶</a></h3><p>It’s very useful to search for a tag that has a certain CSS class, butthe name of the CSS attribute, “class”, is a reserved word inPython. Using <code class="docutils literal notranslate"><span class="pre">class</span></code> as a keyword argument will give you a syntaxerror. As of Beautiful Soup 4.1.2, you can search by CSS class usingthe keyword argument <code class="docutils literal notranslate"><span class="pre">class\_</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="n">class\_</span><span class="o">=</span><span class="s2">&quot;sister&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div><p>As with any keyword argument, you can pass <code class="docutils literal notranslate"><span class="pre">class\_</span></code> a string, a regularexpression, a function, or <code class="docutils literal notranslate"><span class="pre">True</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">class\_</span><span class="o">=</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;itl&quot;</span><span class="p">))</span><span class="c1"># [&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;]</span><span class="k">def</span> <span class="nf">has\_six\_characters</span><span class="p">(</span><span class="n">css\_class</span><span class="p">):</span> <span class="k">return</span> <span class="n">css\_class</span> <span class="ow">is</span> <span class="ow">not</span> <span class="kc">None</span> <span class="ow">and</span> <span class="nb">len</span><span class="p">(</span><span class="n">css\_class</span><span class="p">)</span> <span class="o">==</span> <span class="mi">6</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">class\_</span><span class="o">=</span><span class="n">has\_six\_characters</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div><p><a class="reference internal" href="#multivalue"><span class="std std-ref">Remember</span></a> that a single tag can have multiplevalues for its “class” attribute. When you search for a tag thatmatches a certain CSS class, you’re matching against <cite>any</cite> of its CSSclasses:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">css\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">css\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="n">class\_</span><span class="o">=</span><span class="s2">&quot;strikeout&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;]</span><span class="n">css\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="n">class\_</span><span class="o">=</span><span class="s2">&quot;body&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;]</span></pre></div></div><p>You can also search for the exact string value of the <code class="docutils literal notranslate"><span class="pre">class</span></code> attribute:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">css\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="n">class\_</span><span class="o">=</span><span class="s2">&quot;body strikeout&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;]</span></pre></div></div><p>But searching for variants of the string value won’t work:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">css\_soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="n">class\_</span><span class="o">=</span><span class="s2">&quot;strikeout body&quot;</span><span class="p">)</span><span class="c1"># []</span></pre></div></div><p>If you want to search for tags that match two or more CSS classes, youshould use a CSS selector:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">css\_soup</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;p.strikeout.body&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;body strikeout&quot;&gt;&lt;/p&gt;]</span></pre></div></div><p>In older versions of Beautiful Soup, which don’t have the <code class="docutils literal notranslate"><span class="pre">class\_</span></code>shortcut, you can use the <code class="docutils literal notranslate"><span class="pre">attrs</span></code> trick mentioned above. Create adictionary whose value for “class” is the string (or regularexpression, or whatever) you want to search for:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="n">attrs</span><span class="o">=</span><span class="p">{</span><span class="s2">&quot;class&quot;</span><span class="p">:</span> <span class="s2">&quot;sister&quot;</span><span class="p">})</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div></section><section id="the-string-argument"><span id="id11"></span><h3>The <code class="docutils literal notranslate"><span class="pre">string</span></code> argument<a class="headerlink" href="#the-string-argument" title="Permalink to this heading">¶</a></h3><p>With <code class="docutils literal notranslate"><span class="pre">string</span></code> you can search for strings instead of tags. As with<code class="docutils literal notranslate"><span class="pre">name</span></code> and the keyword arguments, you can pass in <a class="reference internal" href="#a-string">a string</a>, <a class="reference internal" href="#a-regular-expression">aregular expression</a>, <a class="reference internal" href="#a-list">a list</a>, <a class="reference internal" href="#a-function">a function</a>, or <a class="reference internal" href="#the-value-true">the value True</a>.Here are some examples:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="s2">&quot;Elsie&quot;</span><span class="p">)</span><span class="c1"># [&#39;Elsie&#39;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="p">[</span><span class="s2">&quot;Tillie&quot;</span><span class="p">,</span> <span class="s2">&quot;Elsie&quot;</span><span class="p">,</span> <span class="s2">&quot;Lacie&quot;</span><span class="p">])</span><span class="c1"># [&#39;Elsie&#39;, &#39;Lacie&#39;, &#39;Tillie&#39;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="n">re</span><span class="o">.</span><span class="n">compile</span><span class="p">(</span><span class="s2">&quot;Dormouse&quot;</span><span class="p">))</span><span class="c1"># [&quot;The Dormouse&#39;s story&quot;, &quot;The Dormouse&#39;s story&quot;]</span><span class="k">def</span> <span class="nf">is\_the\_only\_string\_within\_a\_tag</span><span class="p">(</span><span class="n">s</span><span class="p">):</span><span class="w"> </span><span class="sd">&quot;&quot;&quot;Return True if this string is the only child of its parent tag.&quot;&quot;&quot;</span> <span class="k">return</span> <span class="p">(</span><span class="n">s</span> <span class="o">==</span> <span class="n">s</span><span class="o">.</span><span class="n">parent</span><span class="o">.</span><span class="n">string</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="n">is\_the\_only\_string\_within\_a\_tag</span><span class="p">)</span><span class="c1"># [&quot;The Dormouse&#39;s story&quot;, &quot;The Dormouse&#39;s story&quot;, &#39;Elsie&#39;, &#39;Lacie&#39;, &#39;Tillie&#39;, &#39;...&#39;]</span></pre></div></div><p>Although <code class="docutils literal notranslate"><span class="pre">string</span></code> is for finding strings, you can combine it witharguments that find tags: Beautiful Soup will find all tags whose<code class="docutils literal notranslate"><span class="pre">.string</span></code> matches your value for <code class="docutils literal notranslate"><span class="pre">string</span></code>. This code finds the &lt;a&gt;tags whose <code class="docutils literal notranslate"><span class="pre">.string</span></code> is “Elsie”:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="n">string</span><span class="o">=</span><span class="s2">&quot;Elsie&quot;</span><span class="p">)</span><span class="c1"># [&lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">string</span></code> argument is new in Beautiful Soup 4.4.0. In earlierversions it was called <code class="docutils literal notranslate"><span class="pre">text</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="n">text</span><span class="o">=</span><span class="s2">&quot;Elsie&quot;</span><span class="p">)</span><span class="c1"># [&lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span></pre></div></div></section><section id="the-limit-argument"><span id="limit"></span><h3>The <code class="docutils literal notranslate"><span class="pre">limit</span></code> argument<a class="headerlink" href="#the-limit-argument" title="Permalink to this heading">¶</a></h3><p><code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> returns all the tags and strings that match yourfilters. This can take a while if the document is large. If you don’tneed <cite>all</cite> the results, you can pass in a number for <code class="docutils literal notranslate"><span class="pre">limit</span></code>. Thisworks just like the LIMIT keyword in SQL. It tells Beautiful Soup tostop gathering results after it’s found a certain number.</p><p>There are three links in the “three sisters” document, but this codeonly finds the first two:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="n">limit</span><span class="o">=</span><span class="mi">2</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span></pre></div></div></section><section id="the-recursive-argument"><span id="recursive"></span><h3>The <code class="docutils literal notranslate"><span class="pre">recursive</span></code> argument<a class="headerlink" href="#the-recursive-argument" title="Permalink to this heading">¶</a></h3><p>If you call <code class="docutils literal notranslate"><span class="pre">mytag.find\_all()</span></code>, Beautiful Soup will examine all thedescendants of <code class="docutils literal notranslate"><span class="pre">mytag</span></code>: its children, its children’s children, andso on. If you only want Beautiful Soup to consider direct children,you can pass in <code class="docutils literal notranslate"><span class="pre">recursive=False</span></code>. See the difference here:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">html</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">html</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">,</span> <span class="n">recursive</span><span class="o">=</span><span class="kc">False</span><span class="p">)</span><span class="c1"># []</span></pre></div></div><p>Here’s that part of the document:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="o">&lt;</span><span class="n">html</span><span class="o">&gt;</span> <span class="o">&lt;</span><span class="n">head</span><span class="o">&gt;</span> <span class="o">&lt;</span><span class="n">title</span><span class="o">&gt;</span> <span class="n">The</span> <span class="n">Dormouse</span><span class="s1">&#39;s story</span> <span class="o">&lt;/</span><span class="n">title</span><span class="o">&gt;</span> <span class="o">&lt;/</span><span class="n">head</span><span class="o">&gt;</span><span class="o">...</span></pre></div></div><p>The &lt;title&gt; tag is beneath the &lt;html&gt; tag, but it’s not <cite>directly</cite>beneath the &lt;html&gt; tag: the &lt;head&gt; tag is in the way. Beautiful Soupfinds the &lt;title&gt; tag when it’s allowed to look at all descendants ofthe &lt;html&gt; tag, but when <code class="docutils literal notranslate"><span class="pre">recursive=False</span></code> restricts it to the&lt;html&gt; tag’s immediate children, it finds nothing.</p><p>Beautiful Soup offers a lot of tree-searching methods (covered below),and they mostly take the same arguments as <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code>: <code class="docutils literal notranslate"><span class="pre">name</span></code>,<code class="docutils literal notranslate"><span class="pre">attrs</span></code>, <code class="docutils literal notranslate"><span class="pre">string</span></code>, <code class="docutils literal notranslate"><span class="pre">limit</span></code>, and the keyword arguments. But the<code class="docutils literal notranslate"><span class="pre">recursive</span></code> argument is different: <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> and <code class="docutils literal notranslate"><span class="pre">find()</span></code> arethe only methods that support it. Passing <code class="docutils literal notranslate"><span class="pre">recursive=False</span></code> into amethod like <code class="docutils literal notranslate"><span class="pre">find\_parents()</span></code> wouldn’t be very useful.</p></section></section><section id="calling-a-tag-is-like-calling-find-all"><h2>Calling a tag is like calling <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code><a class="headerlink" href="#calling-a-tag-is-like-calling-find-all" title="Permalink to this heading">¶</a></h2><p>Because <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> is the most popular method in the BeautifulSoup search API, you can use a shortcut for it. If you treat the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object or a <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> object as though it were afunction, then it’s the same as calling <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> on thatobject. These two lines of code are equivalent:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span><span class="n">soup</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span></pre></div></div><p>These two lines are also equivalent:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">title</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span></pre></div></div></section><section id="find"><h2><code class="docutils literal notranslate"><span class="pre">find()</span></code><a class="headerlink" href="#find" title="Permalink to this heading">¶</a></h2><p>Method signature: find(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#recursive"><span class="std std-ref">recursive</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>The <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> method scans the entire document looking forresults, but sometimes you only want to find one result. If you know adocument only has one &lt;body&gt; tag, it’s a waste of time to scan theentire document looking for more. Rather than passing in <code class="docutils literal notranslate"><span class="pre">limit=1</span></code>every time you call <code class="docutils literal notranslate"><span class="pre">find\_all</span></code>, you can use the <code class="docutils literal notranslate"><span class="pre">find()</span></code>method. These two lines of code are <cite>nearly</cite> equivalent:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;title&#39;</span><span class="p">,</span> <span class="n">limit</span><span class="o">=</span><span class="mi">1</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s1">&#39;title&#39;</span><span class="p">)</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span></pre></div></div><p>The only difference is that <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> returns a list containingthe single result, and <code class="docutils literal notranslate"><span class="pre">find()</span></code> just returns the result.</p><p>If <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> can’t find anything, it returns an empty list. If<code class="docutils literal notranslate"><span class="pre">find()</span></code> can’t find anything, it returns <code class="docutils literal notranslate"><span class="pre">None</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;nosuchtag&quot;</span><span class="p">))</span><span class="c1"># None</span></pre></div></div><p>Remember the <code class="docutils literal notranslate"><span class="pre">soup.head.title</span></code> trick from <a class="reference internal" href="#navigating-using-tag-names">Navigating using tagnames</a>? That trick works by repeatedly calling <code class="docutils literal notranslate"><span class="pre">find()</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">head</span><span class="o">.</span><span class="n">title</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;head&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span></pre></div></div></section><section id="find-parents-and-find-parent"><h2><code class="docutils literal notranslate"><span class="pre">find\_parents()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_parent()</span></code><a class="headerlink" href="#find-parents-and-find-parent" title="Permalink to this heading">¶</a></h2><p>Method signature: find\_parents(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#limit"><span class="std std-ref">limit</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>Method signature: find\_parent(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>I spent a lot of time above covering <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> and<code class="docutils literal notranslate"><span class="pre">find()</span></code>. The Beautiful Soup API defines ten other methods forsearching the tree, but don’t be afraid. Five of these methods arebasically the same as <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code>, and the other five are basicallythe same as <code class="docutils literal notranslate"><span class="pre">find()</span></code>. The only differences are in what parts of thetree they search.</p><p>First let’s consider <code class="docutils literal notranslate"><span class="pre">find\_parents()</span></code> and<code class="docutils literal notranslate"><span class="pre">find\_parent()</span></code>. Remember that <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> and <code class="docutils literal notranslate"><span class="pre">find()</span></code> worktheir way down the tree, looking at tag’s descendants. These methodsdo the opposite: they work their way <cite>up</cite> the tree, looking at a tag’s(or a string’s) parents. Let’s try them out, starting from a stringburied deep in the “three daughters” document:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">a\_string</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="s2">&quot;Lacie&quot;</span><span class="p">)</span><span class="n">a\_string</span><span class="c1"># &#39;Lacie&#39;</span><span class="n">a\_string</span><span class="o">.</span><span class="n">find\_parents</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span><span class="n">a\_string</span><span class="o">.</span><span class="n">find\_parent</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">)</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; and their names were</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span><span class="c1"># and they lived at the bottom of a well.&lt;/p&gt;</span><span class="n">a\_string</span><span class="o">.</span><span class="n">find\_parents</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="n">class\_</span><span class="o">=</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># []</span></pre></div></div><p>One of the three &lt;a&gt; tags is the direct parent of the string inquestion, so our search finds it. One of the three &lt;p&gt; tags is anindirect parent of the string, and our search finds that aswell. There’s a &lt;p&gt; tag with the CSS class “title” <cite>somewhere</cite> in thedocument, but it’s not one of this string’s parents, so we can’t findit with <code class="docutils literal notranslate"><span class="pre">find\_parents()</span></code>.</p><p>You may have made the connection between <code class="docutils literal notranslate"><span class="pre">find\_parent()</span></code> and<code class="docutils literal notranslate"><span class="pre">find\_parents()</span></code>, and the <a class="reference internal" href="#parent">.parent</a> and <a class="reference internal" href="#parents">.parents</a> attributesmentioned earlier. The connection is very strong. These search methodsactually use <code class="docutils literal notranslate"><span class="pre">.parents</span></code> to iterate over all the parents, and checkeach one against the provided filter to see if it matches.</p></section><section id="find-next-siblings-and-find-next-sibling"><h2><code class="docutils literal notranslate"><span class="pre">find\_next\_siblings()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_next\_sibling()</span></code><a class="headerlink" href="#find-next-siblings-and-find-next-sibling" title="Permalink to this heading">¶</a></h2><p>Method signature: find\_next\_siblings(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#limit"><span class="std std-ref">limit</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>Method signature: find\_next\_sibling(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>These methods use <a class="reference internal" href="#sibling-generators"><span class="std std-ref">.next\_siblings</span></a> toiterate over the rest of an element’s siblings in the tree. The<code class="docutils literal notranslate"><span class="pre">find\_next\_siblings()</span></code> method returns all the siblings that match,and <code class="docutils literal notranslate"><span class="pre">find\_next\_sibling()</span></code> only returns the first one:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">first\_link</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">first\_link</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="n">first\_link</span><span class="o">.</span><span class="n">find\_next\_siblings</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">first\_story\_paragraph</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="s2">&quot;story&quot;</span><span class="p">)</span><span class="n">first\_story\_paragraph</span><span class="o">.</span><span class="n">find\_next\_sibling</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">)</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span></pre></div></div></section><section id="find-previous-siblings-and-find-previous-sibling"><h2><code class="docutils literal notranslate"><span class="pre">find\_previous\_siblings()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_previous\_sibling()</span></code><a class="headerlink" href="#find-previous-siblings-and-find-previous-sibling" title="Permalink to this heading">¶</a></h2><p>Method signature: find\_previous\_siblings(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#limit"><span class="std std-ref">limit</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>Method signature: find\_previous\_sibling(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>These methods use <a class="reference internal" href="#sibling-generators"><span class="std std-ref">.previous\_siblings</span></a> to iterate over an element’ssiblings that precede it in the tree. The <code class="docutils literal notranslate"><span class="pre">find\_previous\_siblings()</span></code>method returns all the siblings that match, and<code class="docutils literal notranslate"><span class="pre">find\_previous\_sibling()</span></code> only returns the first one:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">last\_link</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="nb">id</span><span class="o">=</span><span class="s2">&quot;link3&quot;</span><span class="p">)</span><span class="n">last\_link</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;</span><span class="n">last\_link</span><span class="o">.</span><span class="n">find\_previous\_siblings</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span><span class="n">first\_story\_paragraph</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">,</span> <span class="s2">&quot;story&quot;</span><span class="p">)</span><span class="n">first\_story\_paragraph</span><span class="o">.</span><span class="n">find\_previous\_sibling</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">)</span><span class="c1"># &lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span></pre></div></div></section><section id="find-all-next-and-find-next"><h2><code class="docutils literal notranslate"><span class="pre">find\_all\_next()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_next()</span></code><a class="headerlink" href="#find-all-next-and-find-next" title="Permalink to this heading">¶</a></h2><p>Method signature: find\_all\_next(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#limit"><span class="std std-ref">limit</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>Method signature: find\_next(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>These methods use <a class="reference internal" href="#element-generators"><span class="std std-ref">.next\_elements</span></a> toiterate over whatever tags and strings that come after it in thedocument. The <code class="docutils literal notranslate"><span class="pre">find\_all\_next()</span></code> method returns all matches, and<code class="docutils literal notranslate"><span class="pre">find\_next()</span></code> only returns the first match:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">first\_link</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">first\_link</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="n">first\_link</span><span class="o">.</span><span class="n">find\_all\_next</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="kc">True</span><span class="p">)</span><span class="c1"># [&#39;Elsie&#39;, &#39;,\n&#39;, &#39;Lacie&#39;, &#39; and\n&#39;, &#39;Tillie&#39;,</span><span class="c1"># &#39;;\nand they lived at the bottom of a well.&#39;, &#39;\n&#39;, &#39;...&#39;, &#39;\n&#39;]</span><span class="n">first\_link</span><span class="o">.</span><span class="n">find\_next</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">)</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span></pre></div></div><p>In the first example, the string “Elsie” showed up, even though it wascontained within the &lt;a&gt; tag we started from. In the second example,the last &lt;p&gt; tag in the document showed up, even though it’s not inthe same part of the tree as the &lt;a&gt; tag we started from. For thesemethods, all that matters is that an element match the filter, andshow up later in the document than the starting element.</p></section><section id="find-all-previous-and-find-previous"><h2><code class="docutils literal notranslate"><span class="pre">find\_all\_previous()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_previous()</span></code><a class="headerlink" href="#find-all-previous-and-find-previous" title="Permalink to this heading">¶</a></h2><p>Method signature: find\_all\_previous(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#limit"><span class="std std-ref">limit</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>Method signature: find\_previous(<a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>)</p><p>These methods use <a class="reference internal" href="#element-generators"><span class="std std-ref">.previous\_elements</span></a> toiterate over the tags and strings that came before it in thedocument. The <code class="docutils literal notranslate"><span class="pre">find\_all\_previous()</span></code> method returns all matches, and<code class="docutils literal notranslate"><span class="pre">find\_previous()</span></code> only returns the first match:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">first\_link</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">first\_link</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span><span class="n">first\_link</span><span class="o">.</span><span class="n">find\_all\_previous</span><span class="p">(</span><span class="s2">&quot;p&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; ...&lt;/p&gt;,</span><span class="c1"># &lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;]</span><span class="n">first\_link</span><span class="o">.</span><span class="n">find\_previous</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># &lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;</span></pre></div></div><p>The call to <code class="docutils literal notranslate"><span class="pre">find\_all\_previous(&quot;p&quot;)</span></code> found the first paragraph inthe document (the one with class=”title”), but it also finds thesecond paragraph, the &lt;p&gt; tag that contains the &lt;a&gt; tag we startedwith. This shouldn’t be too surprising: we’re looking at all the tagsthat show up earlier in the document than the one we started with. A&lt;p&gt; tag that contains an &lt;a&gt; tag must have shown up before the &lt;a&gt;tag it contains.</p></section><section id="css-selectors-through-the-css-property"><h2>CSS selectors through the <code class="docutils literal notranslate"><span class="pre">.css</span></code> property<a class="headerlink" href="#css-selectors-through-the-css-property" title="Permalink to this heading">¶</a></h2><p><a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> and <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> objects support CSS selectors throughtheir <code class="docutils literal notranslate"><span class="pre">.css</span></code> property. The actual selector implementation is handledby the <a class="reference external" href="https://facelessuser.github.io/soupsieve/">Soup Sieve</a>package, available on PyPI as <code class="docutils literal notranslate"><span class="pre">soupsieve</span></code>. If you installedBeautiful Soup through <code class="docutils literal notranslate"><span class="pre">pip</span></code>, Soup Sieve was installed at the sametime, so you don’t have to do anything extra.</p><p>The Soup Sieve documentation lists <a class="reference external" href="https://facelessuser.github.io/soupsieve/selectors/">all the currently supported CSSselectors</a>, buthere are some of the basics. You can find tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;title&quot;</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;p:nth-of-type(3)&quot;</span><span class="p">)</span><span class="c1"># [&lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;]</span></pre></div></div><p>Find tags beneath other tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;body a&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;html head title&quot;</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span></pre></div></div><p>Find tags <cite>directly</cite> beneath other tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;head &gt; title&quot;</span><span class="p">)</span><span class="c1"># [&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;p &gt; a&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;p &gt; a:nth-of-type(2)&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;p &gt; #link1&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;body &gt; a&quot;</span><span class="p">)</span><span class="c1"># []</span></pre></div></div><p>Find the siblings of tags:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;#link1 ~ .sister&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;#link1 + .sister&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span></pre></div></div><p>Find tags by CSS class:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;.sister&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;[class~=sister]&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div><p>Find tags by ID:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;#link1&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;a#link2&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span></pre></div></div><p>Find tags that match any selector from a list of selectors:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;#link1,#link2&quot;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;]</span></pre></div></div><p>Test for the existence of an attribute:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s1">&#39;a[href]&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span></pre></div></div><p>Find tags by attribute value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s1">&#39;a[href=&quot;http://example.com/elsie&quot;]&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s1">&#39;a[href^=&quot;http://example.com/&quot;]&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s1">&#39;a[href$=&quot;tillie&quot;]&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s1">&#39;a[href\*=&quot;.com/el&quot;]&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;]</span></pre></div></div><p>There’s also a method called <code class="docutils literal notranslate"><span class="pre">select\_one()</span></code>, which finds only thefirst tag that matches a selector:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select\_one</span><span class="p">(</span><span class="s2">&quot;.sister&quot;</span><span class="p">)</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span></pre></div></div><p>As a convenience, you can call <code class="docutils literal notranslate"><span class="pre">select()</span></code> and <code class="docutils literal notranslate"><span class="pre">select\_one()</span></code> candirectly on the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> or <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> object, omitting the<code class="docutils literal notranslate"><span class="pre">.css</span></code> property:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s1">&#39;a[href$=&quot;tillie&quot;]&#39;</span><span class="p">)</span><span class="c1"># [&lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;]</span><span class="n">soup</span><span class="o">.</span><span class="n">select\_one</span><span class="p">(</span><span class="s2">&quot;.sister&quot;</span><span class="p">)</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;</span></pre></div></div><p>CSS selector support is a convenience for people who already know theCSS selector syntax. You can do all of this with the Beautiful SoupAPI. If CSS selectors are all you need, you should skip Beautiful Soupaltogether and parse the document with <code class="docutils literal notranslate"><span class="pre">lxml</span></code>: it’s a lotfaster. But Soup Sieve lets you <cite>combine</cite> CSS selectors with theBeautiful Soup API.</p><section id="advanced-soup-sieve-features"><h3>Advanced Soup Sieve features<a class="headerlink" href="#advanced-soup-sieve-features" title="Permalink to this heading">¶</a></h3><p>Soup Sieve offers a substantial API beyond the <code class="docutils literal notranslate"><span class="pre">select()</span></code> and<code class="docutils literal notranslate"><span class="pre">select\_one()</span></code> methods, and you can access most of that API throughthe <code class="docutils literal notranslate"><span class="pre">.css</span></code> attribute of <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> or <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a>. What followsis just a list of the supported methods; see <a class="reference external" href="https://facelessuser.github.io/soupsieve/">the Soup Sievedocumentation</a> for fulldocumentation.</p><p>The <code class="docutils literal notranslate"><span class="pre">iselect()</span></code> method works the same as <code class="docutils literal notranslate"><span class="pre">select()</span></code>, but itreturns a generator instead of a list:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">[</span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span> <span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">iselect</span><span class="p">(</span><span class="s2">&quot;.sister&quot;</span><span class="p">)]</span><span class="c1"># [&#39;link1&#39;, &#39;link2&#39;, &#39;link3&#39;]</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">closest()</span></code> method returns the nearest parent of a given <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>that matches a CSS selector, similar to Beautiful Soup’s<code class="docutils literal notranslate"><span class="pre">find\_parent()</span></code> method:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">elsie</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select\_one</span><span class="p">(</span><span class="s2">&quot;.sister&quot;</span><span class="p">)</span><span class="n">elsie</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">closest</span><span class="p">(</span><span class="s2">&quot;p.story&quot;</span><span class="p">)</span><span class="c1"># &lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; and their names were</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span><span class="c1"># and they lived at the bottom of a well.&lt;/p&gt;</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">match()</span></code> method returns a boolean depending on whether or not aspecific <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> matches a selector:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># elsie.css.match(&quot;#link1&quot;)</span><span class="kc">True</span><span class="c1"># elsie.css.match(&quot;#link2&quot;)</span><span class="kc">False</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">filter()</span></code> method returns the subset of a tag’s direct childrenthat match a selector:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">[</span><span class="n">tag</span><span class="o">.</span><span class="n">string</span> <span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find</span><span class="p">(</span><span class="s1">&#39;p&#39;</span><span class="p">,</span> <span class="s1">&#39;story&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">filter</span><span class="p">(</span><span class="s1">&#39;a&#39;</span><span class="p">)]</span><span class="c1"># [&#39;Elsie&#39;, &#39;Lacie&#39;, &#39;Tillie&#39;]</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">escape()</span></code> method escapes CSS identifiers that would otherwisebe invalid:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">escape</span><span class="p">(</span><span class="s2">&quot;1-strange-identifier&quot;</span><span class="p">)</span><span class="c1"># &#39;\\31 -strange-identifier&#39;</span></pre></div></div></section><section id="namespaces-in-css-selectors"><h3>Namespaces in CSS selectors<a class="headerlink" href="#namespaces-in-css-selectors" title="Permalink to this heading">¶</a></h3><p>If you’ve parsed XML that defines namespaces, you can use them in CSSselectors.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span><span class="n">xml</span> <span class="o">=</span> <span class="s2">&quot;&quot;&quot;&lt;tag xmlns:ns1=&quot;http://namespace1/&quot; xmlns:ns2=&quot;http://namespace2/&quot;&gt;</span><span class="s2"> &lt;ns1:child&gt;I&#39;m in namespace 1&lt;/ns1:child&gt;</span><span class="s2"> &lt;ns2:child&gt;I&#39;m in namespace 2&lt;/ns2:child&gt;</span><span class="s2">&lt;/tag&gt; &quot;&quot;&quot;</span><span class="n">namespace\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">xml</span><span class="p">,</span> <span class="s2">&quot;xml&quot;</span><span class="p">)</span><span class="n">namespace\_soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;child&quot;</span><span class="p">)</span><span class="c1"># [&lt;ns1:child&gt;I&#39;m in namespace 1&lt;/ns1:child&gt;, &lt;ns2:child&gt;I&#39;m in namespace 2&lt;/ns2:child&gt;]</span><span class="n">namespace\_soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;ns1|child&quot;</span><span class="p">)</span><span class="c1"># [&lt;ns1:child&gt;I&#39;m in namespace 1&lt;/ns1:child&gt;]</span></pre></div></div><p>Beautiful Soup tries to use namespace prefixes that make sense basedon what it saw while parsing the document, but you can always provideyour own dictionary of abbreviations:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">namespaces</span> <span class="o">=</span> <span class="nb">dict</span><span class="p">(</span><span class="n">first</span><span class="o">=</span><span class="s2">&quot;http://namespace1/&quot;</span><span class="p">,</span> <span class="n">second</span><span class="o">=</span><span class="s2">&quot;http://namespace2/&quot;</span><span class="p">)</span><span class="n">namespace\_soup</span><span class="o">.</span><span class="n">css</span><span class="o">.</span><span class="n">select</span><span class="p">(</span><span class="s2">&quot;second|child&quot;</span><span class="p">,</span> <span class="n">namespaces</span><span class="o">=</span><span class="n">namespaces</span><span class="p">)</span><span class="c1"># [&lt;ns1:child&gt;I&#39;m in namespace 2&lt;/ns1:child&gt;]</span></pre></div></div></section><section id="history-of-css-selector-support"><h3>History of CSS selector support<a class="headerlink" href="#history-of-css-selector-support" title="Permalink to this heading">¶</a></h3><p>The <code class="docutils literal notranslate"><span class="pre">.css</span></code> property was added in Beautiful Soup 4.12.0. Prior to this,only the <code class="docutils literal notranslate"><span class="pre">.select()</span></code> and <code class="docutils literal notranslate"><span class="pre">.select\_one()</span></code> convenience methods weresupported.</p><p>The Soup Sieve integration was added in Beautiful Soup 4.7.0. Earlierversions had the <code class="docutils literal notranslate"><span class="pre">.select()</span></code> method, but only the most commonly-usedCSS selectors were supported.</p></section></section></section><section id="modifying-the-tree"><h1>Modifying the tree<a class="headerlink" href="#modifying-the-tree" title="Permalink to this heading">¶</a></h1><p>Beautiful Soup’s main strength is in searching the parse tree, but youcan also modify the tree and write your changes as a new HTML or XMLdocument.</p><section id="changing-tag-names-and-attributes"><h2>Changing tag names and attributes<a class="headerlink" href="#changing-tag-names-and-attributes" title="Permalink to this heading">¶</a></h2><p>I covered this earlier, in <a class="reference internal" href="#bs4.Tag.attrs" title="bs4.Tag.attrs"><code class="xref py py-attr docutils literal notranslate"><span class="pre">Tag.attrs</span></code></a>, but it bears repeating. Youcan rename a tag, change the values of its attributes, add newattributes, and delete attributes:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;b class=&quot;boldest&quot;&gt;Extremely bold&lt;/b&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="n">tag</span><span class="o">.</span><span class="n">name</span> <span class="o">=</span> <span class="s2">&quot;blockquote&quot;</span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span> <span class="o">=</span> <span class="s1">&#39;verybold&#39;</span><span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span> <span class="o">=</span> <span class="mi">1</span><span class="n">tag</span><span class="c1"># &lt;blockquote class=&quot;verybold&quot; id=&quot;1&quot;&gt;Extremely bold&lt;/blockquote&gt;</span><span class="k">del</span> <span class="n">tag</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="k">del</span> <span class="n">tag</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="n">tag</span><span class="c1"># &lt;blockquote&gt;Extremely bold&lt;/blockquote&gt;</span></pre></div></div></section><section id="modifying-string"><h2>Modifying <code class="docutils literal notranslate"><span class="pre">.string</span></code><a class="headerlink" href="#modifying-string" title="Permalink to this heading">¶</a></h2><p>If you set a tag’s <code class="docutils literal notranslate"><span class="pre">.string</span></code> attribute to a new string, the tag’s contents arereplaced with that string:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">tag</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s2">&quot;New link text.&quot;</span><span class="n">tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;New link text.&lt;/a&gt;</span></pre></div></div><p>Be careful: if the tag contained other tags, they and all theircontents will be destroyed.</p></section><section id="append"><h2><code class="docutils literal notranslate"><span class="pre">append()</span></code><a class="headerlink" href="#append" title="Permalink to this heading">¶</a></h2><p>You can add to a tag’s contents with <code class="docutils literal notranslate"><span class="pre">Tag.append()</span></code>. It works justlike calling <code class="docutils literal notranslate"><span class="pre">.append()</span></code> on a Python list:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;Foo&lt;/a&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="s2">&quot;Bar&quot;</span><span class="p">)</span><span class="n">soup</span><span class="c1"># &lt;a&gt;FooBar&lt;/a&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;Foo&#39;, &#39;Bar&#39;]</span></pre></div></div></section><section id="extend"><h2><code class="docutils literal notranslate"><span class="pre">extend()</span></code><a class="headerlink" href="#extend" title="Permalink to this heading">¶</a></h2><p>Starting in Beautiful Soup 4.7.0, <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> also supports a methodcalled <code class="docutils literal notranslate"><span class="pre">.extend()</span></code>, which adds every element of a list to a <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>,in order:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;Soup&lt;/a&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">extend</span><span class="p">([</span><span class="s2">&quot;&#39;s&quot;</span><span class="p">,</span> <span class="s2">&quot; &quot;</span><span class="p">,</span> <span class="s2">&quot;on&quot;</span><span class="p">])</span><span class="n">soup</span><span class="c1"># &lt;a&gt;Soup&#39;s on&lt;/a&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;Soup&#39;, &#39;&#39;s&#39;, &#39; &#39;, &#39;on&#39;]</span></pre></div></div></section><section id="navigablestring-and-new-tag"><h2><code class="docutils literal notranslate"><span class="pre">NavigableString()</span></code> and <code class="docutils literal notranslate"><span class="pre">.new\_tag()</span></code><a class="headerlink" href="#navigablestring-and-new-tag" title="Permalink to this heading">¶</a></h2><p>If you need to add a string to a document, no problem–you can pass aPython string in to <code class="docutils literal notranslate"><span class="pre">append()</span></code>, or you can call the <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>constructor:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">NavigableString</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;b&gt;&lt;/b&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="n">tag</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="s2">&quot;Hello&quot;</span><span class="p">)</span><span class="n">new\_string</span> <span class="o">=</span> <span class="n">NavigableString</span><span class="p">(</span><span class="s2">&quot; there&quot;</span><span class="p">)</span><span class="n">tag</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="n">new\_string</span><span class="p">)</span><span class="n">tag</span><span class="c1"># &lt;b&gt;Hello there.&lt;/b&gt;</span><span class="n">tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;Hello&#39;, &#39; there&#39;]</span></pre></div></div><p>If you want to create a comment or some other subclass of<a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>, just call the constructor:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">Comment</span><span class="n">new\_comment</span> <span class="o">=</span> <span class="n">Comment</span><span class="p">(</span><span class="s2">&quot;Nice to see you.&quot;</span><span class="p">)</span><span class="n">tag</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="n">new\_comment</span><span class="p">)</span><span class="n">tag</span><span class="c1"># &lt;b&gt;Hello there&lt;!--Nice to see you.--&gt;&lt;/b&gt;</span><span class="n">tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;Hello&#39;, &#39; there&#39;, &#39;Nice to see you.&#39;]</span></pre></div></div><p><cite>(This is a new feature in Beautiful Soup 4.4.0.)</cite></p><p>What if you need to create a whole new tag? The best solution is tocall the factory method <code class="docutils literal notranslate"><span class="pre">BeautifulSoup.new\_tag()</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;b&gt;&lt;/b&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">original\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="n">new\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">,</span> <span class="n">href</span><span class="o">=</span><span class="s2">&quot;http://www.example.com&quot;</span><span class="p">)</span><span class="n">original\_tag</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="n">new\_tag</span><span class="p">)</span><span class="n">original\_tag</span><span class="c1"># &lt;b&gt;&lt;a href=&quot;http://www.example.com&quot;&gt;&lt;/a&gt;&lt;/b&gt;</span><span class="n">new\_tag</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s2">&quot;Link text.&quot;</span><span class="n">original\_tag</span><span class="c1"># &lt;b&gt;&lt;a href=&quot;http://www.example.com&quot;&gt;Link text.&lt;/a&gt;&lt;/b&gt;</span></pre></div></div><p>Only the first argument, the tag name, is required.</p></section><section id="insert"><h2><code class="docutils literal notranslate"><span class="pre">insert()</span></code><a class="headerlink" href="#insert" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">Tag.insert()</span></code> is just like <code class="docutils literal notranslate"><span class="pre">Tag.append()</span></code>, except the new elementdoesn’t necessarily go at the end of its parent’s<code class="docutils literal notranslate"><span class="pre">.contents</span></code>. It’ll be inserted at whatever numeric position yousay. It works just like <code class="docutils literal notranslate"><span class="pre">.insert()</span></code> on a Python list:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">tag</span><span class="o">.</span><span class="n">insert</span><span class="p">(</span><span class="mi">1</span><span class="p">,</span> <span class="s2">&quot;but did not endorse &quot;</span><span class="p">)</span><span class="n">tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;I linked to but did not endorse &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;</span><span class="n">tag</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;I linked to &#39;, &#39;but did not endorse&#39;, &lt;i&gt;example.com&lt;/i&gt;]</span></pre></div></div></section><section id="insert-before-and-insert-after"><h2><code class="docutils literal notranslate"><span class="pre">insert\_before()</span></code> and <code class="docutils literal notranslate"><span class="pre">insert\_after()</span></code><a class="headerlink" href="#insert-before-and-insert-after" title="Permalink to this heading">¶</a></h2><p>The <code class="docutils literal notranslate"><span class="pre">insert\_before()</span></code> method inserts tags or strings immediatelybefore something else in the parse tree:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;b&gt;leave&lt;/b&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;i&quot;</span><span class="p">)</span><span class="n">tag</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s2">&quot;Don&#39;t&quot;</span><span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">string</span><span class="o">.</span><span class="n">insert\_before</span><span class="p">(</span><span class="n">tag</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="c1"># &lt;b&gt;&lt;i&gt;Don&#39;t&lt;/i&gt;leave&lt;/b&gt;</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">insert\_after()</span></code> method inserts tags or strings immediatelyfollowing something else in the parse tree:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">div</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s1">&#39;div&#39;</span><span class="p">)</span><span class="n">div</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s1">&#39;ever&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">i</span><span class="o">.</span><span class="n">insert\_after</span><span class="p">(</span><span class="s2">&quot; you &quot;</span><span class="p">,</span> <span class="n">div</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="c1"># &lt;b&gt;&lt;i&gt;Don&#39;t&lt;/i&gt; you &lt;div&gt;ever&lt;/div&gt; leave&lt;/b&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&lt;i&gt;Don&#39;t&lt;/i&gt;, &#39; you&#39;, &lt;div&gt;ever&lt;/div&gt;, &#39;leave&#39;]</span></pre></div></div></section><section id="clear"><h2><code class="docutils literal notranslate"><span class="pre">clear()</span></code><a class="headerlink" href="#clear" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">Tag.clear()</span></code> removes the contents of a tag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">tag</span><span class="o">.</span><span class="n">clear</span><span class="p">()</span><span class="n">tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;&lt;/a&gt;</span></pre></div></div></section><section id="extract"><h2><code class="docutils literal notranslate"><span class="pre">extract()</span></code><a class="headerlink" href="#extract" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">PageElement.extract()</span></code> removes a tag or string from the tree. Itreturns the tag or string that was extracted:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">a\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">i\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">i</span><span class="o">.</span><span class="n">extract</span><span class="p">()</span><span class="n">a\_tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;I linked to&lt;/a&gt;</span><span class="n">i\_tag</span><span class="c1"># &lt;i&gt;example.com&lt;/i&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">i\_tag</span><span class="o">.</span><span class="n">parent</span><span class="p">)</span><span class="c1"># None</span></pre></div></div><p>At this point you effectively have two parse trees: one rooted at the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object you used to parse the document, and one rootedat the tag that was extracted. You can go on to call <code class="docutils literal notranslate"><span class="pre">extract</span></code> ona child of the element you extracted:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">my\_string</span> <span class="o">=</span> <span class="n">i\_tag</span><span class="o">.</span><span class="n">string</span><span class="o">.</span><span class="n">extract</span><span class="p">()</span><span class="n">my\_string</span><span class="c1"># &#39;example.com&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">my\_string</span><span class="o">.</span><span class="n">parent</span><span class="p">)</span><span class="c1"># None</span><span class="n">i\_tag</span><span class="c1"># &lt;i&gt;&lt;/i&gt;</span></pre></div></div></section><section id="decompose"><h2><code class="docutils literal notranslate"><span class="pre">decompose()</span></code><a class="headerlink" href="#decompose" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">Tag.decompose()</span></code> removes a tag from the tree, then <cite>completelydestroys it and its contents</cite>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">a\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">i\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">i</span><span class="n">i\_tag</span><span class="o">.</span><span class="n">decompose</span><span class="p">()</span><span class="n">a\_tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;I linked to&lt;/a&gt;</span></pre></div></div><p>The behavior of a decomposed <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> or <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> is notdefined and you should not use it for anything. If you’re not surewhether something has been decomposed, you can check its<code class="docutils literal notranslate"><span class="pre">.decomposed</span></code> property <cite>(new in Beautiful Soup 4.9.0)</cite>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">i\_tag</span><span class="o">.</span><span class="n">decomposed</span><span class="c1"># True</span><span class="n">a\_tag</span><span class="o">.</span><span class="n">decomposed</span><span class="c1"># False</span></pre></div></div></section><section id="replace-with"><span id="id12"></span><h2><code class="docutils literal notranslate"><span class="pre">replace\_with()</span></code><a class="headerlink" href="#replace-with" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">PageElement.replace\_with()</span></code> removes a tag or string from the tree,and replaces it with one or more tags or strings of your choice:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">a\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">new\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;b&quot;</span><span class="p">)</span><span class="n">new\_tag</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s2">&quot;example.com&quot;</span><span class="n">a\_tag</span><span class="o">.</span><span class="n">i</span><span class="o">.</span><span class="n">replace\_with</span><span class="p">(</span><span class="n">new\_tag</span><span class="p">)</span><span class="n">a\_tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;b&gt;example.com&lt;/b&gt;&lt;/a&gt;</span><span class="n">bold\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;b&quot;</span><span class="p">)</span><span class="n">bold\_tag</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s2">&quot;example&quot;</span><span class="n">i\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;i&quot;</span><span class="p">)</span><span class="n">i\_tag</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="s2">&quot;net&quot;</span><span class="n">a\_tag</span><span class="o">.</span><span class="n">b</span><span class="o">.</span><span class="n">replace\_with</span><span class="p">(</span><span class="n">bold\_tag</span><span class="p">,</span> <span class="s2">&quot;.&quot;</span><span class="p">,</span> <span class="n">i\_tag</span><span class="p">)</span><span class="n">a\_tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;b&gt;example&lt;/b&gt;.&lt;i&gt;net&lt;/i&gt;&lt;/a&gt;</span></pre></div></div><p><code class="docutils literal notranslate"><span class="pre">replace\_with()</span></code> returns the tag or string that got replaced, sothat you can examine it or add it back to another part of the tree.</p><p><cite>The ability to pass multiple arguments into replace\_with() is newin Beautiful Soup 4.10.0.</cite></p></section><section id="wrap"><h2><code class="docutils literal notranslate"><span class="pre">wrap()</span></code><a class="headerlink" href="#wrap" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">PageElement.wrap()</span></code> wraps an element in the tag you specify. Itreturns the new wrapper:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;p&gt;I wish I was bold.&lt;/p&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">string</span><span class="o">.</span><span class="n">wrap</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;b&quot;</span><span class="p">))</span><span class="c1"># &lt;b&gt;I wish I was bold.&lt;/b&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">wrap</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">new\_tag</span><span class="p">(</span><span class="s2">&quot;div&quot;</span><span class="p">))</span><span class="c1"># &lt;div&gt;&lt;p&gt;&lt;b&gt;I wish I was bold.&lt;/b&gt;&lt;/p&gt;&lt;/div&gt;</span></pre></div></div><p><cite>This method is new in Beautiful Soup 4.0.5.</cite></p></section><section id="unwrap"><h2><code class="docutils literal notranslate"><span class="pre">unwrap()</span></code><a class="headerlink" href="#unwrap" title="Permalink to this heading">¶</a></h2><p><code class="docutils literal notranslate"><span class="pre">Tag.unwrap()</span></code> is the opposite of <code class="docutils literal notranslate"><span class="pre">wrap()</span></code>. It replaces a tag withwhatever’s inside that tag. It’s good for stripping out markup:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">a\_tag</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="n">a\_tag</span><span class="o">.</span><span class="n">i</span><span class="o">.</span><span class="n">unwrap</span><span class="p">()</span><span class="n">a\_tag</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;I linked to example.com&lt;/a&gt;</span></pre></div></div><p>Like <code class="docutils literal notranslate"><span class="pre">replace\_with()</span></code>, <code class="docutils literal notranslate"><span class="pre">unwrap()</span></code> returns the tagthat was replaced.</p></section><section id="smooth"><h2><code class="docutils literal notranslate"><span class="pre">smooth()</span></code><a class="headerlink" href="#smooth" title="Permalink to this heading">¶</a></h2><p>After calling a bunch of methods that modify the parse tree, you may end up with two or more <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> objects next to each other. Beautiful Soup doesn’t have any problems with this, but since it can’t happen in a freshly parsed document, you might not expect behavior like the following:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;p&gt;A one&lt;/p&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="s2">&quot;, a two&quot;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;A one&#39;, &#39;, a two&#39;]</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">encode</span><span class="p">())</span><span class="c1"># b&#39;&lt;p&gt;A one, a two&lt;/p&gt;&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;p&gt;</span><span class="c1"># A one</span><span class="c1"># , a two</span><span class="c1"># &lt;/p&gt;</span></pre></div></div><p>You can call <code class="docutils literal notranslate"><span class="pre">Tag.smooth()</span></code> to clean up the parse tree by consolidating adjacent strings:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">smooth</span><span class="p">()</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">contents</span><span class="c1"># [&#39;A one, a two&#39;]</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;p&gt;</span><span class="c1"># A one, a two</span><span class="c1"># &lt;/p&gt;</span></pre></div></div><p><cite>This method is new in Beautiful Soup 4.8.0.</cite></p></section></section><section id="output"><h1>Output<a class="headerlink" href="#output" title="Permalink to this heading">¶</a></h1><section id="pretty-printing"><span id="prettyprinting"></span><h2>Pretty-printing<a class="headerlink" href="#pretty-printing" title="Permalink to this heading">¶</a></h2><p>The <code class="docutils literal notranslate"><span class="pre">prettify()</span></code> method will turn a Beautiful Soup parse tree into anicely formatted Unicode string, with a separate line for eachtag and each string:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;html&gt;&lt;head&gt;&lt;body&gt;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">()</span><span class="c1"># &#39;&lt;html&gt;\n &lt;head&gt;\n &lt;/head&gt;\n &lt;body&gt;\n &lt;a href=&quot;http://example.com/&quot;&gt;\n...&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;html&gt;</span><span class="c1"># &lt;head&gt;</span><span class="c1"># &lt;/head&gt;</span><span class="c1"># &lt;body&gt;</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;</span><span class="c1"># I linked to</span><span class="c1"># &lt;i&gt;</span><span class="c1"># example.com</span><span class="c1"># &lt;/i&gt;</span><span class="c1"># &lt;/a&gt;</span><span class="c1"># &lt;/body&gt;</span><span class="c1"># &lt;/html&gt;</span></pre></div></div><p>You can call <code class="docutils literal notranslate"><span class="pre">prettify()</span></code> on the top-level <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object,or on any of its <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> objects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;a href=&quot;http://example.com/&quot;&gt;</span><span class="c1"># I linked to</span><span class="c1"># &lt;i&gt;</span><span class="c1"># example.com</span><span class="c1"># &lt;/i&gt;</span><span class="c1"># &lt;/a&gt;</span></pre></div></div><p>Since it adds whitespace (in the form of newlines), <code class="docutils literal notranslate"><span class="pre">prettify()</span></code>changes the meaning of an HTML document and should not be used toreformat one. The goal of <code class="docutils literal notranslate"><span class="pre">prettify()</span></code> is to help you visuallyunderstand the structure of the documents you work with.</p></section><section id="non-pretty-printing"><h2>Non-pretty printing<a class="headerlink" href="#non-pretty-printing" title="Permalink to this heading">¶</a></h2><p>If you just want a string, with no fancy formatting, you can call<code class="docutils literal notranslate"><span class="pre">str()</span></code> on a <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object, or on a <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> within it:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">str</span><span class="p">(</span><span class="n">soup</span><span class="p">)</span><span class="c1"># &#39;&lt;html&gt;&lt;head&gt;&lt;/head&gt;&lt;body&gt;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&lt;/body&gt;&lt;/html&gt;&#39;</span><span class="nb">str</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">)</span><span class="c1"># &#39;&lt;a href=&quot;http://example.com/&quot;&gt;I linked to &lt;i&gt;example.com&lt;/i&gt;&lt;/a&gt;&#39;</span></pre></div></div><p>The <code class="docutils literal notranslate"><span class="pre">str()</span></code> function returns a string encoded in UTF-8. See<a class="reference internal" href="#encodings">Encodings</a> for other options.</p><p>You can also call <code class="docutils literal notranslate"><span class="pre">encode()</span></code> to get a bytestring, and <code class="docutils literal notranslate"><span class="pre">decode()</span></code>to get Unicode.</p></section><section id="output-formatters"><span id="id13"></span><h2>Output formatters<a class="headerlink" href="#output-formatters" title="Permalink to this heading">¶</a></h2><p>If you give Beautiful Soup a document that contains HTML entities like“&amp;lquot;”, they’ll be converted to Unicode characters:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&amp;ldquo;Dammit!&amp;rdquo; he said.&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">str</span><span class="p">(</span><span class="n">soup</span><span class="p">)</span><span class="c1"># &#39;“Dammit!” he said.&#39;</span></pre></div></div><p>If you then convert the document to a bytestring, the Unicode characterswill be encoded as UTF-8. You won’t get the HTML entities back:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;utf8&quot;</span><span class="p">)</span><span class="c1"># b&#39;\xe2\x80\x9cDammit!\xe2\x80\x9d he said.&#39;</span></pre></div></div><p>By default, the only characters that are escaped upon output are bareampersands and angle brackets. These get turned into “&amp;amp;”, “&amp;lt;”,and “&amp;gt;”, so that Beautiful Soup doesn’t inadvertently generateinvalid HTML or XML:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;p&gt;The law firm of Dewey, Cheatem, &amp; Howe&lt;/p&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="c1"># &lt;p&gt;The law firm of Dewey, Cheatem, &amp;amp; Howe&lt;/p&gt;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;a href=&quot;http://example.com/?foo=val1&amp;bar=val2&quot;&gt;A link&lt;/a&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="c1"># &lt;a href=&quot;http://example.com/?foo=val1&amp;amp;bar=val2&quot;&gt;A link&lt;/a&gt;</span></pre></div></div><p>You can change this behavior by providing a value for the<code class="docutils literal notranslate"><span class="pre">formatter</span></code> argument to <code class="docutils literal notranslate"><span class="pre">prettify()</span></code>, <code class="docutils literal notranslate"><span class="pre">encode()</span></code>, or<code class="docutils literal notranslate"><span class="pre">decode()</span></code>. Beautiful Soup recognizes five possible values for<code class="docutils literal notranslate"><span class="pre">formatter</span></code>.</p><p>The default is <code class="docutils literal notranslate"><span class="pre">formatter=&quot;minimal&quot;</span></code>. Strings will only be processedenough to ensure that Beautiful Soup generates valid HTML/XML:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">french</span> <span class="o">=</span> <span class="s2">&quot;&lt;p&gt;Il a dit &amp;lt;&amp;lt;Sacr&amp;eacute; bleu!&amp;gt;&amp;gt;&lt;/p&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">french</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;minimal&quot;</span><span class="p">))</span><span class="c1"># &lt;p&gt;</span><span class="c1"># Il a dit &amp;lt;&amp;lt;Sacré bleu!&amp;gt;&amp;gt;</span><span class="c1"># &lt;/p&gt;</span></pre></div></div><p>If you pass in <code class="docutils literal notranslate"><span class="pre">formatter=&quot;html&quot;</span></code>, Beautiful Soup will convertUnicode characters to HTML entities whenever possible:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;html&quot;</span><span class="p">))</span><span class="c1"># &lt;p&gt;</span><span class="c1"># Il a dit &amp;lt;&amp;lt;Sacr&amp;eacute; bleu!&amp;gt;&amp;gt;</span><span class="c1"># &lt;/p&gt;</span></pre></div></div><p>If you pass in <code class="docutils literal notranslate"><span class="pre">formatter=&quot;html5&quot;</span></code>, it’s similar to<code class="docutils literal notranslate"><span class="pre">formatter=&quot;html&quot;</span></code>, but Beautiful Soup willomit the closing slash in HTML void tags like “br”:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">br</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;br&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">br</span><span class="nb">print</span><span class="p">(</span><span class="n">br</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;html&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;br/&gt;&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">br</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;html5&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;br&gt;&#39;</span></pre></div></div><p>In addition, any attributes whose values are the empty stringwill become HTML-style boolean attributes:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">option</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;option selected=&quot;&quot;&gt;&lt;/option&gt;&#39;</span><span class="p">)</span><span class="o">.</span><span class="n">option</span><span class="nb">print</span><span class="p">(</span><span class="n">option</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;html&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;option selected=&quot;&quot;&gt;&lt;/option&gt;&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">option</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;html5&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;option selected&gt;&lt;/option&gt;&#39;</span></pre></div></div><p><em>(This behavior is new as of Beautiful Soup 4.10.0.)</em></p><p>If you pass in <code class="docutils literal notranslate"><span class="pre">formatter=None</span></code>, Beautiful Soup will not modifystrings at all on output. This is the fastest option, but it may leadto Beautiful Soup generating invalid HTML/XML, as in these examples:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="kc">None</span><span class="p">))</span><span class="c1"># &lt;p&gt;</span><span class="c1"># Il a dit &lt;&lt;Sacré bleu!&gt;&gt;</span><span class="c1"># &lt;/p&gt;</span><span class="n">link\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s1">&#39;&lt;a href=&quot;http://example.com/?foo=val1&amp;bar=val2&quot;&gt;A link&lt;/a&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">link\_soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="kc">None</span><span class="p">))</span><span class="c1"># b&#39;&lt;a href=&quot;http://example.com/?foo=val1&amp;bar=val2&quot;&gt;A link&lt;/a&gt;&#39;</span></pre></div></div><section id="formatter-objects"><h3>Formatter objects<a class="headerlink" href="#formatter-objects" title="Permalink to this heading">¶</a></h3><p>If you need more sophisticated control over your output, you caninstantiate one of Beautiful Soup’s formatter classes and pass thatobject in as <code class="docutils literal notranslate"><span class="pre">formatter</span></code>.</p><dl class="py class"><dt class="sig sig-object py" id="bs4.HTMLFormatter"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">HTMLFormatter</span></span><a class="headerlink" href="#bs4.HTMLFormatter" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>Used to customize the formatting rules for HTML documents.</p><p>Here’s a formatter that converts strings to uppercase, whether theyoccur in a text node or in an attribute value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4.formatter</span> <span class="kn">import</span> <span class="n">HTMLFormatter</span><span class="k">def</span> <span class="nf">uppercase</span><span class="p">(</span><span class="nb">str</span><span class="p">):</span> <span class="k">return</span> <span class="nb">str</span><span class="o">.</span><span class="n">upper</span><span class="p">()</span><span class="n">formatter</span> <span class="o">=</span> <span class="n">HTMLFormatter</span><span class="p">(</span><span class="n">uppercase</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="n">formatter</span><span class="p">))</span><span class="c1"># &lt;p&gt;</span><span class="c1"># IL A DIT &lt;&lt;SACRÉ BLEU!&gt;&gt;</span><span class="c1"># &lt;/p&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">link\_soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="n">formatter</span><span class="p">))</span><span class="c1"># &lt;a href=&quot;HTTP://EXAMPLE.COM/?FOO=VAL1&amp;BAR=VAL2&quot;&gt;</span><span class="c1"># A LINK</span><span class="c1"># &lt;/a&gt;</span></pre></div></div><p>Here’s a formatter that increases the indentation when pretty-printing:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">formatter</span> <span class="o">=</span> <span class="n">HTMLFormatter</span><span class="p">(</span><span class="n">indent</span><span class="o">=</span><span class="mi">8</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">link\_soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="n">formatter</span><span class="p">))</span><span class="c1"># &lt;a href=&quot;http://example.com/?foo=val1&amp;bar=val2&quot;&gt;</span><span class="c1"># A link</span><span class="c1"># &lt;/a&gt;</span></pre></div></div><dl class="py class"><dt class="sig sig-object py" id="bs4.XMLFormatter"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">XMLFormatter</span></span><a class="headerlink" href="#bs4.XMLFormatter" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>Used to customize the formatting rules for XML documents.</p></section><section id="writing-your-own-formatter"><h3>Writing your own formatter<a class="headerlink" href="#writing-your-own-formatter" title="Permalink to this heading">¶</a></h3><p>Subclassing <a class="reference internal" href="#bs4.HTMLFormatter" title="bs4.HTMLFormatter"><code class="xref py py-class docutils literal notranslate"><span class="pre">HTMLFormatter</span></code></a> or <a class="reference internal" href="#bs4.XMLFormatter" title="bs4.XMLFormatter"><code class="xref py py-class docutils literal notranslate"><span class="pre">XMLFormatter</span></code></a> willgive you even more control over the output. For example, BeautifulSoup sorts the attributes in every tag by default:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">attr\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="sa">b</span><span class="s1">&#39;&lt;p z=&quot;1&quot; m=&quot;2&quot; a=&quot;3&quot;&gt;&lt;/p&gt;&#39;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">attr\_soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">encode</span><span class="p">())</span><span class="c1"># &lt;p a=&quot;3&quot; m=&quot;2&quot; z=&quot;1&quot;&gt;&lt;/p&gt;</span></pre></div></div><p>To turn this off, you can subclass the <code class="docutils literal notranslate"><span class="pre">Formatter.attributes()</span></code>method, which controls which attributes are output and in whatorder. This implementation also filters out the attribute called “m”whenever it appears:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">class</span> <span class="nc">UnsortedAttributes</span><span class="p">(</span><span class="n">HTMLFormatter</span><span class="p">):</span> <span class="k">def</span> <span class="nf">attributes</span><span class="p">(</span><span class="bp">self</span><span class="p">,</span> <span class="n">tag</span><span class="p">):</span> <span class="k">for</span> <span class="n">k</span><span class="p">,</span> <span class="n">v</span> <span class="ow">in</span> <span class="n">tag</span><span class="o">.</span><span class="n">attrs</span><span class="o">.</span><span class="n">items</span><span class="p">():</span> <span class="k">if</span> <span class="n">k</span> <span class="o">==</span> <span class="s1">&#39;m&#39;</span><span class="p">:</span> <span class="k">continue</span> <span class="k">yield</span> <span class="n">k</span><span class="p">,</span> <span class="n">v</span><span class="nb">print</span><span class="p">(</span><span class="n">attr\_soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="n">UnsortedAttributes</span><span class="p">()))</span><span class="c1"># &lt;p z=&quot;1&quot; a=&quot;3&quot;&gt;&lt;/p&gt;</span></pre></div></div><p>One last caveat: if you create a <a class="reference internal" href="#bs4.CData" title="bs4.CData"><code class="xref py py-class docutils literal notranslate"><span class="pre">CData</span></code></a> object, the text insidethat object is always presented <cite>exactly as it appears, with noformatting</cite>. Beautiful Soup will call your entity substitutionfunction, just in case you’ve written a custom function that countsall the strings in the document or something, but it will ignore thereturn value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4.element</span> <span class="kn">import</span> <span class="n">CData</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;/a&gt;&quot;</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">string</span> <span class="o">=</span> <span class="n">CData</span><span class="p">(</span><span class="s2">&quot;one &lt; three&quot;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="n">formatter</span><span class="o">=</span><span class="s2">&quot;html&quot;</span><span class="p">))</span><span class="c1"># &lt;a&gt;</span><span class="c1"># &lt;![CDATA[one &lt; three]]&gt;</span><span class="c1"># &lt;/a&gt;</span></pre></div></div></section></section><section id="get-text"><h2><code class="docutils literal notranslate"><span class="pre">get\_text()</span></code><a class="headerlink" href="#get-text" title="Permalink to this heading">¶</a></h2><p>If you only want the human-readable text inside a document or tag, you can use the<code class="docutils literal notranslate"><span class="pre">get\_text()</span></code> method. It returns all the text in a document orbeneath a tag, as a single Unicode string:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://example.com/&quot;&gt;</span><span class="se">\n</span><span class="s1">I linked to &lt;i&gt;example.com&lt;/i&gt;</span><span class="se">\n</span><span class="s1">&lt;/a&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">get\_text</span><span class="p">()</span><span class="s1">&#39;</span><span class="se">\n</span><span class="s1">I linked to example.com</span><span class="se">\n</span><span class="s1">&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">i</span><span class="o">.</span><span class="n">get\_text</span><span class="p">()</span><span class="s1">&#39;example.com&#39;</span></pre></div></div><p>You can specify a string to be used to join the bits of texttogether:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># soup.get\_text(&quot;|&quot;)</span><span class="s1">&#39;</span><span class="se">\n</span><span class="s1">I linked to |example.com|</span><span class="se">\n</span><span class="s1">&#39;</span></pre></div></div><p>You can tell Beautiful Soup to strip whitespace from the beginning andend of each bit of text:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="c1"># soup.get\_text(&quot;|&quot;, strip=True)</span><span class="s1">&#39;I linked to|example.com&#39;</span></pre></div></div><p>But at that point you might want to use the <a class="reference internal" href="#string-generators"><span class="std std-ref">.stripped\_strings</span></a>generator instead, and process the text yourself:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="p">[</span><span class="n">text</span> <span class="k">for</span> <span class="n">text</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">stripped\_strings</span><span class="p">]</span><span class="c1"># [&#39;I linked to&#39;, &#39;example.com&#39;]</span></pre></div></div><p><em>As of Beautiful Soup version 4.9.0, when lxml or html.parser are inuse, the contents of &lt;script&gt;, &lt;style&gt;, and &lt;template&gt;tags are generally not considered to be ‘text’, since those tags are not part ofthe human-visible content of the page.</em></p><p><em>As of Beautiful Soup version 4.10.0, you can call get\_text(),.strings, or .stripped\_strings on a NavigableString object. It willeither return the object itself, or nothing, so the only reason to dothis is when you’re iterating over a mixed list.</em></p></section></section><section id="specifying-the-parser-to-use"><h1>Specifying the parser to use<a class="headerlink" href="#specifying-the-parser-to-use" title="Permalink to this heading">¶</a></h1><p>If you just need to parse some HTML, you can dump the markup into the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor, and it’ll probably be fine. BeautifulSoup will pick a parser for you and parse the data. But there are afew additional arguments you can pass in to the constructor to changewhich parser is used.</p><p>The first argument to the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor is a string oran open filehandle–the markup you want parsed. The second argument is<cite>how</cite> you’d like the markup parsed.</p><p>If you don’t specify anything, you’ll get the best HTML parser that’sinstalled. Beautiful Soup ranks lxml’s parser as being the best, thenhtml5lib’s, then Python’s built-in parser. You can override this byspecifying one of the following:</p><ul class="simple"><li><p>What type of markup you want to parse. Currently supported are“html”, “xml”, and “html5”.</p></li><li><p>The name of the parser library you want to use. Currently supportedoptions are “lxml”, “html5lib”, and “html.parser” (Python’sbuilt-in HTML parser).</p></li></ul><p>The section <a class="reference internal" href="#installing-a-parser">Installing a parser</a> contrasts the supported parsers.</p><p>If you don’t have an appropriate parser installed, Beautiful Soup willignore your request and pick a different parser. Right now, the onlysupported XML parser is lxml. If you don’t have lxml installed, askingfor an XML parser won’t give you one, and asking for “lxml” won’t workeither.</p><section id="differences-between-parsers"><h2>Differences between parsers<a class="headerlink" href="#differences-between-parsers" title="Permalink to this heading">¶</a></h2><p>Beautiful Soup presents the same interface to a number of differentparsers, but each parser is different. Different parsers will createdifferent parse trees from the same document. The biggest differencesare between the HTML parsers and the XML parsers. Here’s a shortdocument, parsed as HTML using the parser that comes with Python:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;b/&gt;&lt;/a&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;html.parser&quot;</span><span class="p">)</span><span class="c1"># &lt;a&gt;&lt;b&gt;&lt;/b&gt;&lt;/a&gt;</span></pre></div></div><p>Since a standalone &lt;b/&gt; tag is not valid HTML, html.parser turns it intoa &lt;b&gt;&lt;/b&gt; tag pair.</p><p>Here’s the same document parsed as XML (running this requires that youhave lxml installed). Note that the standalone &lt;b/&gt; tag is left alone, andthat the document is given an XML declaration instead of being putinto an &lt;html&gt; tag.:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;b/&gt;&lt;/a&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;xml&quot;</span><span class="p">))</span><span class="c1"># &lt;?xml version=&quot;1.0&quot; encoding=&quot;utf-8&quot;?&gt;</span><span class="c1"># &lt;a&gt;&lt;b/&gt;&lt;/a&gt;</span></pre></div></div><p>There are also differences between HTML parsers. If you give BeautifulSoup a perfectly-formed HTML document, these differences won’tmatter. One parser will be faster than another, but they’ll all giveyou a data structure that looks exactly like the original HTMLdocument.</p><p>But if the document is not perfectly-formed, different parsers willgive different results. Here’s a short, invalid document parsed usinglxml’s HTML parser. Note that the &lt;a&gt; tag gets wrapped in &lt;body&gt; and&lt;html&gt; tags, and the dangling &lt;/p&gt; tag is simply ignored:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;/p&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;lxml&quot;</span><span class="p">)</span><span class="c1"># &lt;html&gt;&lt;body&gt;&lt;a&gt;&lt;/a&gt;&lt;/body&gt;&lt;/html&gt;</span></pre></div></div><p>Here’s the same document parsed using html5lib:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;/p&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;html5lib&quot;</span><span class="p">)</span><span class="c1"># &lt;html&gt;&lt;head&gt;&lt;/head&gt;&lt;body&gt;&lt;a&gt;&lt;p&gt;&lt;/p&gt;&lt;/a&gt;&lt;/body&gt;&lt;/html&gt;</span></pre></div></div><p>Instead of ignoring the dangling &lt;/p&gt; tag, html5lib pairs it with anopening &lt;p&gt; tag. html5lib also adds an empty &lt;head&gt; tag; lxml didn’tbother.</p><p>Here’s the same document parsed with Python’s built-in HTMLparser:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="s2">&quot;&lt;a&gt;&lt;/p&gt;&quot;</span><span class="p">,</span> <span class="s2">&quot;html.parser&quot;</span><span class="p">)</span><span class="c1"># &lt;a&gt;&lt;/a&gt;</span></pre></div></div><p>Like lxml, this parser ignores the closing &lt;/p&gt; tag. Unlikehtml5lib or lxml, this parser makes no attempt to create awell-formed HTML document by adding &lt;html&gt; or &lt;body&gt; tags.</p><p>Since the document “&lt;a&gt;&lt;/p&gt;” is invalid, none of these techniques isthe ‘correct’ way to handle it. The html5lib parser uses techniquesthat are part of the HTML5 standard, so it has the best claim on beingthe ‘correct’ way, but all three techniques are legitimate.</p><p>Differences between parsers can affect your script. If you’re planningon distributing your script to other people, or running it on multiplemachines, you should specify a parser in the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a>constructor. That will reduce the chances that your users parse adocument differently from the way you parse it.</p></section></section><section id="encodings"><h1>Encodings<a class="headerlink" href="#encodings" title="Permalink to this heading">¶</a></h1><p>Any HTML or XML document is written in a specific encoding like ASCIIor UTF-8. But when you load that document into Beautiful Soup, you’lldiscover it’s been converted to Unicode:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s2">&quot;&lt;h1&gt;Sacr</span><span class="se">\xc3\xa9</span><span class="s2"> bleu!&lt;/h1&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">h1</span><span class="c1"># &lt;h1&gt;Sacré bleu!&lt;/h1&gt;</span><span class="n">soup</span><span class="o">.</span><span class="n">h1</span><span class="o">.</span><span class="n">string</span><span class="c1"># &#39;Sacr\xe9 bleu!&#39;</span></pre></div></div><p>It’s not magic. (That sure would be nice.) Beautiful Soup uses asub-library called <a class="reference internal" href="#unicode-dammit">Unicode, Dammit</a> to detect a document’s encodingand convert it to Unicode. The autodetected encoding is available asthe <code class="docutils literal notranslate"><span class="pre">.original\_encoding</span></code> attribute of the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">original\_encoding</span><span class="s1">&#39;utf-8&#39;</span></pre></div></div><p>Unicode, Dammit guesses correctly most of the time, but sometimes itmakes mistakes. Sometimes it guesses correctly, but only after abyte-by-byte search of the document that takes a very long time. Ifyou happen to know a document’s encoding ahead of time, you can avoidmistakes and delays by passing it to the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructoras <code class="docutils literal notranslate"><span class="pre">from\_encoding</span></code>.</p><p>Here’s a document written in ISO-8859-8. The document is so short thatUnicode, Dammit can’t get a lock on it, and misidentifies it asISO-8859-7:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="sa">b</span><span class="s2">&quot;&lt;h1&gt;</span><span class="se">\xed\xe5\xec\xf9</span><span class="s2">&lt;/h1&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">h1</span><span class="p">)</span><span class="c1"># &lt;h1&gt;νεμω&lt;/h1&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">original\_encoding</span><span class="p">)</span><span class="c1"># iso-8859-7</span></pre></div></div><p>We can fix this by passing in the correct <code class="docutils literal notranslate"><span class="pre">from\_encoding</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">from\_encoding</span><span class="o">=</span><span class="s2">&quot;iso-8859-8&quot;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">h1</span><span class="p">)</span><span class="c1"># &lt;h1&gt;םולש&lt;/h1&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">original\_encoding</span><span class="p">)</span><span class="c1"># iso8859-8</span></pre></div></div><p>If you don’t know what the correct encoding is, but you know thatUnicode, Dammit is guessing wrong, you can pass the wrong guesses inas <code class="docutils literal notranslate"><span class="pre">exclude\_encodings</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">exclude\_encodings</span><span class="o">=</span><span class="p">[</span><span class="s2">&quot;iso-8859-7&quot;</span><span class="p">])</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">h1</span><span class="p">)</span><span class="c1"># &lt;h1&gt;םולש&lt;/h1&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">original\_encoding</span><span class="p">)</span><span class="c1"># WINDOWS-1255</span></pre></div></div><p>Windows-1255 isn’t 100% correct, but that encoding is a compatiblesuperset of ISO-8859-8, so it’s close enough. (<code class="docutils literal notranslate"><span class="pre">exclude\_encodings</span></code>is a new feature in Beautiful Soup 4.4.0.)</p><p>In rare cases (usually when a UTF-8 document contains text written ina completely different encoding), the only way to get Unicode may beto replace some characters with the special Unicode character“REPLACEMENT CHARACTER” (U+FFFD, �). If Unicode, Dammit needs to dothis, it will set the <code class="docutils literal notranslate"><span class="pre">.contains\_replacement\_characters</span></code> attributeto <code class="docutils literal notranslate"><span class="pre">True</span></code> on the <code class="docutils literal notranslate"><span class="pre">UnicodeDammit</span></code> or <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object. Thislets you know that the Unicode representation is not an exactrepresentation of the original–some data was lost. If a documentcontains �, but <code class="docutils literal notranslate"><span class="pre">.contains\_replacement\_characters</span></code> is <code class="docutils literal notranslate"><span class="pre">False</span></code>,you’ll know that the � was there originally (as it is in thisparagraph) and doesn’t stand in for missing data.</p><section id="output-encoding"><h2>Output encoding<a class="headerlink" href="#output-encoding" title="Permalink to this heading">¶</a></h2><p>When you write out a document from Beautiful Soup, you get a UTF-8document, even if the document wasn’t in UTF-8 to begin with. Here’s adocument written in the Latin-1 encoding:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="sa">b</span><span class="s1">&#39;&#39;&#39;</span><span class="s1"> &lt;html&gt;</span><span class="s1"> &lt;head&gt;</span><span class="s1"> &lt;meta content=&quot;text/html; charset=ISO-Latin-1&quot; http-equiv=&quot;Content-type&quot; /&gt;</span><span class="s1"> &lt;/head&gt;</span><span class="s1"> &lt;body&gt;</span><span class="s1"> &lt;p&gt;Sacr</span><span class="se">\xe9</span><span class="s1"> bleu!&lt;/p&gt;</span><span class="s1"> &lt;/body&gt;</span><span class="s1"> &lt;/html&gt;</span><span class="s1">&#39;&#39;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;html&gt;</span><span class="c1"># &lt;head&gt;</span><span class="c1"># &lt;meta content=&quot;text/html; charset=utf-8&quot; http-equiv=&quot;Content-type&quot; /&gt;</span><span class="c1"># &lt;/head&gt;</span><span class="c1"># &lt;body&gt;</span><span class="c1"># &lt;p&gt;</span><span class="c1"># Sacré bleu!</span><span class="c1"># &lt;/p&gt;</span><span class="c1"># &lt;/body&gt;</span><span class="c1"># &lt;/html&gt;</span></pre></div></div><p>Note that the &lt;meta&gt; tag has been rewritten to reflect the fact thatthe document is now in UTF-8.</p><p>If you don’t want UTF-8, you can pass an encoding into <code class="docutils literal notranslate"><span class="pre">prettify()</span></code>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">prettify</span><span class="p">(</span><span class="s2">&quot;latin-1&quot;</span><span class="p">))</span><span class="c1"># &lt;html&gt;</span><span class="c1"># &lt;head&gt;</span><span class="c1"># &lt;meta content=&quot;text/html; charset=latin-1&quot; http-equiv=&quot;Content-type&quot; /&gt;</span><span class="c1"># ...</span></pre></div></div><p>You can also call encode() on the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> object, or anyelement in the soup, just as if it were a Python string:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;latin-1&quot;</span><span class="p">)</span><span class="c1"># b&#39;&lt;p&gt;Sacr\xe9 bleu!&lt;/p&gt;&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;utf-8&quot;</span><span class="p">)</span><span class="c1"># b&#39;&lt;p&gt;Sacr\xc3\xa9 bleu!&lt;/p&gt;&#39;</span></pre></div></div><p>Any characters that can’t be represented in your chosen encoding willbe converted into numeric XML entity references. Here’s a documentthat includes the Unicode character SNOWMAN:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="sa">u</span><span class="s2">&quot;&lt;b&gt;</span><span class="se">\N{SNOWMAN}</span><span class="s2">&lt;/b&gt;&quot;</span><span class="n">snowman\_soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">tag</span> <span class="o">=</span> <span class="n">snowman\_soup</span><span class="o">.</span><span class="n">b</span></pre></div></div><p>The SNOWMAN character can be part of a UTF-8 document (it looks like☃), but there’s no representation for that character in ISO-Latin-1 orASCII, so it’s converted into “&amp;#9731” for those encodings:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;utf-8&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;b&gt;\xe2\x98\x83&lt;/b&gt;&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;latin-1&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;b&gt;&amp;#9731;&lt;/b&gt;&#39;</span><span class="nb">print</span><span class="p">(</span><span class="n">tag</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;ascii&quot;</span><span class="p">))</span><span class="c1"># b&#39;&lt;b&gt;&amp;#9731;&lt;/b&gt;&#39;</span></pre></div></div></section><section id="unicode-dammit"><h2>Unicode, Dammit<a class="headerlink" href="#unicode-dammit" title="Permalink to this heading">¶</a></h2><p>You can use Unicode, Dammit without using Beautiful Soup. It’s usefulwhenever you have data in an unknown encoding and you just want it tobecome Unicode:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">UnicodeDammit</span><span class="n">dammit</span> <span class="o">=</span> <span class="n">UnicodeDammit</span><span class="p">(</span><span class="sa">b</span><span class="s2">&quot;</span><span class="se">\xc2\xab</span><span class="s2">Sacr</span><span class="se">\xc3\xa9</span><span class="s2"> bleu!</span><span class="se">\xc2\xbb</span><span class="s2">&quot;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">dammit</span><span class="o">.</span><span class="n">unicode\_markup</span><span class="p">)</span><span class="c1"># «Sacré bleu!»</span><span class="n">dammit</span><span class="o">.</span><span class="n">original\_encoding</span><span class="c1"># &#39;utf-8&#39;</span></pre></div></div><p>Unicode, Dammit’s guesses will get a lot more accurate if you installone of these Python libraries: <code class="docutils literal notranslate"><span class="pre">charset-normalizer</span></code>, <code class="docutils literal notranslate"><span class="pre">chardet</span></code>, or<code class="docutils literal notranslate"><span class="pre">cchardet</span></code>. The more data you give Unicode, Dammit, the moreaccurately it will guess. If you have your own suspicions as to whatthe encoding might be, you can pass them in as a list:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">dammit</span> <span class="o">=</span> <span class="n">UnicodeDammit</span><span class="p">(</span><span class="s2">&quot;Sacr</span><span class="se">\xe9</span><span class="s2"> bleu!&quot;</span><span class="p">,</span> <span class="p">[</span><span class="s2">&quot;latin-1&quot;</span><span class="p">,</span> <span class="s2">&quot;iso-8859-1&quot;</span><span class="p">])</span><span class="nb">print</span><span class="p">(</span><span class="n">dammit</span><span class="o">.</span><span class="n">unicode\_markup</span><span class="p">)</span><span class="c1"># Sacré bleu!</span><span class="n">dammit</span><span class="o">.</span><span class="n">original\_encoding</span><span class="c1"># &#39;latin-1&#39;</span></pre></div></div><p>Unicode, Dammit has two special features that Beautiful Soup doesn’tuse.</p><section id="smart-quotes"><h3>Smart quotes<a class="headerlink" href="#smart-quotes" title="Permalink to this heading">¶</a></h3><p>You can use Unicode, Dammit to convert Microsoft smart quotes to HTML or XMLentities:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="sa">b</span><span class="s2">&quot;&lt;p&gt;I just </span><span class="se">\x93</span><span class="s2">love</span><span class="se">\x94</span><span class="s2"> Microsoft Word</span><span class="se">\x92</span><span class="s2">s smart quotes&lt;/p&gt;&quot;</span><span class="n">UnicodeDammit</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="p">[</span><span class="s2">&quot;windows-1252&quot;</span><span class="p">],</span> <span class="n">smart\_quotes\_to</span><span class="o">=</span><span class="s2">&quot;html&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">unicode\_markup</span><span class="c1"># &#39;&lt;p&gt;I just &amp;ldquo;love&amp;rdquo; Microsoft Word&amp;rsquo;s smart quotes&lt;/p&gt;&#39;</span><span class="n">UnicodeDammit</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="p">[</span><span class="s2">&quot;windows-1252&quot;</span><span class="p">],</span> <span class="n">smart\_quotes\_to</span><span class="o">=</span><span class="s2">&quot;xml&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">unicode\_markup</span><span class="c1"># &#39;&lt;p&gt;I just &amp;#x201C;love&amp;#x201D; Microsoft Word&amp;#x2019;s smart quotes&lt;/p&gt;&#39;</span></pre></div></div><p>You can also convert Microsoft smart quotes to ASCII quotes:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">UnicodeDammit</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="p">[</span><span class="s2">&quot;windows-1252&quot;</span><span class="p">],</span> <span class="n">smart\_quotes\_to</span><span class="o">=</span><span class="s2">&quot;ascii&quot;</span><span class="p">)</span><span class="o">.</span><span class="n">unicode\_markup</span><span class="c1"># &#39;&lt;p&gt;I just &quot;love&quot; Microsoft Word\&#39;s smart quotes&lt;/p&gt;&#39;</span></pre></div></div><p>Hopefully you’ll find this feature useful, but Beautiful Soup doesn’tuse it. Beautiful Soup prefers the default behavior, which is toconvert Microsoft smart quotes to Unicode characters along witheverything else:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">UnicodeDammit</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="p">[</span><span class="s2">&quot;windows-1252&quot;</span><span class="p">])</span><span class="o">.</span><span class="n">unicode\_markup</span><span class="c1"># &#39;&lt;p&gt;I just “love” Microsoft Word’s smart quotes&lt;/p&gt;&#39;</span></pre></div></div></section><section id="inconsistent-encodings"><h3>Inconsistent encodings<a class="headerlink" href="#inconsistent-encodings" title="Permalink to this heading">¶</a></h3><p>Sometimes a document is mostly in UTF-8, but contains Windows-1252characters such as (again) Microsoft smart quotes. This can happenwhen a website includes data from multiple sources. You can use<code class="docutils literal notranslate"><span class="pre">UnicodeDammit.detwingle()</span></code> to turn such a document into pureUTF-8. Here’s a simple example:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">snowmen</span> <span class="o">=</span> <span class="p">(</span><span class="sa">u</span><span class="s2">&quot;</span><span class="se">\N{SNOWMAN}</span><span class="s2">&quot;</span> <span class="o">\*</span> <span class="mi">3</span><span class="p">)</span><span class="n">quote</span> <span class="o">=</span> <span class="p">(</span><span class="sa">u</span><span class="s2">&quot;</span><span class="se">\N{LEFT DOUBLE QUOTATION MARK}</span><span class="s2">I like snowmen!</span><span class="se">\N{RIGHT DOUBLE QUOTATION MARK}</span><span class="s2">&quot;</span><span class="p">)</span><span class="n">doc</span> <span class="o">=</span> <span class="n">snowmen</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;utf8&quot;</span><span class="p">)</span> <span class="o">+</span> <span class="n">quote</span><span class="o">.</span><span class="n">encode</span><span class="p">(</span><span class="s2">&quot;windows\_1252&quot;</span><span class="p">)</span></pre></div></div><p>This document is a mess. The snowmen are in UTF-8 and the quotes arein Windows-1252. You can display the snowmen or the quotes, but notboth:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">doc</span><span class="p">)</span><span class="c1"># ☃☃☃�I like snowmen!�</span><span class="nb">print</span><span class="p">(</span><span class="n">doc</span><span class="o">.</span><span class="n">decode</span><span class="p">(</span><span class="s2">&quot;windows-1252&quot;</span><span class="p">))</span><span class="c1"># â˜ƒâ˜ƒâ˜ƒ“I like snowmen!”</span></pre></div></div><p>Decoding the document as UTF-8 raises a <code class="docutils literal notranslate"><span class="pre">UnicodeDecodeError</span></code>, anddecoding it as Windows-1252 gives you gibberish. Fortunately,<code class="docutils literal notranslate"><span class="pre">UnicodeDammit.detwingle()</span></code> will convert the string to pure UTF-8,allowing you to decode it to Unicode and display the snowmen and quotemarks simultaneously:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">new\_doc</span> <span class="o">=</span> <span class="n">UnicodeDammit</span><span class="o">.</span><span class="n">detwingle</span><span class="p">(</span><span class="n">doc</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">new\_doc</span><span class="o">.</span><span class="n">decode</span><span class="p">(</span><span class="s2">&quot;utf8&quot;</span><span class="p">))</span><span class="c1"># ☃☃☃“I like snowmen!”</span></pre></div></div><p><code class="docutils literal notranslate"><span class="pre">UnicodeDammit.detwingle()</span></code> only knows how to handle Windows-1252embedded in UTF-8 (or vice versa, I suppose), but this is the mostcommon case.</p><p>Note that you must know to call <code class="docutils literal notranslate"><span class="pre">UnicodeDammit.detwingle()</span></code> on yourdata before passing it into <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> or the <code class="docutils literal notranslate"><span class="pre">UnicodeDammit</span></code>constructor. Beautiful Soup assumes that a document has a singleencoding, whatever it might be. If you pass it a document thatcontains both UTF-8 and Windows-1252, it’s likely to think the wholedocument is Windows-1252, and the document will come out looking like<code class="docutils literal notranslate"><span class="pre">â˜ƒâ˜ƒâ˜ƒ“I</span> <span class="pre">like</span> <span class="pre">snowmen!”</span></code>.</p><p><code class="docutils literal notranslate"><span class="pre">UnicodeDammit.detwingle()</span></code> is new in Beautiful Soup 4.1.0.</p></section></section></section><section id="line-numbers"><h1>Line numbers<a class="headerlink" href="#line-numbers" title="Permalink to this heading">¶</a></h1><p>The <code class="docutils literal notranslate"><span class="pre">html.parser</span></code> and <code class="docutils literal notranslate"><span class="pre">html5lib</span></code> parsers can keep track of where inthe original document each Tag was found. You can access thisinformation as <code class="docutils literal notranslate"><span class="pre">Tag.sourceline</span></code> (line number) and <code class="docutils literal notranslate"><span class="pre">Tag.sourcepos</span></code>(position of the start tag within a line):</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s2">&quot;&lt;p</span><span class="se">\n</span><span class="s2">&gt;Paragraph 1&lt;/p&gt;</span><span class="se">\n</span><span class="s2"> &lt;p&gt;Paragraph 2&lt;/p&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;p&#39;</span><span class="p">):</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">((</span><span class="n">tag</span><span class="o">.</span><span class="n">sourceline</span><span class="p">,</span> <span class="n">tag</span><span class="o">.</span><span class="n">sourcepos</span><span class="p">,</span> <span class="n">tag</span><span class="o">.</span><span class="n">string</span><span class="p">)))</span><span class="c1"># (1, 0, &#39;Paragraph 1&#39;)</span><span class="c1"># (3, 4, &#39;Paragraph 2&#39;)</span></pre></div></div><p>Note that the two parsers mean slightly different things by<code class="docutils literal notranslate"><span class="pre">sourceline</span></code> and <code class="docutils literal notranslate"><span class="pre">sourcepos</span></code>. For html.parser, these numbersrepresent the position of the initial less-than sign. For html5lib,these numbers represent the position of the final greater-than sign:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html5lib&#39;</span><span class="p">)</span><span class="k">for</span> <span class="n">tag</span> <span class="ow">in</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;p&#39;</span><span class="p">):</span> <span class="nb">print</span><span class="p">(</span><span class="nb">repr</span><span class="p">((</span><span class="n">tag</span><span class="o">.</span><span class="n">sourceline</span><span class="p">,</span> <span class="n">tag</span><span class="o">.</span><span class="n">sourcepos</span><span class="p">,</span> <span class="n">tag</span><span class="o">.</span><span class="n">string</span><span class="p">)))</span><span class="c1"># (2, 0, &#39;Paragraph 1&#39;)</span><span class="c1"># (3, 6, &#39;Paragraph 2&#39;)</span></pre></div></div><p>You can shut off this feature by passing <code class="docutils literal notranslate"><span class="pre">store\_line\_numbers=False</span></code>into the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s2">&quot;&lt;p</span><span class="se">\n</span><span class="s2">&gt;Paragraph 1&lt;/p&gt;</span><span class="se">\n</span><span class="s2"> &lt;p&gt;Paragraph 2&lt;/p&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">store\_line\_numbers</span><span class="o">=</span><span class="kc">False</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="o">.</span><span class="n">sourceline</span><span class="p">)</span><span class="c1"># None</span></pre></div></div><p><cite>This feature is new in 4.8.1, and the parsers based on lxml don’tsupport it.</cite></p></section><section id="comparing-objects-for-equality"><h1>Comparing objects for equality<a class="headerlink" href="#comparing-objects-for-equality" title="Permalink to this heading">¶</a></h1><p>Beautiful Soup says that two <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> or <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> objectsare equal when they represent the same HTML or XML markup. In thisexample, the two &lt;b&gt; tags are treated as equal, even though they livein different parts of the object tree, because they both look like“&lt;b&gt;pizza&lt;/b&gt;”:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s2">&quot;&lt;p&gt;I want &lt;b&gt;pizza&lt;/b&gt; and more &lt;b&gt;pizza&lt;/b&gt;!&lt;/p&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">first\_b</span><span class="p">,</span> <span class="n">second\_b</span> <span class="o">=</span> <span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="s1">&#39;b&#39;</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">first\_b</span> <span class="o">==</span> <span class="n">second\_b</span><span class="p">)</span><span class="c1"># True</span><span class="nb">print</span><span class="p">(</span><span class="n">first\_b</span><span class="o">.</span><span class="n">previous\_element</span> <span class="o">==</span> <span class="n">second\_b</span><span class="o">.</span><span class="n">previous\_element</span><span class="p">)</span><span class="c1"># False</span></pre></div></div><p>If you want to see whether two variables refer to exactly the sameobject, use <cite>is</cite>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">first\_b</span> <span class="ow">is</span> <span class="n">second\_b</span><span class="p">)</span><span class="c1"># False</span></pre></div></div></section><section id="copying-beautiful-soup-objects"><h1>Copying Beautiful Soup objects<a class="headerlink" href="#copying-beautiful-soup-objects" title="Permalink to this heading">¶</a></h1><p>You can use <code class="docutils literal notranslate"><span class="pre">copy.copy()</span></code> to create a copy of any <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> or<a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">import</span> <span class="nn">copy</span><span class="n">p\_copy</span> <span class="o">=</span> <span class="n">copy</span><span class="o">.</span><span class="n">copy</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span><span class="p">)</span><span class="nb">print</span><span class="p">(</span><span class="n">p\_copy</span><span class="p">)</span><span class="c1"># &lt;p&gt;I want &lt;b&gt;pizza&lt;/b&gt; and more &lt;b&gt;pizza&lt;/b&gt;!&lt;/p&gt;</span></pre></div></div><p>The copy is considered equal to the original, since it represents thesame markup as the original, but it’s not the same object:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span> <span class="o">==</span> <span class="n">p\_copy</span><span class="p">)</span><span class="c1"># True</span><span class="nb">print</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">p</span> <span class="ow">is</span> <span class="n">p\_copy</span><span class="p">)</span><span class="c1"># False</span></pre></div></div><p>The only real difference is that the copy is completely detached fromthe original Beautiful Soup object tree, just as if <code class="docutils literal notranslate"><span class="pre">extract()</span></code> hadbeen called on it:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="nb">print</span><span class="p">(</span><span class="n">p\_copy</span><span class="o">.</span><span class="n">parent</span><span class="p">)</span><span class="c1"># None</span></pre></div></div><p>This is because two different <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> objects can’t occupy the samespace at the same time.</p></section><section id="advanced-parser-customization"><h1>Advanced parser customization<a class="headerlink" href="#advanced-parser-customization" title="Permalink to this heading">¶</a></h1><p>Beautiful Soup offers a number of ways to customize how the parsertreats incoming HTML and XML. This section covers the most commonlyused customization techniques.</p><section id="parsing-only-part-of-a-document"><h2>Parsing only part of a document<a class="headerlink" href="#parsing-only-part-of-a-document" title="Permalink to this heading">¶</a></h2><p>Let’s say you want to use Beautiful Soup look at a document’s &lt;a&gt;tags. It’s a waste of time and memory to parse the entire document andthen go over it again looking for &lt;a&gt; tags. It would be much faster toignore everything that wasn’t an &lt;a&gt; tag in the first place. The<a class="reference internal" href="#bs4.SoupStrainer" title="bs4.SoupStrainer"><code class="xref py py-class docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a> class allows you to choose which parts of an incomingdocument are parsed. You just create a <a class="reference internal" href="#bs4.SoupStrainer" title="bs4.SoupStrainer"><code class="xref py py-class docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a> and pass it into the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor as the <code class="docutils literal notranslate"><span class="pre">parse\_only</span></code> argument.</p><p>(Note that <em>this feature won’t work if you’re using the html5lib parser</em>.If you use html5lib, the whole document will be parsed, nomatter what. This is because html5lib constantly rearranges the parsetree as it works, and if some part of the document didn’t actuallymake it into the parse tree, it’ll crash. To avoid confusion, in theexamples below I’ll be forcing Beautiful Soup to use Python’sbuilt-in parser.)</p><dl class="py class"><dt class="sig sig-object py" id="bs4.SoupStrainer"><em class="property"><span class="pre">class</span><span class="w"> </span></em><span class="sig-prename descclassname"><span class="pre">bs4.</span></span><span class="sig-name descname"><span class="pre">SoupStrainer</span></span><a class="headerlink" href="#bs4.SoupStrainer" title="Permalink to this definition">¶</a></dt><dd></dd></dl><p>The <a class="reference internal" href="#bs4.SoupStrainer" title="bs4.SoupStrainer"><code class="xref py py-class docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a> class takes the same arguments as a typicalmethod from <a class="reference internal" href="#searching-the-tree">Searching the tree</a>: <a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, <a class="reference internal" href="#attrs"><span class="std std-ref">attrs</span></a>, <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>, and <a class="reference internal" href="#kwargs"><span class="std std-ref">\*\*kwargs</span></a>. Here arethree <a class="reference internal" href="#bs4.SoupStrainer" title="bs4.SoupStrainer"><code class="xref py py-class docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a> objects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">SoupStrainer</span><span class="n">only\_a\_tags</span> <span class="o">=</span> <span class="n">SoupStrainer</span><span class="p">(</span><span class="s2">&quot;a&quot;</span><span class="p">)</span><span class="n">only\_tags\_with\_id\_link2</span> <span class="o">=</span> <span class="n">SoupStrainer</span><span class="p">(</span><span class="nb">id</span><span class="o">=</span><span class="s2">&quot;link2&quot;</span><span class="p">)</span><span class="k">def</span> <span class="nf">is\_short\_string</span><span class="p">(</span><span class="n">string</span><span class="p">):</span> <span class="k">return</span> <span class="n">string</span> <span class="ow">is</span> <span class="ow">not</span> <span class="kc">None</span> <span class="ow">and</span> <span class="nb">len</span><span class="p">(</span><span class="n">string</span><span class="p">)</span> <span class="o">&lt;</span> <span class="mi">10</span><span class="n">only\_short\_strings</span> <span class="o">=</span> <span class="n">SoupStrainer</span><span class="p">(</span><span class="n">string</span><span class="o">=</span><span class="n">is\_short\_string</span><span class="p">)</span></pre></div></div><p>I’m going to bring back the “three sisters” document one more time,and we’ll see what the document looks like when it’s parsed with thesethree <a class="reference internal" href="#bs4.SoupStrainer" title="bs4.SoupStrainer"><code class="xref py py-class docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a> objects:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">html\_doc</span> <span class="o">=</span> <span class="s2">&quot;&quot;&quot;&lt;html&gt;&lt;head&gt;&lt;title&gt;The Dormouse&#39;s story&lt;/title&gt;&lt;/head&gt;</span><span class="s2">&lt;body&gt;</span><span class="s2">&lt;p class=&quot;title&quot;&gt;&lt;b&gt;The Dormouse&#39;s story&lt;/b&gt;&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;Once upon a time there were three little sisters; and their names were</span><span class="s2">&lt;a href=&quot;http://example.com/elsie&quot; class=&quot;sister&quot; id=&quot;link1&quot;&gt;Elsie&lt;/a&gt;,</span><span class="s2">&lt;a href=&quot;http://example.com/lacie&quot; class=&quot;sister&quot; id=&quot;link2&quot;&gt;Lacie&lt;/a&gt; and</span><span class="s2">&lt;a href=&quot;http://example.com/tillie&quot; class=&quot;sister&quot; id=&quot;link3&quot;&gt;Tillie&lt;/a&gt;;</span><span class="s2">and they lived at the bottom of a well.&lt;/p&gt;</span><span class="s2">&lt;p class=&quot;story&quot;&gt;...&lt;/p&gt;</span><span class="s2">&quot;&quot;&quot;</span><span class="nb">print</span><span class="p">(</span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s2">&quot;html.parser&quot;</span><span class="p">,</span> <span class="n">parse\_only</span><span class="o">=</span><span class="n">only\_a\_tags</span><span class="p">)</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/elsie&quot; id=&quot;link1&quot;&gt;</span><span class="c1"># Elsie</span><span class="c1"># &lt;/a&gt;</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;</span><span class="c1"># Lacie</span><span class="c1"># &lt;/a&gt;</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/tillie&quot; id=&quot;link3&quot;&gt;</span><span class="c1"># Tillie</span><span class="c1"># &lt;/a&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s2">&quot;html.parser&quot;</span><span class="p">,</span> <span class="n">parse\_only</span><span class="o">=</span><span class="n">only\_tags\_with\_id\_link2</span><span class="p">)</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># &lt;a class=&quot;sister&quot; href=&quot;http://example.com/lacie&quot; id=&quot;link2&quot;&gt;</span><span class="c1"># Lacie</span><span class="c1"># &lt;/a&gt;</span><span class="nb">print</span><span class="p">(</span><span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s2">&quot;html.parser&quot;</span><span class="p">,</span> <span class="n">parse\_only</span><span class="o">=</span><span class="n">only\_short\_strings</span><span class="p">)</span><span class="o">.</span><span class="n">prettify</span><span class="p">())</span><span class="c1"># Elsie</span><span class="c1"># ,</span><span class="c1"># Lacie</span><span class="c1"># and</span><span class="c1"># Tillie</span><span class="c1"># ...</span><span class="c1">#</span></pre></div></div><p>You can also pass a <a class="reference internal" href="#bs4.SoupStrainer" title="bs4.SoupStrainer"><code class="xref py py-class docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a> into any of the methods coveredin <a class="reference internal" href="#searching-the-tree">Searching the tree</a>. This probably isn’t terribly useful, but Ithought I’d mention it:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">html\_doc</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">find\_all</span><span class="p">(</span><span class="n">only\_short\_strings</span><span class="p">)</span><span class="c1"># [&#39;\n\n&#39;, &#39;\n\n&#39;, &#39;Elsie&#39;, &#39;,\n&#39;, &#39;Lacie&#39;, &#39; and\n&#39;, &#39;Tillie&#39;,</span><span class="c1"># &#39;\n\n&#39;, &#39;...&#39;, &#39;\n&#39;]</span></pre></div></div></section><section id="customizing-multi-valued-attributes"><h2>Customizing multi-valued attributes<a class="headerlink" href="#customizing-multi-valued-attributes" title="Permalink to this heading">¶</a></h2><p>In an HTML document, an attribute like <code class="docutils literal notranslate"><span class="pre">class</span></code> is given a list ofvalues, and an attribute like <code class="docutils literal notranslate"><span class="pre">id</span></code> is given a single value, becausethe HTML specification treats those attributes differently:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a class=&quot;cls1 cls2&quot; id=&quot;id1 id2&quot;&gt;&#39;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># [&#39;cls1&#39;, &#39;cls2&#39;]</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="c1"># &#39;id1 id2&#39;</span></pre></div></div><p>You can turn this off by passing in<code class="docutils literal notranslate"><span class="pre">multi\_valued\_attributes=None</span></code>. Than all attributes will be given asingle value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">multi\_valued\_attributes</span><span class="o">=</span><span class="kc">None</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;class&#39;</span><span class="p">]</span><span class="c1"># &#39;cls1 cls2&#39;</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;id&#39;</span><span class="p">]</span><span class="c1"># &#39;id1 id2&#39;</span></pre></div></div><p>You can customize this behavior quite a bit by passing in adictionary for <code class="docutils literal notranslate"><span class="pre">multi\_valued\_attributes</span></code>. If you need this, look at<code class="docutils literal notranslate"><span class="pre">HTMLTreeBuilder.DEFAULT\_CDATA\_LIST\_ATTRIBUTES</span></code> to see theconfiguration Beautiful Soup uses by default, which is based on theHTML specification.</p><p><cite>(This is a new feature in Beautiful Soup 4.8.0.)</cite></p></section><section id="handling-duplicate-attributes"><h2>Handling duplicate attributes<a class="headerlink" href="#handling-duplicate-attributes" title="Permalink to this heading">¶</a></h2><p>When using the <code class="docutils literal notranslate"><span class="pre">html.parser</span></code> parser, you can use the<code class="docutils literal notranslate"><span class="pre">on\_duplicate\_attribute</span></code> constructor argument to customize whatBeautiful Soup does when it encounters a tag that defines the sameattribute more than once:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">markup</span> <span class="o">=</span> <span class="s1">&#39;&lt;a href=&quot;http://url1/&quot; href=&quot;http://url2/&quot;&gt;&#39;</span></pre></div></div><p>The default behavior is to use the last value found for the tag:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;href&#39;</span><span class="p">]</span><span class="c1"># http://url2/</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">on\_duplicate\_attribute</span><span class="o">=</span><span class="s1">&#39;replace&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;href&#39;</span><span class="p">]</span><span class="c1"># http://url2/</span></pre></div></div><p>With <code class="docutils literal notranslate"><span class="pre">on\_duplicate\_attribute='ignore'</span></code> you can tell Beautiful Soupto use the <cite>first</cite> value found and ignore the rest:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">on\_duplicate\_attribute</span><span class="o">=</span><span class="s1">&#39;ignore&#39;</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;href&#39;</span><span class="p">]</span><span class="c1"># http://url1/</span></pre></div></div><p>(lxml and html5lib always do it this way; their behavior can’t beconfigured from within Beautiful Soup.)</p><p>If you need more, you can pass in a function that’s called on each duplicate value:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">def</span> <span class="nf">accumulate</span><span class="p">(</span><span class="n">attributes\_so\_far</span><span class="p">,</span> <span class="n">key</span><span class="p">,</span> <span class="n">value</span><span class="p">):</span> <span class="k">if</span> <span class="ow">not</span> <span class="nb">isinstance</span><span class="p">(</span><span class="n">attributes\_so\_far</span><span class="p">[</span><span class="n">key</span><span class="p">],</span> <span class="nb">list</span><span class="p">):</span> <span class="n">attributes\_so\_far</span><span class="p">[</span><span class="n">key</span><span class="p">]</span> <span class="o">=</span> <span class="p">[</span><span class="n">attributes\_so\_far</span><span class="p">[</span><span class="n">key</span><span class="p">]]</span> <span class="n">attributes\_so\_far</span><span class="p">[</span><span class="n">key</span><span class="p">]</span><span class="o">.</span><span class="n">append</span><span class="p">(</span><span class="n">value</span><span class="p">)</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">on\_duplicate\_attribute</span><span class="o">=</span><span class="n">accumulate</span><span class="p">)</span><span class="n">soup</span><span class="o">.</span><span class="n">a</span><span class="p">[</span><span class="s1">&#39;href&#39;</span><span class="p">]</span><span class="c1"># [&quot;http://url1/&quot;, &quot;http://url2/&quot;]</span></pre></div></div><p><cite>(This is a new feature in Beautiful Soup 4.9.1.)</cite></p></section><section id="instantiating-custom-subclasses"><h2>Instantiating custom subclasses<a class="headerlink" href="#instantiating-custom-subclasses" title="Permalink to this heading">¶</a></h2><p>When a parser tells Beautiful Soup about a tag or a string, BeautifulSoup will instantiate a <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> or <a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a> object tocontain that information. Instead of that default behavior, you cantell Beautiful Soup to instantiate <cite>subclasses</cite> of <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> or<a class="reference internal" href="#bs4.NavigableString" title="bs4.NavigableString"><code class="xref py py-class docutils literal notranslate"><span class="pre">NavigableString</span></code></a>, subclasses you define with custom behavior:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">Tag</span><span class="p">,</span> <span class="n">NavigableString</span><span class="k">class</span> <span class="nc">MyTag</span><span class="p">(</span><span class="n">Tag</span><span class="p">):</span> <span class="k">pass</span><span class="k">class</span> <span class="nc">MyString</span><span class="p">(</span><span class="n">NavigableString</span><span class="p">):</span> <span class="k">pass</span><span class="n">markup</span> <span class="o">=</span> <span class="s2">&quot;&lt;div&gt;some text&lt;/div&gt;&quot;</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">)</span><span class="nb">isinstance</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">div</span><span class="p">,</span> <span class="n">MyTag</span><span class="p">)</span><span class="c1"># False</span><span class="nb">isinstance</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">div</span><span class="o">.</span><span class="n">string</span><span class="p">,</span> <span class="n">MyString</span><span class="p">)</span><span class="c1"># False</span><span class="n">my\_classes</span> <span class="o">=</span> <span class="p">{</span> <span class="n">Tag</span><span class="p">:</span> <span class="n">MyTag</span><span class="p">,</span> <span class="n">NavigableString</span><span class="p">:</span> <span class="n">MyString</span> <span class="p">}</span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s1">&#39;html.parser&#39;</span><span class="p">,</span> <span class="n">element\_classes</span><span class="o">=</span><span class="n">my\_classes</span><span class="p">)</span><span class="nb">isinstance</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">div</span><span class="p">,</span> <span class="n">MyTag</span><span class="p">)</span><span class="c1"># True</span><span class="nb">isinstance</span><span class="p">(</span><span class="n">soup</span><span class="o">.</span><span class="n">div</span><span class="o">.</span><span class="n">string</span><span class="p">,</span> <span class="n">MyString</span><span class="p">)</span><span class="c1"># True</span></pre></div></div><p>This can be useful when incorporating Beautiful Soup into a testframework.</p><p><cite>(This is a new feature in Beautiful Soup 4.8.1.)</cite></p></section></section><section id="troubleshooting"><h1>Troubleshooting<a class="headerlink" href="#troubleshooting" title="Permalink to this heading">¶</a></h1><section id="diagnose"><span id="id14"></span><h2><code class="docutils literal notranslate"><span class="pre">diagnose()</span></code><a class="headerlink" href="#diagnose" title="Permalink to this heading">¶</a></h2><p>If you’re having trouble understanding what Beautiful Soup does to adocument, pass the document into the <code class="docutils literal notranslate"><span class="pre">diagnose()</span></code> function. (New inBeautiful Soup 4.2.0.) Beautiful Soup will print out a report showingyou how different parsers handle the document, and tell you if you’remissing a parser that Beautiful Soup could be using:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4.diagnose</span> <span class="kn">import</span> <span class="n">diagnose</span><span class="k">with</span> <span class="nb">open</span><span class="p">(</span><span class="s2">&quot;bad.html&quot;</span><span class="p">)</span> <span class="k">as</span> <span class="n">fp</span><span class="p">:</span> <span class="n">data</span> <span class="o">=</span> <span class="n">fp</span><span class="o">.</span><span class="n">read</span><span class="p">()</span><span class="n">diagnose</span><span class="p">(</span><span class="n">data</span><span class="p">)</span><span class="c1"># Diagnostic running on Beautiful Soup 4.2.0</span><span class="c1"># Python version 2.7.3 (default, Aug 1 2012, 05:16:07)</span><span class="c1"># I noticed that html5lib is not installed. Installing it may help.</span><span class="c1"># Found lxml version 2.3.2.0</span><span class="c1">#</span><span class="c1"># Trying to parse your data with html.parser</span><span class="c1"># Here&#39;s what html.parser did with the document:</span><span class="c1"># ...</span></pre></div></div><p>Just looking at the output of diagnose() may show you how to solve theproblem. Even if not, you can paste the output of <code class="docutils literal notranslate"><span class="pre">diagnose()</span></code> whenasking for help.</p></section><section id="errors-when-parsing-a-document"><h2>Errors when parsing a document<a class="headerlink" href="#errors-when-parsing-a-document" title="Permalink to this heading">¶</a></h2><p>There are two different kinds of parse errors. There are crashes,where you feed a document to Beautiful Soup and it raises anexception, usually an <code class="docutils literal notranslate"><span class="pre">HTMLParser.HTMLParseError</span></code>. And there isunexpected behavior, where a Beautiful Soup parse tree looks a lotdifferent than the document used to create it.</p><p>Almost none of these problems turn out to be problems with BeautifulSoup. This is not because Beautiful Soup is an amazingly well-writtenpiece of software. It’s because Beautiful Soup doesn’t include anyparsing code. Instead, it relies on external parsers. If one parserisn’t working on a certain document, the best solution is to try adifferent parser. See <a class="reference internal" href="#installing-a-parser">Installing a parser</a> for details and a parsercomparison.</p><p>The most common parse errors are <code class="docutils literal notranslate"><span class="pre">HTMLParser.HTMLParseError:</span><span class="pre">malformed</span> <span class="pre">start</span> <span class="pre">tag</span></code> and <code class="docutils literal notranslate"><span class="pre">HTMLParser.HTMLParseError:</span> <span class="pre">bad</span> <span class="pre">end</span><span class="pre">tag</span></code>. These are both generated by Python’s built-in HTML parserlibrary, and the solution is to <a class="reference internal" href="#parser-installation"><span class="std std-ref">install lxml orhtml5lib.</span></a></p><p>The most common type of unexpected behavior is that you can’t find atag that you know is in the document. You saw it going in, but<code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> returns <code class="docutils literal notranslate"><span class="pre">[]</span></code> or <code class="docutils literal notranslate"><span class="pre">find()</span></code> returns <code class="docutils literal notranslate"><span class="pre">None</span></code>. This isanother common problem with Python’s built-in HTML parser, whichsometimes skips tags it doesn’t understand. Again, the best solution is to<a class="reference internal" href="#parser-installation"><span class="std std-ref">install lxml or html5lib.</span></a></p></section><section id="version-mismatch-problems"><h2>Version mismatch problems<a class="headerlink" href="#version-mismatch-problems" title="Permalink to this heading">¶</a></h2><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">SyntaxError:</span> <span class="pre">Invalid</span> <span class="pre">syntax</span></code> (on the line <code class="docutils literal notranslate"><span class="pre">ROOT\_TAG\_NAME</span> <span class="pre">=</span><span class="pre">'[document]'</span></code>): Caused by running an old Python 2 version ofBeautiful Soup under Python 3, without converting the code.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">ImportError:</span> <span class="pre">No</span> <span class="pre">module</span> <span class="pre">named</span> <span class="pre">HTMLParser</span></code> - Caused by running an oldPython 2 version of Beautiful Soup under Python 3.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">ImportError:</span> <span class="pre">No</span> <span class="pre">module</span> <span class="pre">named</span> <span class="pre">html.parser</span></code> - Caused by running thePython 3 version of Beautiful Soup under Python 2.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">ImportError:</span> <span class="pre">No</span> <span class="pre">module</span> <span class="pre">named</span> <span class="pre">BeautifulSoup</span></code> - Caused by runningBeautiful Soup 3 code on a system that doesn’t have BS3installed. Or, by writing Beautiful Soup 4 code without knowing thatthe package name has changed to <code class="docutils literal notranslate"><span class="pre">bs4</span></code>.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">ImportError:</span> <span class="pre">No</span> <span class="pre">module</span> <span class="pre">named</span> <span class="pre">bs4</span></code> - Caused by running BeautifulSoup 4 code on a system that doesn’t have BS4 installed.</p></li></ul></section><section id="parsing-xml"><span id="id15"></span><h2>Parsing XML<a class="headerlink" href="#parsing-xml" title="Permalink to this heading">¶</a></h2><p>By default, Beautiful Soup parses documents as HTML. To parse adocument as XML, pass in “xml” as the second argument to the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">soup</span> <span class="o">=</span> <span class="n">BeautifulSoup</span><span class="p">(</span><span class="n">markup</span><span class="p">,</span> <span class="s2">&quot;xml&quot;</span><span class="p">)</span></pre></div></div><p>You’ll need to <a class="reference internal" href="#parser-installation"><span class="std std-ref">have lxml installed</span></a>.</p></section><section id="other-parser-problems"><h2>Other parser problems<a class="headerlink" href="#other-parser-problems" title="Permalink to this heading">¶</a></h2><ul class="simple"><li><p>If your script works on one computer but not another, or in onevirtual environment but not another, or outside the virtualenvironment but not inside, it’s probably because the twoenvironments have different parser libraries available. For example,you may have developed the script on a computer that has lxmlinstalled, and then tried to run it on a computer that only hashtml5lib installed. See <a class="reference internal" href="#differences-between-parsers">Differences between parsers</a> for why thismatters, and fix the problem by mentioning a specific parser libraryin the <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor.</p></li><li><p>Because <a class="reference external" href="http://www.w3.org/TR/html5/syntax.html#syntax">HTML tags and attributes are case-insensitive</a>, all three HTMLparsers convert tag and attribute names to lowercase. That is, themarkup &lt;TAG&gt;&lt;/TAG&gt; is converted to &lt;tag&gt;&lt;/tag&gt;. If you want topreserve mixed-case or uppercase tags and attributes, you’ll need to<a class="reference internal" href="#parsing-xml"><span class="std std-ref">parse the document as XML.</span></a></p></li></ul></section><section id="miscellaneous"><span id="misc"></span><h2>Miscellaneous<a class="headerlink" href="#miscellaneous" title="Permalink to this heading">¶</a></h2><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">UnicodeEncodeError:</span> <span class="pre">'charmap'</span> <span class="pre">codec</span> <span class="pre">can't</span> <span class="pre">encode</span> <span class="pre">character</span><span class="pre">'\xfoo'</span> <span class="pre">in</span> <span class="pre">position</span> <span class="pre">bar</span></code> (or just about any other<code class="docutils literal notranslate"><span class="pre">UnicodeEncodeError</span></code>) - This problem shows up in two mainsituations. First, when you try to print a Unicode character thatyour console doesn’t know how to display. (See <a class="reference external" href="http://wiki.python.org/moin/PrintFails">this page on thePython wiki</a> for help.)Second, when you’re writing to a file and you pass in a Unicodecharacter that’s not supported by your default encoding. In thiscase, the simplest solution is to explicitly encode the Unicodestring into UTF-8 with <code class="docutils literal notranslate"><span class="pre">u.encode(&quot;utf8&quot;)</span></code>.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">KeyError:</span> <span class="pre">[attr]</span></code> - Caused by accessing <code class="docutils literal notranslate"><span class="pre">tag['attr']</span></code> when thetag in question doesn’t define the <code class="docutils literal notranslate"><span class="pre">attr</span></code> attribute. The mostcommon errors are <code class="docutils literal notranslate"><span class="pre">KeyError:</span> <span class="pre">'href'</span></code> and <code class="docutils literal notranslate"><span class="pre">KeyError:</span> <span class="pre">'class'</span></code>.Use <code class="docutils literal notranslate"><span class="pre">tag.get('attr')</span></code> if you’re not sure <code class="docutils literal notranslate"><span class="pre">attr</span></code> isdefined, just as you would with a Python dictionary.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">AttributeError:</span> <span class="pre">'ResultSet'</span> <span class="pre">object</span> <span class="pre">has</span> <span class="pre">no</span> <span class="pre">attribute</span> <span class="pre">'foo'</span></code> - Thisusually happens because you expected <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> to return asingle tag or string. But <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code> returns a <cite>list</cite> of tagsand strings–a <code class="docutils literal notranslate"><span class="pre">ResultSet</span></code> object. You need to iterate over thelist and look at the <code class="docutils literal notranslate"><span class="pre">.foo</span></code> of each one. Or, if you really onlywant one result, you need to use <code class="docutils literal notranslate"><span class="pre">find()</span></code> instead of<code class="docutils literal notranslate"><span class="pre">find\_all()</span></code>.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">AttributeError:</span> <span class="pre">'NoneType'</span> <span class="pre">object</span> <span class="pre">has</span> <span class="pre">no</span> <span class="pre">attribute</span> <span class="pre">'foo'</span></code> - Thisusually happens because you called <code class="docutils literal notranslate"><span class="pre">find()</span></code> and then tried toaccess the <cite>.foo`</cite> attribute of the result. But in your case,<code class="docutils literal notranslate"><span class="pre">find()</span></code> didn’t find anything, so it returned <code class="docutils literal notranslate"><span class="pre">None</span></code>, instead ofreturning a tag or a string. You need to figure out why your<code class="docutils literal notranslate"><span class="pre">find()</span></code> call isn’t returning anything.</p></li><li><p><code class="docutils literal notranslate"><span class="pre">AttributeError:</span> <span class="pre">'NavigableString'</span> <span class="pre">object</span> <span class="pre">has</span> <span class="pre">no</span> <span class="pre">attribute</span><span class="pre">'foo'</span></code> - This usually happens because you’re treating a string asthough it were a tag. You may be iterating over a list, expectingthat it contains nothing but tags, when it actually contains both tags andstrings.</p></li></ul></section><section id="improving-performance"><h2>Improving Performance<a class="headerlink" href="#improving-performance" title="Permalink to this heading">¶</a></h2><p>Beautiful Soup will never be as fast as the parsers it sits on topof. If response time is critical, if you’re paying for computer timeby the hour, or if there’s any other reason why computer time is morevaluable than programmer time, you should forget about Beautiful Soupand work directly atop <a class="reference external" href="http://lxml.de/">lxml</a>.</p><p>That said, there are things you can do to speed up Beautiful Soup. Ifyou’re not using lxml as the underlying parser, my advice is to<a class="reference internal" href="#parser-installation"><span class="std std-ref">start</span></a>. Beautiful Soup parses documentssignificantly faster using lxml than using html.parser or html5lib.</p><p>You can speed up encoding detection significantly by installing the<a class="reference external" href="http://pypi.python.org/pypi/cchardet/">cchardet</a> library.</p><p><a class="reference internal" href="#parsing-only-part-of-a-document">Parsing only part of a document</a> won’t save you much time parsingthe document, but it can save a lot of memory, and it’ll make<cite>searching</cite> the document much faster.</p></section></section><section id="translating-this-documentation"><h1>Translating this documentation<a class="headerlink" href="#translating-this-documentation" title="Permalink to this heading">¶</a></h1><p>New translations of the Beautiful Soup documentation are greatlyappreciated. Translations should be licensed under the MIT license,just like Beautiful Soup and its English documentation are.</p><p>There are two ways of getting your translation into the main code baseand onto the Beautiful Soup website:</p><ol class="arabic simple"><li><p>Create a branch of the Beautiful Soup repository, add yourtranslation, and propose a merge with the main branch, the sameas you would do with a proposed change to the source code.</p></li><li><p>Send a message to the Beautiful Soup discussion group with a link toyour translation, or attach your translation to the message.</p></li></ol><p>Use the Chinese or Brazilian Portuguese translations as your model. Inparticular, please translate the source file <code class="docutils literal notranslate"><span class="pre">doc/source/index.rst</span></code>,rather than the HTML version of the documentation. This makes itpossible to publish the documentation in a variety of formats, notjust HTML.</p></section><section id="id16"><h1>Beautiful Soup 3<a class="headerlink" href="#id16" title="Permalink to this heading">¶</a></h1><p>Beautiful Soup 3 is the previous release series, and is no longerbeing actively developed. It’s currently packaged with all major Linuxdistributions:</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">apt</kbd>-<kbd class="kbd docutils literal notranslate">get</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">python</kbd>-<kbd class="kbd docutils literal notranslate">beautifulsoup</kbd></kbd></p><p>It’s also published through PyPi as <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a>.:</p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">easy\_install</kbd> <kbd class="kbd docutils literal notranslate">BeautifulSoup</kbd></kbd></p><p><kbd class="kbd compound docutils literal notranslate"><kbd class="kbd docutils literal notranslate">$</kbd> <kbd class="kbd docutils literal notranslate">pip</kbd> <kbd class="kbd docutils literal notranslate">install</kbd> <kbd class="kbd docutils literal notranslate">BeautifulSoup</kbd></kbd></p><p>You can also <a class="reference external" href="http://www.crummy.com/software/BeautifulSoup/bs3/download/3.x/BeautifulSoup-3.2.0.tar.gz">download a tarball of Beautiful Soup 3.2.0</a>.</p><p>If you ran <code class="docutils literal notranslate"><span class="pre">easy\_install</span> <span class="pre">beautifulsoup</span></code> or <code class="docutils literal notranslate"><span class="pre">easy\_install</span><span class="pre">BeautifulSoup</span></code>, but your code doesn’t work, you installed BeautifulSoup 3 by mistake. You need to run <code class="docutils literal notranslate"><span class="pre">easy\_install</span> <span class="pre">beautifulsoup4</span></code>.</p><p><a class="reference external" href="http://www.crummy.com/software/BeautifulSoup/bs3/documentation.html">The documentation for Beautiful Soup 3 is archived online</a>.</p><section id="porting-code-to-bs4"><h2>Porting code to BS4<a class="headerlink" href="#porting-code-to-bs4" title="Permalink to this heading">¶</a></h2><p>Most code written against Beautiful Soup 3 will work against BeautifulSoup 4 with one simple change. All you should have to do is change thepackage name from <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> to <code class="docutils literal notranslate"><span class="pre">bs4</span></code>. So this:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">BeautifulSoup</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span></pre></div></div><p>becomes this:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">bs4</span> <span class="kn">import</span> <span class="n">BeautifulSoup</span></pre></div></div><ul class="simple"><li><p>If you get the <code class="docutils literal notranslate"><span class="pre">ImportError</span></code> “No module named BeautifulSoup”, yourproblem is that you’re trying to run Beautiful Soup 3 code, but youonly have Beautiful Soup 4 installed.</p></li><li><p>If you get the <code class="docutils literal notranslate"><span class="pre">ImportError</span></code> “No module named bs4”, your problemis that you’re trying to run Beautiful Soup 4 code, but you onlyhave Beautiful Soup 3 installed.</p></li></ul><p>Although BS4 is mostly backwards-compatible with BS3, most of itsmethods have been deprecated and given new names for <a class="reference external" href="http://www.python.org/dev/peps/pep-0008/">PEP 8 compliance</a>. There are numerous otherrenames and changes, and a few of them break backwards compatibility.</p><p>Here’s what you’ll need to know to convert your BS3 code and habits to BS4:</p><section id="you-need-a-parser"><h3>You need a parser<a class="headerlink" href="#you-need-a-parser" title="Permalink to this heading">¶</a></h3><p>Beautiful Soup 3 used Python’s <code class="docutils literal notranslate"><span class="pre">SGMLParser</span></code>, a module that wasdeprecated and removed in Python 3.0. Beautiful Soup 4 uses<code class="docutils literal notranslate"><span class="pre">html.parser</span></code> by default, but you can plug in lxml or html5lib anduse that instead. See <a class="reference internal" href="#installing-a-parser">Installing a parser</a> for a comparison.</p><p>Since <code class="docutils literal notranslate"><span class="pre">html.parser</span></code> is not the same parser as <code class="docutils literal notranslate"><span class="pre">SGMLParser</span></code>, youmay find that Beautiful Soup 4 gives you a different parse tree thanBeautiful Soup 3 for the same markup. If you swap out <code class="docutils literal notranslate"><span class="pre">html.parser</span></code>for lxml or html5lib, you may find that the parse tree changes yetagain. If this happens, you’ll need to update your scraping code todeal with the new tree.</p></section><section id="method-names"><h3>Method names<a class="headerlink" href="#method-names" title="Permalink to this heading">¶</a></h3><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">renderContents</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">encode\_contents</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">replaceWith</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">replace\_with</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">replaceWithChildren</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">unwrap</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findAll</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_all</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findAllNext</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_all\_next</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findAllPrevious</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_all\_previous</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findNext</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_next</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findNextSibling</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_next\_sibling</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findNextSiblings</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_next\_siblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findParent</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_parent</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findParents</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_parents</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findPrevious</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_previous</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findPreviousSibling</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_previous\_sibling</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">findPreviousSiblings</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">find\_previous\_siblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">getText</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">get\_text</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">nextSibling</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">next\_sibling</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">previousSibling</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">previous\_sibling</span></code></p></li></ul><p>Some arguments to the Beautiful Soup constructor were renamed for thesame reasons:</p><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(parseOnlyThese=...)</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">BeautifulSoup(parse\_only=...)</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">BeautifulSoup(fromEncoding=...)</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">BeautifulSoup(from\_encoding=...)</span></code></p></li></ul><p>I renamed one method for compatibility with Python 3:</p><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">Tag.has\_key()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">Tag.has\_attr()</span></code></p></li></ul><p>I renamed one attribute to use more accurate terminology:</p><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">Tag.isSelfClosing</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">Tag.is\_empty\_element</span></code></p></li></ul><p>I renamed three attributes to avoid using words that have specialmeaning to Python. Unlike the others, these changes are <em>not backwardscompatible.</em> If you used these attributes in BS3, your code will breakon BS4 until you change them.</p><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">UnicodeDammit.unicode</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">UnicodeDammit.unicode\_markup</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.next</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">Tag.next\_element</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.previous</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">Tag.previous\_element</span></code></p></li></ul><p>These methods are left over from the Beautiful Soup 2 API. They’vebeen deprecated since 2006, and should not be used at all:</p><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">Tag.fetchNextSiblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.fetchPreviousSiblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.fetchPrevious</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.fetchPreviousSiblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.fetchParents</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.findChild</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">Tag.findChildren</span></code></p></li></ul></section><section id="generators"><h3>Generators<a class="headerlink" href="#generators" title="Permalink to this heading">¶</a></h3><p>I gave the generators PEP 8-compliant names, and transformed them intoproperties:</p><ul class="simple"><li><p><code class="docutils literal notranslate"><span class="pre">childGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">children</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">nextGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">next\_elements</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">nextSiblingGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">next\_siblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">previousGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">previous\_elements</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">previousSiblingGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">previous\_siblings</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">recursiveChildGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">descendants</span></code></p></li><li><p><code class="docutils literal notranslate"><span class="pre">parentGenerator()</span></code> -&gt; <code class="docutils literal notranslate"><span class="pre">parents</span></code></p></li></ul><p>So instead of this:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">parent</span> <span class="ow">in</span> <span class="n">tag</span><span class="o">.</span><span class="n">parentGenerator</span><span class="p">():</span> <span class="o">...</span></pre></div></div><p>You can write this:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="k">for</span> <span class="n">parent</span> <span class="ow">in</span> <span class="n">tag</span><span class="o">.</span><span class="n">parents</span><span class="p">:</span> <span class="o">...</span></pre></div></div><p>(But the old code will still work.)</p><p>Some of the generators used to yield <code class="docutils literal notranslate"><span class="pre">None</span></code> after they were done, andthen stop. That was a bug. Now the generators just stop.</p><p>There are two new generators, <a class="reference internal" href="#string-generators"><span class="std std-ref">.strings and.stripped\_strings</span></a>. <code class="docutils literal notranslate"><span class="pre">.strings</span></code> yieldsNavigableString objects, and <code class="docutils literal notranslate"><span class="pre">.stripped\_strings</span></code> yields Pythonstrings that have had whitespace stripped.</p></section><section id="xml"><h3>XML<a class="headerlink" href="#xml" title="Permalink to this heading">¶</a></h3><p>There is no longer a <code class="docutils literal notranslate"><span class="pre">BeautifulStoneSoup</span></code> class for parsing XML. Toparse XML you pass in “xml” as the second argument to the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor. For the same reason, the<a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor no longer recognizes the <code class="docutils literal notranslate"><span class="pre">isHTML</span></code>argument.</p><p>Beautiful Soup’s handling of empty-element XML tags has beenimproved. Previously when you parsed XML you had to explicitly saywhich tags were considered empty-element tags. The <code class="docutils literal notranslate"><span class="pre">selfClosingTags</span></code>argument to the constructor is no longer recognized. Instead,Beautiful Soup considers any empty tag to be an empty-element tag. Ifyou add a child to an empty-element tag, it stops being anempty-element tag.</p></section><section id="entities"><h3>Entities<a class="headerlink" href="#entities" title="Permalink to this heading">¶</a></h3><p>An incoming HTML or XML entity is always converted into thecorresponding Unicode character. Beautiful Soup 3 had a number ofoverlapping ways of dealing with entities, which have beenremoved. The <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor no longer recognizes the<code class="docutils literal notranslate"><span class="pre">smartQuotesTo</span></code> or <code class="docutils literal notranslate"><span class="pre">convertEntities</span></code> arguments. (<a class="reference internal" href="#unicode-dammit">Unicode,Dammit</a> still has <code class="docutils literal notranslate"><span class="pre">smart\_quotes\_to</span></code>, but its default is now to turnsmart quotes into Unicode.) The constants <code class="docutils literal notranslate"><span class="pre">HTML\_ENTITIES</span></code>,<code class="docutils literal notranslate"><span class="pre">XML\_ENTITIES</span></code>, and <code class="docutils literal notranslate"><span class="pre">XHTML\_ENTITIES</span></code> have been removed, since theyconfigure a feature (transforming some but not all entities intoUnicode characters) that no longer exists.</p><p>If you want to turn Unicode characters back into HTML entities onoutput, rather than turning them into UTF-8 characters, you need touse an <a class="reference internal" href="#output-formatters"><span class="std std-ref">output formatter</span></a>.</p></section><section id="id17"><h3>Miscellaneous<a class="headerlink" href="#id17" title="Permalink to this heading">¶</a></h3><p><a class="reference internal" href="#string"><span class="std std-ref">Tag.string</span></a> now operates recursively. If tag Acontains a single tag B and nothing else, then A.string is the same asB.string. (Previously, it was None.)</p><p><a class="reference internal" href="#multi-valued-attributes">Multi-valued attributes</a> like <code class="docutils literal notranslate"><span class="pre">class</span></code> have lists of strings astheir values, not strings. This may affect the way you search by CSSclass.</p><p><a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> objects now implement the <code class="docutils literal notranslate"><span class="pre">\_\_hash\_\_</span></code> method, such that two<a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a> objects are considered equal if they generate the samemarkup. This may change your script’s behavior if you put <a class="reference internal" href="#bs4.Tag" title="bs4.Tag"><code class="xref py py-class docutils literal notranslate"><span class="pre">Tag</span></code></a>objects into a dictionary or set.</p><p>If you pass one of the <code class="docutils literal notranslate"><span class="pre">find\*</span></code> methods both <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a> <cite>and</cite>a tag-specific argument like <a class="reference internal" href="#name"><span class="std std-ref">name</span></a>, Beautiful Soup willsearch for tags that match your tag-specific criteria and whose<a class="reference internal" href="#string"><span class="std std-ref">Tag.string</span></a> matches your value for <a class="reference internal" href="#id11"><span class="std std-ref">string</span></a>. It will <cite>not</cite> find the strings themselves. Previously,Beautiful Soup ignored the tag-specific arguments and looked forstrings.</p><p>The <a class="reference internal" href="#bs4.BeautifulSoup" title="bs4.BeautifulSoup"><code class="xref py py-class docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a> constructor no longer recognizes the<cite>markupMassage</cite> argument. It’s now the parser’s responsibility tohandle markup correctly.</p><p>The rarely-used alternate parser classes like<code class="docutils literal notranslate"><span class="pre">ICantBelieveItsBeautifulSoup</span></code> and <code class="docutils literal notranslate"><span class="pre">BeautifulSOAP</span></code> have beenremoved. It’s now the parser’s decision how to handle ambiguousmarkup.</p><p>The <code class="docutils literal notranslate"><span class="pre">prettify()</span></code> method now returns a Unicode string, not a bytestring.</p></section></section></section> <div class="clearer"></div> </div> </div> </div> <div class="sphinxsidebar" role="navigation" aria-label="main navigation"> <div class="sphinxsidebarwrapper"> <div> <h3><a href="#">Table of Contents</a></h3> <ul><li><a class="reference internal" href="#">Beautiful Soup Documentation</a><ul><li><a class="reference internal" href="#getting-help">Getting help</a></li></ul></li><li><a class="reference internal" href="#quick-start">Quick Start</a></li><li><a class="reference internal" href="#installing-beautiful-soup">Installing Beautiful Soup</a><ul><li><a class="reference internal" href="#installing-a-parser">Installing a parser</a></li></ul></li><li><a class="reference internal" href="#making-the-soup">Making the soup</a></li><li><a class="reference internal" href="#kinds-of-objects">Kinds of objects</a><ul><li><a class="reference internal" href="#bs4.Tag"><code class="docutils literal notranslate"><span class="pre">Tag</span></code></a><ul><li><a class="reference internal" href="#bs4.Tag.name"><code class="docutils literal notranslate"><span class="pre">Tag.name</span></code></a></li><li><a class="reference internal" href="#bs4.Tag.attrs"><code class="docutils literal notranslate"><span class="pre">Tag.attrs</span></code></a></li></ul></li><li><a class="reference internal" href="#bs4.NavigableString"><code class="docutils literal notranslate"><span class="pre">NavigableString</span></code></a></li><li><a class="reference internal" href="#bs4.BeautifulSoup"><code class="docutils literal notranslate"><span class="pre">BeautifulSoup</span></code></a></li><li><a class="reference internal" href="#special-strings">Special strings</a><ul><li><a class="reference internal" href="#bs4.Comment"><code class="docutils literal notranslate"><span class="pre">Comment</span></code></a></li><li><a class="reference internal" href="#for-html-documents">For HTML documents</a><ul><li><a class="reference internal" href="#bs4.Stylesheet"><code class="docutils literal notranslate"><span class="pre">Stylesheet</span></code></a></li><li><a class="reference internal" href="#bs4.Script"><code class="docutils literal notranslate"><span class="pre">Script</span></code></a></li><li><a class="reference internal" href="#bs4.Template"><code class="docutils literal notranslate"><span class="pre">Template</span></code></a></li></ul></li><li><a class="reference internal" href="#for-xml-documents">For XML documents</a><ul><li><a class="reference internal" href="#bs4.Declaration"><code class="docutils literal notranslate"><span class="pre">Declaration</span></code></a></li><li><a class="reference internal" href="#bs4.Doctype"><code class="docutils literal notranslate"><span class="pre">Doctype</span></code></a></li><li><a class="reference internal" href="#bs4.CData"><code class="docutils literal notranslate"><span class="pre">CData</span></code></a></li><li><a class="reference internal" href="#bs4.ProcessingInstruction"><code class="docutils literal notranslate"><span class="pre">ProcessingInstruction</span></code></a></li></ul></li></ul></li></ul></li><li><a class="reference internal" href="#navigating-the-tree">Navigating the tree</a><ul><li><a class="reference internal" href="#going-down">Going down</a><ul><li><a class="reference internal" href="#navigating-using-tag-names">Navigating using tag names</a></li><li><a class="reference internal" href="#contents-and-children"><code class="docutils literal notranslate"><span class="pre">.contents</span></code> and <code class="docutils literal notranslate"><span class="pre">.children</span></code></a></li><li><a class="reference internal" href="#descendants"><code class="docutils literal notranslate"><span class="pre">.descendants</span></code></a></li><li><a class="reference internal" href="#string"><code class="docutils literal notranslate"><span class="pre">.string</span></code></a></li><li><a class="reference internal" href="#strings-and-stripped-strings"><code class="docutils literal notranslate"><span class="pre">.strings</span></code> and <code class="docutils literal notranslate"><span class="pre">stripped\_strings</span></code></a></li></ul></li><li><a class="reference internal" href="#going-up">Going up</a><ul><li><a class="reference internal" href="#parent"><code class="docutils literal notranslate"><span class="pre">.parent</span></code></a></li><li><a class="reference internal" href="#parents"><code class="docutils literal notranslate"><span class="pre">.parents</span></code></a></li></ul></li><li><a class="reference internal" href="#going-sideways">Going sideways</a><ul><li><a class="reference internal" href="#next-sibling-and-previous-sibling"><code class="docutils literal notranslate"><span class="pre">.next\_sibling</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_sibling</span></code></a></li><li><a class="reference internal" href="#next-siblings-and-previous-siblings"><code class="docutils literal notranslate"><span class="pre">.next\_siblings</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_siblings</span></code></a></li></ul></li><li><a class="reference internal" href="#going-back-and-forth">Going back and forth</a><ul><li><a class="reference internal" href="#next-element-and-previous-element"><code class="docutils literal notranslate"><span class="pre">.next\_element</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_element</span></code></a></li><li><a class="reference internal" href="#next-elements-and-previous-elements"><code class="docutils literal notranslate"><span class="pre">.next\_elements</span></code> and <code class="docutils literal notranslate"><span class="pre">.previous\_elements</span></code></a></li></ul></li></ul></li><li><a class="reference internal" href="#searching-the-tree">Searching the tree</a><ul><li><a class="reference internal" href="#kinds-of-filters">Kinds of filters</a><ul><li><a class="reference internal" href="#a-string">A string</a></li><li><a class="reference internal" href="#a-regular-expression">A regular expression</a></li><li><a class="reference internal" href="#a-list">A list</a></li><li><a class="reference internal" href="#true"><code class="docutils literal notranslate"><span class="pre">True</span></code></a></li><li><a class="reference internal" href="#a-function">A function</a></li></ul></li><li><a class="reference internal" href="#find-all"><code class="docutils literal notranslate"><span class="pre">find\_all()</span></code></a><ul><li><a class="reference internal" href="#the-name-argument">The <code class="docutils literal notranslate"><span class="pre">name</span></code> argument</a></li><li><a class="reference internal" href="#the-keyword-arguments">The keyword arguments</a></li><li><a class="reference internal" href="#searching-by-css-class">Searching by CSS class</a></li><li><a class="reference internal" href="#the-string-argument">The <code class="docutils literal notranslate"><span class="pre">string</span></code> argument</a></li><li><a class="reference internal" href="#the-limit-argument">The <code class="docutils literal notranslate"><span class="pre">limit</span></code> argument</a></li><li><a class="reference internal" href="#the-recursive-argument">The <code class="docutils literal notranslate"><span class="pre">recursive</span></code> argument</a></li></ul></li><li><a class="reference internal" href="#calling-a-tag-is-like-calling-find-all">Calling a tag is like calling <code class="docutils literal notranslate"><span class="pre">find\_all()</span></code></a></li><li><a class="reference internal" href="#find"><code class="docutils literal notranslate"><span class="pre">find()</span></code></a></li><li><a class="reference internal" href="#find-parents-and-find-parent"><code class="docutils literal notranslate"><span class="pre">find\_parents()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_parent()</span></code></a></li><li><a class="reference internal" href="#find-next-siblings-and-find-next-sibling"><code class="docutils literal notranslate"><span class="pre">find\_next\_siblings()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_next\_sibling()</span></code></a></li><li><a class="reference internal" href="#find-previous-siblings-and-find-previous-sibling"><code class="docutils literal notranslate"><span class="pre">find\_previous\_siblings()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_previous\_sibling()</span></code></a></li><li><a class="reference internal" href="#find-all-next-and-find-next"><code class="docutils literal notranslate"><span class="pre">find\_all\_next()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_next()</span></code></a></li><li><a class="reference internal" href="#find-all-previous-and-find-previous"><code class="docutils literal notranslate"><span class="pre">find\_all\_previous()</span></code> and <code class="docutils literal notranslate"><span class="pre">find\_previous()</span></code></a></li><li><a class="reference internal" href="#css-selectors-through-the-css-property">CSS selectors through the <code class="docutils literal notranslate"><span class="pre">.css</span></code> property</a><ul><li><a class="reference internal" href="#advanced-soup-sieve-features">Advanced Soup Sieve features</a></li><li><a class="reference internal" href="#namespaces-in-css-selectors">Namespaces in CSS selectors</a></li><li><a class="reference internal" href="#history-of-css-selector-support">History of CSS selector support</a></li></ul></li></ul></li><li><a class="reference internal" href="#modifying-the-tree">Modifying the tree</a><ul><li><a class="reference internal" href="#changing-tag-names-and-attributes">Changing tag names and attributes</a></li><li><a class="reference internal" href="#modifying-string">Modifying <code class="docutils literal notranslate"><span class="pre">.string</span></code></a></li><li><a class="reference internal" href="#append"><code class="docutils literal notranslate"><span class="pre">append()</span></code></a></li><li><a class="reference internal" href="#extend"><code class="docutils literal notranslate"><span class="pre">extend()</span></code></a></li><li><a class="reference internal" href="#navigablestring-and-new-tag"><code class="docutils literal notranslate"><span class="pre">NavigableString()</span></code> and <code class="docutils literal notranslate"><span class="pre">.new\_tag()</span></code></a></li><li><a class="reference internal" href="#insert"><code class="docutils literal notranslate"><span class="pre">insert()</span></code></a></li><li><a class="reference internal" href="#insert-before-and-insert-after"><code class="docutils literal notranslate"><span class="pre">insert\_before()</span></code> and <code class="docutils literal notranslate"><span class="pre">insert\_after()</span></code></a></li><li><a class="reference internal" href="#clear"><code class="docutils literal notranslate"><span class="pre">clear()</span></code></a></li><li><a class="reference internal" href="#extract"><code class="docutils literal notranslate"><span class="pre">extract()</span></code></a></li><li><a class="reference internal" href="#decompose"><code class="docutils literal notranslate"><span class="pre">decompose()</span></code></a></li><li><a class="reference internal" href="#replace-with"><code class="docutils literal notranslate"><span class="pre">replace\_with()</span></code></a></li><li><a class="reference internal" href="#wrap"><code class="docutils literal notranslate"><span class="pre">wrap()</span></code></a></li><li><a class="reference internal" href="#unwrap"><code class="docutils literal notranslate"><span class="pre">unwrap()</span></code></a></li><li><a class="reference internal" href="#smooth"><code class="docutils literal notranslate"><span class="pre">smooth()</span></code></a></li></ul></li><li><a class="reference internal" href="#output">Output</a><ul><li><a class="reference internal" href="#pretty-printing">Pretty-printing</a></li><li><a class="reference internal" href="#non-pretty-printing">Non-pretty printing</a></li><li><a class="reference internal" href="#output-formatters">Output formatters</a><ul><li><a class="reference internal" href="#formatter-objects">Formatter objects</a><ul><li><a class="reference internal" href="#bs4.HTMLFormatter"><code class="docutils literal notranslate"><span class="pre">HTMLFormatter</span></code></a></li><li><a class="reference internal" href="#bs4.XMLFormatter"><code class="docutils literal notranslate"><span class="pre">XMLFormatter</span></code></a></li></ul></li><li><a class="reference internal" href="#writing-your-own-formatter">Writing your own formatter</a></li></ul></li><li><a class="reference internal" href="#get-text"><code class="docutils literal notranslate"><span class="pre">get\_text()</span></code></a></li></ul></li><li><a class="reference internal" href="#specifying-the-parser-to-use">Specifying the parser to use</a><ul><li><a class="reference internal" href="#differences-between-parsers">Differences between parsers</a></li></ul></li><li><a class="reference internal" href="#encodings">Encodings</a><ul><li><a class="reference internal" href="#output-encoding">Output encoding</a></li><li><a class="reference internal" href="#unicode-dammit">Unicode, Dammit</a><ul><li><a class="reference internal" href="#smart-quotes">Smart quotes</a></li><li><a class="reference internal" href="#inconsistent-encodings">Inconsistent encodings</a></li></ul></li></ul></li><li><a class="reference internal" href="#line-numbers">Line numbers</a></li><li><a class="reference internal" href="#comparing-objects-for-equality">Comparing objects for equality</a></li><li><a class="reference internal" href="#copying-beautiful-soup-objects">Copying Beautiful Soup objects</a></li><li><a class="reference internal" href="#advanced-parser-customization">Advanced parser customization</a><ul><li><a class="reference internal" href="#parsing-only-part-of-a-document">Parsing only part of a document</a><ul><li><a class="reference internal" href="#bs4.SoupStrainer"><code class="docutils literal notranslate"><span class="pre">SoupStrainer</span></code></a></li></ul></li><li><a class="reference internal" href="#customizing-multi-valued-attributes">Customizing multi-valued attributes</a></li><li><a class="reference internal" href="#handling-duplicate-attributes">Handling duplicate attributes</a></li><li><a class="reference internal" href="#instantiating-custom-subclasses">Instantiating custom subclasses</a></li></ul></li><li><a class="reference internal" href="#troubleshooting">Troubleshooting</a><ul><li><a class="reference internal" href="#diagnose"><code class="docutils literal notranslate"><span class="pre">diagnose()</span></code></a></li><li><a class="reference internal" href="#errors-when-parsing-a-document">Errors when parsing a document</a></li><li><a class="reference internal" href="#version-mismatch-problems">Version mismatch problems</a></li><li><a class="reference internal" href="#parsing-xml">Parsing XML</a></li><li><a class="reference internal" href="#other-parser-problems">Other parser problems</a></li><li><a class="reference internal" href="#miscellaneous">Miscellaneous</a></li><li><a class="reference internal" href="#improving-performance">Improving Performance</a></li></ul></li><li><a class="reference internal" href="#translating-this-documentation">Translating this documentation</a></li><li><a class="reference internal" href="#id16">Beautiful Soup 3</a><ul><li><a class="reference internal" href="#porting-code-to-bs4">Porting code to BS4</a><ul><li><a class="reference internal" href="#you-need-a-parser">You need a parser</a></li><li><a class="reference internal" href="#method-names">Method names</a></li><li><a class="reference internal" href="#generators">Generators</a></li><li><a class="reference internal" href="#xml">XML</a></li><li><a class="reference internal" href="#entities">Entities</a></li><li><a class="reference internal" href="#id17">Miscellaneous</a></li></ul></li></ul></li></ul> </div> <div role="note" aria-label="source link"> <h3>This Page</h3> <ul class="this-page-menu"> <li><a href="\_sources/index.rst.txt" rel="nofollow">Show Source</a></li> </ul> </div><div id="searchbox" style="display: none" role="search"> <h3 id="searchlabel">Quick search</h3> <div class="searchformwrapper"> <form class="search" action="search.html" method="get"> <input type="text" name="q" aria-labelledby="searchlabel" autocomplete="off" autocorrect="off" autocapitalize="off" spellcheck="false"/> <input type="submit" value="Go" /> </form> </div></div><script>document.getElementById('searchbox').style.display = "block"</script> </div> </div> <div class="clearer"></div> </div> <div class="related" role="navigation" aria-label="related navigation"> <h3>Navigation</h3> <ul> <li class="right" style="margin-right: 10px"> <a href="genindex.html" title="General Index" >index</a></li> <li class="right" > <a href="py-modindex.html" title="Python Module Index" >modules</a> |</li> <li class="nav-item nav-item-0"><a href="#">Beautiful Soup 4.12.0 documentation</a> &#187;</li> <li class="nav-item nav-item-this"><a href="">Beautiful Soup Documentation</a></li> </ul> </div> <div class="footer" role="contentinfo"> &#169; Copyright 2004-2023, Leonard Richardson. 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Links: g, e, n, i, n, d, e, x, ., h, t, m, l, ,, , p, y, -, m, o, d, i, n, d, e, x, ., h, t, m, l, ,, , #, ,, , #, m, o, d, u, l, e, -, b, s, 4, ,, , h, t, t, p, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, ,, , h, t, t, p, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, b, s, 3, /, d, o, c, u, m, e, n, t, a, t, i, o, n, ., h, t, m, l, ,, , #, p, o, r, t, i, n, g, -, c, o, d, e, -, t, o, -, b, s, 4, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, b, s, 4, /, d, o, c, ., z, h, /, ,, , h, t, t, p, :, /, /, k, o, n, d, o, u, ., c, o, m, /, B, S, 4, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, b, s, 4, /, d, o, c, ., k, o, /, ,, , h, t, t, p, s, 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/, d, o, c, u, m, e, n, t, a, t, i, o, n, ., h, t, m, l, ,, , h, t, t, p, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, d, o, w, n, l, o, a, d, /, 4, ., x, /, ,, , #, i, n, s, t, a, l, l, i, n, g, -, a, -, p, a, r, s, e, r, ,, , h, t, t, p, :, /, /, l, x, m, l, ., d, e, /, ,, , h, t, t, p, :, /, /, c, o, d, e, ., g, o, o, g, l, e, ., c, o, m, /, p, /, h, t, m, l, 5, l, i, b, /, ,, , #, d, i, f, f, e, r, e, n, c, e, s, -, b, e, t, w, e, e, n, -, p, a, r, s, e, r, s, ,, , #, m, a, k, i, n, g, -, t, h, e, -, s, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, i, d, 1, 5, ,, , #, k, i, n, d, s, -, o, f, -, o, b, j, e, c, t, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, n, a, v, i, g, a, t, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, b, s, 4, ., T, a, g, ., n, a, m, e, ,, , #, b, s, 4, ., T, a, g, ., a, t, t, r, s, ,, , #, m, u, l, t, i, -, v, a, l, u, e, d, -, a, t, t, r, i, b, u, t, e, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, n, a, v, i, g, a, t, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, r, e, p, l, a, c, e, -, w, i, t, h, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, n, a, v, i, g, a, t, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., T, a, g, ,, , #, n, a, v, i, g, a, t, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, m, o, d, i, f, y, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, s, p, e, c, i, a, l, -, s, t, r, i, n, g, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, f, o, r, -, h, t, m, l, -, d, o, c, u, m, e, n, t, s, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., S, t, y, l, e, s, h, e, e, t, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., S, c, r, i, p, t, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., T, e, m, p, l, a, t, e, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, f, o, r, -, x, m, l, -, d, o, c, u, m, e, n, t, s, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., D, e, c, l, a, r, a, t, i, o, n, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, 3, ., o, r, g, /, T, R, /, R, E, C, -, x, m, l, /, #, s, e, c, -, p, r, o, l, o, g, -, d, t, d, ,, , #, b, s, 4, ., D, o, c, t, y, p, e, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, 3, ., o, r, g, /, T, R, /, R, E, C, -, x, m, l, /, #, d, t, -, d, o, c, t, y, p, e, ,, , #, b, s, 4, ., C, D, a, t, a, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, 3, ., o, r, g, /, T, R, /, R, E, C, -, x, m, l, /, #, s, e, c, -, c, d, a, t, a, -, s, e, c, t, ,, , #, b, s, 4, ., P, r, o, c, e, s, s, i, n, g, I, n, s, t, r, u, c, t, i, o, n, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., w, 3, ., o, r, g, /, T, R, /, R, E, C, -, x, m, l, /, #, s, e, c, -, p, i, ,, , #, n, a, v, i, g, a, t, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, g, o, i, n, g, -, d, o, w, n, ,, , #, n, a, v, i, g, a, t, i, n, g, -, u, s, i, n, g, -, t, a, g, -, n, a, m, e, s, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, c, o, n, t, e, n, t, s, -, a, n, d, -, c, h, i, l, d, r, e, n, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, m, o, d, i, f, y, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, d, e, s, c, e, n, d, a, n, t, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, s, t, r, i, n, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, s, t, r, i, n, g, s, -, a, n, d, -, s, t, r, i, p, p, e, d, -, s, t, r, i, n, g, s, ,, , #, g, o, i, n, g, -, u, p, ,, , #, p, a, r, e, n, t, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, p, a, r, e, n, t, s, ,, , #, g, o, i, n, g, -, s, i, d, e, w, a, y, s, ,, , #, n, e, x, t, -, s, i, b, l, i, n, g, -, a, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, ,, , #, n, e, x, t, -, s, i, b, l, i, n, g, s, -, a, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, s, ,, , #, g, o, i, n, g, -, b, a, c, k, -, a, n, d, -, f, o, r, t, h, ,, , #, n, e, x, t, -, e, l, e, m, e, n, t, -, a, n, d, -, p, r, e, v, i, o, u, s, -, e, l, e, m, e, n, t, ,, , #, n, e, x, t, -, e, l, e, m, e, n, t, s, -, a, n, d, -, p, r, e, v, i, o, u, s, -, e, l, e, m, e, n, t, s, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, k, i, n, d, s, -, o, f, -, f, i, l, t, e, r, s, ,, , #, a, -, s, t, r, i, n, g, ,, , #, a, -, r, e, g, u, l, a, r, -, e, x, p, r, e, s, s, i, o, n, ,, , #, a, -, l, i, s, t, ,, , #, t, r, u, e, ,, , #, a, -, f, u, n, c, t, i, o, n, ,, , #, f, i, n, d, -, a, l, l, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, r, e, c, u, r, s, i, v, e, ,, , #, i, d, 1, 1, ,, , #, l, i, m, i, t, ,, , #, k, w, a, r, g, s, ,, , #, k, i, n, d, s, -, o, f, -, f, i, l, t, e, r, s, ,, , #, t, h, e, -, n, a, m, e, -, a, r, g, u, m, e, n, t, ,, , #, k, i, n, d, s, -, o, f, -, f, i, l, t, e, r, s, ,, , #, a, -, s, t, r, i, n, g, ,, , #, a, -, r, e, g, u, l, a, r, -, e, x, p, r, e, s, s, i, o, n, ,, , #, a, -, l, i, s, t, ,, , #, a, -, f, u, n, c, t, i, o, n, ,, , #, t, h, e, -, v, a, l, u, e, -, t, r, u, e, ,, , #, t, h, e, -, k, e, y, w, o, r, d, -, a, r, g, u, m, e, n, t, s, ,, , #, a, -, s, t, r, i, n, g, ,, , #, a, -, r, e, g, u, l, a, r, -, e, x, p, r, e, s, s, i, o, n, ,, , #, a, -, l, i, s, t, ,, , #, a, -, f, u, n, c, t, i, o, n, ,, , #, t, h, e, -, v, a, l, u, e, -, t, r, u, e, ,, , #, s, e, a, r, c, h, i, n, g, -, b, y, -, c, s, s, -, c, l, a, s, s, ,, , #, m, u, l, t, i, v, a, l, u, e, ,, , #, t, h, e, -, s, t, r, i, n, g, -, a, r, g, u, m, e, n, t, ,, , #, a, -, s, t, r, i, n, g, ,, , #, a, -, r, e, g, u, l, a, r, -, e, x, p, r, e, s, s, i, o, n, ,, , #, a, -, l, i, s, t, ,, , #, a, -, f, u, n, c, t, i, o, n, ,, , #, t, h, e, -, v, a, l, u, e, -, t, r, u, e, ,, , #, t, h, e, -, l, i, m, i, t, -, a, r, g, u, m, e, n, t, ,, , #, t, h, e, -, r, e, c, u, r, s, i, v, e, -, a, r, g, u, m, e, n, t, ,, , #, c, a, l, l, i, n, g, -, a, -, t, a, g, -, i, s, -, l, i, k, e, -, c, a, l, l, i, n, g, -, f, i, n, d, -, a, l, l, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., T, a, g, ,, , #, f, i, n, d, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, r, e, c, u, r, s, i, v, e, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, n, a, v, i, g, a, t, i, n, g, -, u, s, i, n, g, -, t, a, g, -, n, a, m, e, s, ,, , #, f, i, n, d, -, p, a, r, e, n, t, s, -, a, n, d, -, f, i, n, d, -, p, a, r, e, n, t, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, l, i, m, i, t, ,, , #, k, w, a, r, g, s, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, p, a, r, e, n, t, ,, , #, p, a, r, e, n, t, s, ,, , #, f, i, n, d, -, n, e, x, t, -, s, i, b, l, i, n, g, s, -, a, n, d, -, f, i, n, d, -, n, e, x, t, -, s, i, b, l, i, n, g, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, l, i, m, i, t, ,, , #, k, w, a, r, g, s, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, s, i, b, l, i, n, g, -, g, e, n, e, r, a, t, o, r, s, ,, , #, f, i, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, s, -, a, n, d, -, f, i, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, l, i, m, i, t, ,, , #, k, w, a, r, g, s, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, s, i, b, l, i, n, g, -, g, e, n, e, r, a, t, o, r, s, ,, , #, f, i, n, d, -, a, l, l, -, n, e, x, t, -, a, n, d, -, f, i, n, d, -, n, e, x, t, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, l, i, m, i, t, ,, , #, k, w, a, r, g, s, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, e, l, e, m, e, n, t, -, g, e, n, e, r, a, t, o, r, s, ,, , #, f, i, n, d, -, a, l, l, -, p, r, e, v, i, o, u, s, -, a, n, d, -, f, i, n, d, -, p, r, e, v, i, o, u, s, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, l, i, m, i, t, ,, , #, k, w, a, r, g, s, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, e, l, e, m, e, n, t, -, g, e, n, e, r, a, t, o, r, s, ,, , #, c, s, s, -, s, e, l, e, c, t, o, r, s, -, t, h, r, o, u, g, h, -, t, h, e, -, c, s, s, -, p, r, o, p, e, r, t, y, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., T, a, g, ,, , h, t, t, p, s, :, /, /, f, a, c, e, l, e, s, s, u, s, e, r, ., g, i, t, h, u, b, ., i, o, /, s, o, u, p, s, i, e, v, e, /, ,, , h, t, t, p, s, :, /, /, f, a, c, e, l, e, s, s, u, s, e, r, ., g, i, t, h, u, b, ., i, o, /, s, o, u, p, s, i, e, v, e, /, s, e, l, e, c, t, o, r, s, /, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., T, a, g, ,, , #, a, d, v, a, n, c, e, d, -, s, o, u, p, -, s, i, e, v, e, -, f, e, a, t, u, r, e, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , h, t, t, p, s, :, /, /, f, a, c, e, l, e, s, s, u, s, e, r, ., g, i, t, h, u, b, ., i, o, /, s, o, u, p, s, i, e, v, e, /, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, n, a, m, e, s, p, a, c, e, s, -, i, n, -, c, s, s, -, s, e, l, e, c, t, o, r, s, ,, , #, h, i, s, t, o, r, y, -, o, f, -, c, s, s, -, s, e, l, e, c, t, o, r, -, s, u, p, p, o, r, t, ,, , #, m, o, d, i, f, y, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, c, h, a, n, g, i, n, g, -, t, a, g, -, n, a, m, e, s, -, a, n, d, -, a, t, t, r, i, b, u, t, e, s, ,, , #, b, s, 4, ., T, a, g, ., a, t, t, r, s, ,, , #, m, o, d, i, f, y, i, n, g, -, s, t, r, i, n, g, ,, , #, a, p, p, e, n, d, ,, , #, e, x, t, e, n, d, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, n, a, v, i, g, a, b, l, e, s, t, r, i, n, g, -, a, n, d, -, n, e, w, -, t, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, i, n, s, e, r, t, ,, , #, i, n, s, e, r, t, -, b, e, f, o, r, e, -, a, n, d, -, i, n, s, e, r, t, -, a, f, t, e, r, ,, , #, c, l, e, a, r, ,, , #, e, x, t, r, a, c, t, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, d, e, c, o, m, p, o, s, e, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, r, e, p, l, a, c, e, -, w, i, t, h, ,, , #, w, r, a, p, ,, , #, u, n, w, r, a, p, ,, , #, s, m, o, o, t, h, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, o, u, t, p, u, t, ,, , #, p, r, e, t, t, y, -, p, r, i, n, t, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., T, a, g, ,, , #, n, o, n, -, p, r, e, t, t, y, -, p, r, i, n, t, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., T, a, g, ,, , #, e, n, c, o, d, i, n, g, s, ,, , #, o, u, t, p, u, t, -, f, o, r, m, a, t, t, e, r, s, ,, , #, f, o, r, m, a, t, t, e, r, -, o, b, j, e, c, t, s, ,, , #, b, s, 4, ., H, T, M, L, F, o, r, m, a, t, t, e, r, ,, , #, b, s, 4, ., X, M, L, F, o, r, m, a, t, t, e, r, ,, , #, w, r, i, t, i, n, g, -, y, o, u, r, -, o, w, n, -, f, o, r, m, a, t, t, e, r, ,, , #, b, s, 4, ., H, T, M, L, F, o, r, m, a, t, t, e, r, ,, , #, b, s, 4, ., X, M, L, F, o, r, m, a, t, t, e, r, ,, , #, b, s, 4, ., C, D, a, t, a, ,, , #, g, e, t, -, t, e, x, t, ,, , #, s, t, r, i, n, g, -, g, e, n, e, r, a, t, o, r, s, ,, , #, s, p, e, c, i, f, y, i, n, g, -, t, h, e, -, p, a, r, s, e, r, -, t, o, -, u, s, e, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, i, n, s, t, a, l, l, i, n, g, -, a, -, p, a, r, s, e, r, ,, , #, d, i, f, f, e, r, e, n, c, e, s, -, b, e, t, w, e, e, n, -, p, a, r, s, e, r, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, e, n, c, o, d, i, n, g, s, ,, , #, u, n, i, c, o, d, e, -, d, a, m, m, i, t, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, o, u, t, p, u, t, -, e, n, c, o, d, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, u, n, i, c, o, d, e, -, d, a, m, m, i, t, ,, , #, s, m, a, r, t, -, q, u, o, t, e, s, ,, , #, i, n, c, o, n, s, i, s, t, e, n, t, -, e, n, c, o, d, i, n, g, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, l, i, n, e, -, n, u, m, b, e, r, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, c, o, m, p, a, r, i, n, g, -, o, b, j, e, c, t, s, -, f, o, r, -, e, q, u, a, l, i, t, y, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, c, o, p, y, i, n, g, -, b, e, a, u, t, i, f, u, l, -, s, o, u, p, -, o, b, j, e, c, t, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, a, d, v, a, n, c, e, d, -, p, a, r, s, e, r, -, c, u, s, t, o, m, i, z, a, t, i, o, n, ,, , #, p, a, r, s, i, n, g, -, o, n, l, y, -, p, a, r, t, -, o, f, -, a, -, d, o, c, u, m, e, n, t, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, n, a, m, e, ,, , #, a, t, t, r, s, ,, , #, i, d, 1, 1, ,, , #, k, w, a, r, g, s, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, b, s, 4, ., S, o, u, p, S, t, r, a, i, n, e, r, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, c, u, s, t, o, m, i, z, i, n, g, -, m, u, l, t, i, -, v, a, l, u, e, d, -, a, t, t, r, i, b, u, t, e, s, ,, , #, h, a, n, d, l, i, n, g, -, d, u, p, l, i, c, a, t, e, -, a, t, t, r, i, b, u, t, e, s, ,, , #, i, n, s, t, a, n, t, i, a, t, i, n, g, -, c, u, s, t, o, m, -, s, u, b, c, l, a, s, s, e, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, t, r, o, u, b, l, e, s, h, o, o, t, i, n, g, ,, , #, d, i, a, g, n, o, s, e, ,, , #, e, r, r, o, r, s, -, w, h, e, n, -, p, a, r, s, i, n, g, -, a, -, d, o, c, u, m, e, n, t, ,, , #, i, n, s, t, a, l, l, i, n, g, -, a, -, p, a, r, s, e, r, ,, , #, p, a, r, s, e, r, -, i, n, s, t, a, l, l, a, t, i, o, n, ,, , #, p, a, r, s, e, r, -, i, n, s, t, a, l, l, a, t, i, o, n, ,, , #, v, e, r, s, i, o, n, -, m, i, s, m, a, t, c, h, -, p, r, o, b, l, e, m, s, ,, , #, p, a, r, s, i, n, g, -, x, m, l, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, p, a, r, s, e, r, -, i, n, s, t, a, l, l, a, t, i, o, n, ,, , #, o, t, h, e, r, -, p, a, r, s, e, r, -, p, r, o, b, l, e, m, s, ,, , #, d, i, f, f, e, r, e, n, c, e, s, -, b, e, t, w, e, e, n, -, p, a, r, s, e, r, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , h, t, t, p, :, /, /, w, w, w, ., w, 3, ., o, r, g, /, T, R, /, h, t, m, l, 5, /, s, y, n, t, a, x, ., h, t, m, l, #, s, y, n, t, a, x, ,, , #, p, a, r, s, i, n, g, -, x, m, l, ,, , #, m, i, s, c, e, l, l, a, n, e, o, u, s, ,, , h, t, t, p, :, /, /, w, i, k, i, ., p, y, t, h, o, n, ., o, r, g, /, m, o, i, n, /, P, r, i, n, t, F, a, i, l, s, ,, , #, i, m, p, r, o, v, i, n, g, -, p, e, r, f, o, r, m, a, n, c, e, ,, , h, t, t, p, :, /, /, l, x, m, l, ., d, e, /, ,, , #, p, a, r, s, e, r, -, i, n, s, t, a, l, l, a, t, i, o, n, ,, , h, t, t, p, :, /, /, p, y, p, i, ., p, y, t, h, o, n, ., o, r, g, /, p, y, p, i, /, c, c, h, a, r, d, e, t, /, ,, , #, p, a, r, s, i, n, g, -, o, n, l, y, -, p, a, r, t, -, o, f, -, a, -, d, o, c, u, m, e, n, t, ,, , #, t, r, a, n, s, l, a, t, i, n, g, -, t, h, i, s, -, d, o, c, u, m, e, n, t, a, t, i, o, n, ,, , #, i, d, 1, 6, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , h, t, t, p, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, b, s, 3, /, d, o, w, n, l, o, a, d, /, 3, ., x, /, B, e, a, u, t, i, f, u, l, S, o, u, p, -, 3, ., 2, ., 0, ., t, a, r, ., g, z, ,, , h, t, t, p, :, /, /, w, w, w, ., c, r, u, m, m, y, ., c, o, m, /, s, o, f, t, w, a, r, e, /, B, e, a, u, t, i, f, u, l, S, o, u, p, /, b, s, 3, /, d, o, c, u, m, e, n, t, a, t, i, o, n, ., h, t, m, l, ,, , #, p, o, r, t, i, n, g, -, c, o, d, e, -, t, o, -, b, s, 4, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , h, t, t, p, :, /, /, w, w, w, ., p, y, t, h, o, n, ., o, r, g, /, d, e, v, /, p, e, p, s, /, p, e, p, -, 0, 0, 0, 8, /, ,, , #, y, o, u, -, n, e, e, d, -, a, -, p, a, r, s, e, r, ,, , #, i, n, s, t, a, l, l, i, n, g, -, a, -, p, a, r, s, e, r, ,, , #, m, e, t, h, o, d, -, n, a, m, e, s, ,, , #, g, e, n, e, r, a, t, o, r, s, ,, , #, s, t, r, i, n, g, -, g, e, n, e, r, a, t, o, r, s, ,, , #, x, m, l, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, e, n, t, i, t, i, e, s, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, u, n, i, c, o, d, e, -, d, a, m, m, i, t, ,, , #, o, u, t, p, u, t, -, f, o, r, m, a, t, t, e, r, s, ,, , #, i, d, 1, 7, ,, , #, s, t, r, i, n, g, ,, , #, m, u, l, t, i, -, v, a, l, u, e, d, -, a, t, t, r, i, b, u, t, e, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., T, a, g, ,, , #, i, d, 1, 1, ,, , #, n, a, m, e, ,, , #, s, t, r, i, n, g, ,, , #, i, d, 1, 1, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, ,, , #, ,, , #, g, e, t, t, i, n, g, -, h, e, l, p, ,, , #, q, u, i, c, k, -, s, t, a, r, t, ,, , #, i, n, s, t, a, l, l, i, n, g, -, b, e, a, u, t, i, f, u, l, -, s, o, u, p, ,, , #, i, n, s, t, a, l, l, i, n, g, -, a, -, p, a, r, s, e, r, ,, , #, m, a, k, i, n, g, -, t, h, e, -, s, o, u, p, ,, , #, k, i, n, d, s, -, o, f, -, o, b, j, e, c, t, s, ,, , #, b, s, 4, ., T, a, g, ,, , #, b, s, 4, ., T, a, g, ., n, a, m, e, ,, , #, b, s, 4, ., T, a, g, ., a, t, t, r, s, ,, , #, b, s, 4, ., N, a, v, i, g, a, b, l, e, S, t, r, i, n, g, ,, , #, b, s, 4, ., B, e, a, u, t, i, f, u, l, S, o, u, p, ,, , #, s, p, e, c, i, a, l, -, s, t, r, i, n, g, s, ,, , #, b, s, 4, ., C, o, m, m, e, n, t, ,, , #, f, o, r, -, h, t, m, l, -, d, o, c, u, m, e, n, t, s, ,, , #, b, s, 4, ., S, t, y, l, e, s, h, e, e, t, ,, , #, b, s, 4, ., S, c, r, i, p, t, ,, , #, b, s, 4, ., T, e, m, p, l, a, t, e, ,, , #, f, o, r, -, x, m, l, -, d, o, c, u, m, e, n, t, s, ,, , #, b, s, 4, ., D, e, c, l, a, r, a, t, i, o, n, ,, , #, b, s, 4, ., D, o, c, t, y, p, e, ,, , #, b, s, 4, ., C, D, a, t, a, ,, , #, b, s, 4, ., P, r, o, c, e, s, s, i, n, g, I, n, s, t, r, u, c, t, i, o, n, ,, , #, n, a, v, i, g, a, t, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, g, o, i, n, g, -, d, o, w, n, ,, , #, n, a, v, i, g, a, t, i, n, g, -, u, s, i, n, g, -, t, a, g, -, n, a, m, e, s, ,, , #, c, o, n, t, e, n, t, s, -, a, n, d, -, c, h, i, l, d, r, e, n, ,, , #, d, e, s, c, e, n, d, a, n, t, s, ,, , #, s, t, r, i, n, g, ,, , #, s, t, r, i, n, g, s, -, a, n, d, -, s, t, r, i, p, p, e, d, -, s, t, r, i, n, g, s, ,, , #, g, o, i, n, g, -, u, p, ,, , #, p, a, r, e, n, t, ,, , #, p, a, r, e, n, t, s, ,, , #, g, o, i, n, g, -, s, i, d, e, w, a, y, s, ,, , #, n, e, x, t, -, s, i, b, l, i, n, g, -, a, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, ,, , #, n, e, x, t, -, s, i, b, l, i, n, g, s, -, a, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, s, ,, , #, g, o, i, n, g, -, b, a, c, k, -, a, n, d, -, f, o, r, t, h, ,, , #, n, e, x, t, -, e, l, e, m, e, n, t, -, a, n, d, -, p, r, e, v, i, o, u, s, -, e, l, e, m, e, n, t, ,, , #, n, e, x, t, -, e, l, e, m, e, n, t, s, -, a, n, d, -, p, r, e, v, i, o, u, s, -, e, l, e, m, e, n, t, s, ,, , #, s, e, a, r, c, h, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, k, i, n, d, s, -, o, f, -, f, i, l, t, e, r, s, ,, , #, a, -, s, t, r, i, n, g, ,, , #, a, -, r, e, g, u, l, a, r, -, e, x, p, r, e, s, s, i, o, n, ,, , #, a, -, l, i, s, t, ,, , #, t, r, u, e, ,, , #, a, -, f, u, n, c, t, i, o, n, ,, , #, f, i, n, d, -, a, l, l, ,, , #, t, h, e, -, n, a, m, e, -, a, r, g, u, m, e, n, t, ,, , #, t, h, e, -, k, e, y, w, o, r, d, -, a, r, g, u, m, e, n, t, s, ,, , #, s, e, a, r, c, h, i, n, g, -, b, y, -, c, s, s, -, c, l, a, s, s, ,, , #, t, h, e, -, s, t, r, i, n, g, -, a, r, g, u, m, e, n, t, ,, , #, t, h, e, -, l, i, m, i, t, -, a, r, g, u, m, e, n, t, ,, , #, t, h, e, -, r, e, c, u, r, s, i, v, e, -, a, r, g, u, m, e, n, t, ,, , #, c, a, l, l, i, n, g, -, a, -, t, a, g, -, i, s, -, l, i, k, e, -, c, a, l, l, i, n, g, -, f, i, n, d, -, a, l, l, ,, , #, f, i, n, d, ,, , #, f, i, n, d, -, p, a, r, e, n, t, s, -, a, n, d, -, f, i, n, d, -, p, a, r, e, n, t, ,, , #, f, i, n, d, -, n, e, x, t, -, s, i, b, l, i, n, g, s, -, a, n, d, -, f, i, n, d, -, n, e, x, t, -, s, i, b, l, i, n, g, ,, , #, f, i, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, s, -, a, n, d, -, f, i, n, d, -, p, r, e, v, i, o, u, s, -, s, i, b, l, i, n, g, ,, , #, f, i, n, d, -, a, l, l, -, n, e, x, t, -, a, n, d, -, f, i, n, d, -, n, e, x, t, ,, , #, f, i, n, d, -, a, l, l, -, p, r, e, v, i, o, u, s, -, a, n, d, -, f, i, n, d, -, p, r, e, v, i, o, u, s, ,, , #, c, s, s, -, s, e, l, e, c, t, o, r, s, -, t, h, r, o, u, g, h, -, t, h, e, -, c, s, s, -, p, r, o, p, e, r, t, y, ,, , #, a, d, v, a, n, c, e, d, -, s, o, u, p, -, s, i, e, v, e, -, f, e, a, t, u, r, e, s, ,, , #, n, a, m, e, s, p, a, c, e, s, -, i, n, -, c, s, s, -, s, e, l, e, c, t, o, r, s, ,, , #, h, i, s, t, o, r, y, -, o, f, -, c, s, s, -, s, e, l, e, c, t, o, r, -, s, u, p, p, o, r, t, ,, , #, m, o, d, i, f, y, i, n, g, -, t, h, e, -, t, r, e, e, ,, , #, c, h, a, n, g, i, n, g, -, t, a, g, -, n, a, m, e, s, -, a, n, d, -, a, t, t, r, i, b, u, t, e, s, ,, , #, m, o, d, i, f, y, i, n, 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src: url("https://d3njjcbhbojbot.cloudfront.net/web/bundles/styleguide/icons/fonts/coursera.v26.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/bundles/styleguide/icons/fonts/coursera.v26.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/bundles/styleguide/icons/fonts/coursera.v26.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/bundles/styleguide/icons/fonts/coursera.v26.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/bundles/styleguide/icons/fonts/coursera.v26.svg") format('svg');}@font-face { font-family: 'OpenSans-Light'; font-weight: normal; font-style: normal; font-display: swap; src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Light.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Light.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-300.woff2") format('woff2'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-300.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Light.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Light.svg#OpenSans-Light") format('svg');}@font-face { font-family: 'OpenSans'; font-weight: normal; font-style: normal; font-display: swap; src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Regular.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Regular.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-regular.woff2") format('woff2'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-regular.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Regular.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Regular.svg#OpenSans-Regular") format('svg');}@font-face { font-family: 'OpenSans-Semibold'; font-weight: normal; font-style: normal; font-display: swap; src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Semibold.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Semibold.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-600.woff2") format('woff2'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-600.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Semibold.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Semibold.svg#OpenSans-Semibold") format('svg');}@font-face {font-family: 'OpenSans-Bold';font-weight: 700;font-display: swap;src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.eot');src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.eot?#iefix') format('embedded-opentype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-700.woff2') format('woff2'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-700.woff') format('woff'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.ttf') format('truetype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.svg#OpenSans-Bold') format('svg');}@font-face { font-family: 'OpenSans'; font-weight: bold; font-style: normal; font-display: swap; src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-700.woff2") format('woff2'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans-v17-latin-latinext-cyrillic/opensans-700.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/opensans/OpenSans-Bold.svg#OpenSans-Bold") format('svg');}@font-face { font-family: 'Merriweather'; font-display: swap; src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.woff2") format('woff2'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.svg#Merriweather-Regular") format('svg'); font-weight: normal; font-style: normal;}@font-face { font-family: 'Merriweather-Light'; font-display: swap; src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Light.eot"); src: url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Light.eot?#iefix") format('embedded-opentype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Light.woff2") format('woff2'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Light.woff") format('woff'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Light.ttf") format('truetype'), url("https://d3njjcbhbojbot.cloudfront.net/web/type/merriweather/Merriweather-Regular.svg#Merriweather-Light") format('svg'); font-weight: normal; font-style: normal;}@font-face { font-family: 'Source Sans Pro'; font-style: normal; font-weight: 300; font-display: swap; src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-300.eot'); /\* IE9 Compat Modes \*/ src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-300.eot?#iefix') format('embedded-opentype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-300.woff2') format('woff2'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-300.woff') format('woff'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-300.ttf') format('truetype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-300.svg#SourceSansPro') format('svg');}@font-face { font-family: 'Source Sans Pro'; font-style: normal; font-weight: 400; font-display: swap; src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-regular.eot'); /\* IE9 Compat Modes \*/ src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-regular.eot?#iefix') format('embedded-opentype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-regular.woff2') format('woff2'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-regular.woff') format('woff'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-regular.ttf') format('truetype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-regular.svg#SourceSansPro') format('svg');}@font-face { font-family: 'Source Sans Pro'; font-style: normal; font-weight: 600; font-display: swap; src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-600.eot'); /\* IE9 Compat Modes \*/ src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-600.eot?#iefix') format('embedded-opentype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-600.woff2') format('woff2'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-600.woff') format('woff'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-600.ttf') format('truetype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-600.svg#SourceSansPro') format('svg');}@font-face { font-family: 'Source Sans Pro'; font-style: normal; font-weight: bold; font-display: swap; src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-700.eot'); src: url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-700.eot?#iefix') format('embedded-opentype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-700.woff2') format('woff2'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-700.woff') format('woff'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-700.ttf') format('truetype'), url('https://d3njjcbhbojbot.cloudfront.net/web/type/source-sans-pro-v14-latin/source-sans-pro-v14-latin-700.svg#SourceSansPro') format('svg');}</style><script>// NOTE: This file gets included in Jade pre-transformed so it must be ES5-safe.(function (global, factory) { global.errorTracker = factory();})(this, function () { var lastError = {}; function errorEquals(left, right) { return ['message', 'url', 'line', 'column'].every(function (field) { return left[field] == right[field]; }); } return function (tracker, options) { options = options || {}; var logger = options.logger || (window && window.console) || { error: function () {} }; var version = options.version || ''; var versionTimestamp = options.versionTimestamp || ''; var stringifyError = function (error) { var plainObject = {}; if (error && typeof error == 'object') { Object.getOwnPropertyNames(error).forEach(function (key) { plainObject[key] = error[key]; }); } return JSON.stringify(plainObject); }; var logClientSideError = function (message, url, line, column, error) { // errors without line numbers, urls or columns aren't helpful, chuck them if (!url || !column || !line) return; if (message.target && message.type) { message = message.type; } if (error && error.stack) { var findStackUrlRegExp = /\(([^)\s]+?):\d+:\d+\)/gm; var findLastStackUrlRegExp = /\s\*(https?:\/\/[^:\s]+?):\d+:\d+\s\*$/gm; var match; var local = true; // test for parens enclosed URLs in stack trace while ((match = findStackUrlRegExp.exec(error.stack))) { if (match && !options.scriptFilter.test(match[1])) { local = false; break; } } // test for last URL in stack trace if (local) { while ((match = findLastStackUrlRegExp.exec(error.stack))) { if (match && !options.scriptFilter.test(match[1])) { local = false; break; } } } // if stack trace shows us external scripts are buggy, don't log if (!local) return; } var errorStr = stringifyError(error); var errorDescrip = { message: message, script: url, line: line, url: window && window.document ? window.document.URL : url, column: column, error: errorStr, version: version, versionTimestamp: versionTimestamp, appName: window.appName || 'unknown', }; logger.error(errorStr); var trackableUrl = url && (!options.scriptFilter || options.scriptFilter.test(url)); if (trackableUrl) { var isNewError = !errorEquals(errorDescrip, lastError); // don't track the same error over and over again if (isNewError) { lastError = errorDescrip; tracker(errorDescrip); } } }; if (typeof window !== 'undefined') { window.onerror = logClientSideError; if (window.errorTracker) { delete window.errorTracker; } } else { return logClientSideError; } };});</script><script>window.\_204 = [];window.\_400 = [];if(window.errorTracker) { window.errorTracker( function(error) { window.\_400.push({key:'page.error.javascript', value:error}); }, { scriptFilter: new RegExp('^/|^' + location.protocol + '//' + location.host), version: "9c0d93efce2794d25eac88f59d2317fa18aa8751", versionTimestamp: "1701811117544" });}</script><script>window.publicPathOverride = "" !== "" ? "" : null;</script><style>.rc-A11yScreenReaderOnly{position:absolute;width:1px;height:1px;margin:-1px;padding:0;overflow:hidden;clip:rect(0,0,0,0);border:0;text-transform:none}.rc-GlobalFooter\_copyright-row{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;width:50%}@media (max-width:767px){.rc-GlobalFooter\_copyright-row{-webkit-box-orient:vertical;-moz-box-orient:vertical;-o-box-orient:vertical;-webkit-flex-direction:column;-ms-flex-direction:column;flex-direction:column;width:auto}}.rc-GlobalFooter\_copyright-row.lohp-rebrand{line-height:1.25rem;font-family:Source Sans Pro,Arial,sans-serif}.rc-GlobalFooter\_copyright-row--margin-bottom{margin-bottom:20px}.rc-GlobalFooter\_copyright-row--margin-top{margin-top:30px}.rc-GlobalFooter\_copyright-row--no-list .rc-GlobalFooter\_copyright\_col{width:auto}.rc-GlobalFooter\_copyright-row\_text{color:inherit;font-size:.875rem}@media (max-width:767px){.rc-GlobalFooter\_copyright-row\_text{font-size:.75rem}}.rc-GlobalFooter\_copyright\_col{width:50%}@media (max-width:767px){.rc-GlobalFooter\_copyright\_col{width:auto}}.rc-GlobalFooter\_copyright\_list{margin:0;padding:0;list-style:none;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}@media (max-width:767px){.rc-GlobalFooter\_copyright\_list{margin-top:4px}}.rc-GlobalFooter\_copyright\_list\_item{margin:0 10px}.rc-GlobalFooter\_copyright\_list\_item:first-of-type{margin:0 10px 0 5px}@media (max-width:767px){.rc-GlobalFooter\_copyright\_list\_item:first-of-type{margin:0 10px}}.rc-GlobalFooter\_copyright\_list\_item\_link:hover{color:inherit}.rc-GlobalFooter\_column\_header{font-family:OpenSans,Arial,sans-serif;font-size:1.5rem;font-weight:700;margin-bottom:20px}@media (max-width:767px){.rc-GlobalFooter\_column\_header{font-size:1rem;margin-bottom:15px}.rc-GlobalFooter\_column\_header .rc-GlobalFooter\_column\_header{margin-bottom:0}.rc-GlobalFooter\_column\_header--badges,.rc-GlobalFooter\_column\_header--social-media{margin-bottom:25px}}.rc-GlobalFooter\_column\_header.lohp-rebrand{font-family:Source Sans Pro,Arial,sans-serif;font-weight:600;font-size:1.25rem;line-height:1.75rem;letter-spacing:-.1px}.rc-GlobalFooter\_column\_list{margin:0;padding:0;list-style:none;content-visibility:auto;contain-intrinsic-size:1px 406px}.rc-GlobalFooter\_column\_list--bold{margin-top:20px}.rc-GlobalFooter\_column\_list--bold .rc-GlobalFooter\_column\_list\_item{font-weight:700}.rc-GlobalFooter\_column\_list\_item{font-size:1rem;line-height:1.75rem}@media (max-width:767px){.rc-GlobalFooter\_column\_list\_item{font-size:.875rem;line-height:1.5rem}}.rc-GlobalFooter\_column\_list\_item.lohp-rebrand{font-family:Source Sans Pro,Arial,sans-serif;font-size:.875rem;line-height:1.25rem}.rc-GlobalFooter\_column\_list\_item\_link,.rc-GlobalFooter\_column\_list\_item\_link:hover{color:inherit}.rc-GlobalFooter\_coursera-logo{display:block;margin-bottom:20px}@media (max-width:767px){.rc-GlobalFooter\_coursera-logo{margin-bottom:10px}}.rc-GlobalFooter\_description{margin:0;line-height:1.5rem}.rc-GlobalFooter .rc-GlobalFooter\_column .mobile-app-badges{margin-top:40px}@media (max-width:767px){.rc-GlobalFooter .rc-GlobalFooter\_column .mobile-app-badges{margin-top:20px}}.rc-GlobalFooter .rc-GlobalFooter\_column--no-description .mobile-app-badges{margin-top:25px}@media (max-width:767px){.rc-GlobalFooter .rc-GlobalFooter\_column--no-description .mobile-app-badges{margin-top:20px}.rc-GlobalFooter\_social-media.lohp-rebrand{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-orient:vertical;-moz-box-orient:vertical;-o-box-orient:vertical;-webkit-flex-direction:column;-ms-flex-direction:column;flex-direction:column;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.rc-GlobalFooter\_social-media.lohp-rebrand .rc-GlobalFooter\_social-media\_link{margin-left:10px;margin-right:10px}}.rc-GlobalFooter\_social-media--centered .rc-GlobalFooter\_social-media\_link{margin:0 10px}.rc-GlobalFooter\_social-media--left-aligned .rc-GlobalFooter\_social-media\_link{margin-right:20px;margin-left:0}.rc-GlobalFooter\_social-media\_list{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;padding:0;margin:0;list-style:none}.rc-GlobalFooter\_social-media\_link{display:inline-block;margin-left:20px}.rc-GlobalFooter{border-top:1px solid #e4e4e4;padding-top:2.75rem;overflow:hidden}@media (max-width:767px){.rc-GlobalFooter{padding-top:2.5rem}}@media (min-width:768px){.rc-GlobalFooter.lohp-rebrand .bt3-container{max-width:85%}}@media (max-width:767px){.rc-GlobalFooter.lohp-rebrand .bt3-container{max-width:90%;padding-left:0;padding-right:0}}.rc-GlobalFooter\_column-container{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start;-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between;margin:0 -15px}@media (max-width:767px){.rc-GlobalFooter\_column-container{margin:0}}.rc-GlobalFooter\_column-container--sub-content-row{padding-top:15px;padding-bottom:50px;margin:0}.rc-GlobalFooter\_column-container--border-top{border-top:1px solid #e4e4e4}.rc-GlobalFooter\_column-container--align-items-center{-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.rc-GlobalFooter\_column-container--column{-webkit-box-orient:vertical;-moz-box-orient:vertical;-o-box-orient:vertical;-webkit-flex-direction:column;-ms-flex-direction:column;flex-direction:column}.rc-GlobalFooter\_column{width:100%;padding-bottom:2.75rem;padding-left:15px;padding-right:15px}@media (max-width:767px){.rc-GlobalFooter\_column{width:100%;padding-bottom:2rem;padding-left:0;padding-right:0}.rc-GlobalFooter\_column--mobile-column{width:50%}.rc-GlobalFooter\_column--logo-column .rc-GlobalFooter\_column\_container{max-width:320px}.rc-GlobalFooter\_column--left-aligned .rc-GlobalFooter\_column\_container{margin:0}}.rc-GlobalFooter\_column\_container{max-width:170px}.rc-GlobalFooter\_column\_container--logo-column{max-width:210px}.rc-GlobalFooter .mobile-app-badges,.rc-GlobalFooter .mobile-app-badges .mobile-badge{margin:0}.rc-GlobalFooter .mobile-app-badges .mobile-badge:first-of-type{margin-bottom:15px;display:inline-block}@media (max-width:767px){.rc-GlobalFooter .mobile-app-badges .mobile-badge:first-of-type{margin:0}}.rc-PageFooter.hide-top-border{border-top:none}@media (max-width:824px){.rc-PageFooter.sticky-bar{margin-bottom:73px}}@media (max-width:602px){.rc-PageFooter.sticky-bar{margin-bottom:129px}}@media (max-width:767px){.rc-PaidMediaFooter .rc-GlobalFooter\_column\_container{margin:0 auto}.rc-PaidMediaFooter .rc-GlobalFooter\_column\_header{text-align:center}.rc-PaidMediaFooter .mobile-app-badges .mobile-badge:last-child{margin-right:0}.rc-PaidMediaFooter .b-corp-logo{margin:25px auto}}.rc-PaidMediaFooter .rc-GlobalFooter\_copyright-row{width:100%;-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}@media (max-width:1023px){.rc-PaidMediaFooter.sticky-bar{margin-bottom:83px}}.rc-SubFooterSection{padding-left:20px;padding-right:20px}@media (max-width:608px){.rc-SubFooterSection{margin-bottom:1rem}}@media (min-width:768px){.rc-SubFooterSection.lohp-rebrand{margin-bottom:60px}}@media (max-width:767px){.rc-SubFooterSection.lohp-rebrand{margin-bottom:83px}}.rc-SubFooterSection\_\_header{line-height:1.5rem;font-weight:700;font-size:15px;margin-bottom:.75rem;color:#1f1f1f;font-family:OpenSans}.rc-SubFooterSection\_\_header.lohp-rebrand{line-height:1.75rem;letter-spacing:-.1px;font-size:20px;font-family:Source Sans Pro,Arial,sans-serif;font-weight:600}.rc-SubFooterSection\_\_content-column-links{list-style-type:none;padding:0;margin-right:1.125rem;content-visibility:auto;contain-intrinsic-size:1px 670px}.rc-SubFooterSection\_\_content-column-link-item{padding:0;margin-bottom:.625rem;line-height:1.125rem;font-size:.875rem;font-family:OpenSans}.rc-SubFooterSection\_\_content-column-link-item.lohp-rebrand{line-height:1.25rem;font-family:Source Sans Pro,Arial,sans-serif}@media (max-width:608px){.rc-SubFooterSection\_\_content-column-link-item{margin-bottom:.4375rem}}.rc-SubFooterSection\_\_content-column-link-text{color:#1f1f1f}.rc-SubFooterSection\_\_content-column-link-text:hover{color:inherit}.rc-SeoGlobalFooter{background-color:#f8f8f8}.rc-SeoGlobalFooter.lohp-rebrand{background-color:#f5f5f5}@media (max-width:768px){.rc-SeoGlobalFooter.lohp-rebrand.stickyBar{margin-bottom:90px}}.rc-SeoGlobalFooter\_\_content{padding-top:3.0625rem;padding-bottom:8px}@media (max-width:1040px){.rc-SeoGlobalFooter\_\_content{padding-top:2rem}}@media (max-width:608px){.rc-SeoGlobalFooter\_\_content{padding-top:2rem}}.rc-SeoGlobalFooter\_\_content.lohp-rebrand{padding-top:80px}.rc-SeoGlobalFooter\_\_mobile-badges-column-text{display:none}@media (max-width:767px){.rc-SeoGlobalFooter\_\_mobile-badges-column-text{display:block;line-height:1.75rem;font-family:Source Sans Pro,Arial,sans-serif;font-weight:600;font-size:1rem;margin-bottom:1.25rem}}.rc-SeoGlobalFooter\_\_social-media-and-copyright{padding:2.75rem 0;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between;-webkit-box-orient:horizontal;-moz-box-orient:horizontal;-o-box-orient:horizontal;-webkit-flex-direction:row;-ms-flex-direction:row;flex-direction:row}@media (min-width:768px){.rc-SeoGlobalFooter\_\_social-media-and-copyright{-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;border-top:1px solid #e4e4e4}.rc-SeoGlobalFooter\_\_social-media-and-copyright.lohp-rebrand{border-top:1px solid #bdbdbd}}@media (max-width:767px){.rc-SeoGlobalFooter\_\_social-media-and-copyright{padding:1rem 0;border-top:0;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-direction:reverse;-moz-box-direction:reverse;-o-box-direction:reverse;-webkit-box-orient:vertical;-moz-box-orient:vertical;-o-box-orient:vertical;-webkit-flex-direction:column-reverse;-ms-flex-direction:column-reverse;flex-direction:column-reverse}}.rc-HeaderRightNavButton{position:relative;text-align:left}.rc-HeaderRightNavButton.dropdown-btn{width:245px;min-height:42px;outline:0}.rc-HeaderRightNavButton.dropdown-btn a:focus,.rc-HeaderRightNavButton.dropdown-btn a:hover{outline:0;background-color:#f0f0f0}@media (min-width:768px) and (max-width:1024px){.rc-HeaderRightNavButton.dropdown-btn{width:190px}}.rc-HeaderRightNavButton a,.rc-HeaderRightNavButton button{display:block;width:auto;height:auto;margin:0!important;padding:12px 18px;font-size:14px;line-height:20px;color:#1f1f1f;clear:both;border:0}.rc-HeaderRightNavButton a svg,.rc-HeaderRightNavButton button svg{fill:#000!important;height:20px;line-height:20px;margin-right:5px;margin-top:-3px;width:20px}.rc-HeaderRightNavButton a:focus,.rc-HeaderRightNavButton a:hover,.rc-HeaderRightNavButton button:focus,.rc-HeaderRightNavButton button:hover{text-decoration:none;color:#000}.rc-HeaderRightNavButton a:focus svg,.rc-HeaderRightNavButton a:hover svg,.rc-HeaderRightNavButton button:focus svg,.rc-HeaderRightNavButton button:hover svg{fill:#2a73cc!important}@media (max-width:991px){.rc-HeaderRightNavButton .rc-HeaderRightNavButton a,.rc-HeaderRightNavButton .rc-HeaderRightNavButton a button.my-coursera,.rc-HeaderRightNavButton .rc-HeaderRightNavButton a button.my-coursera button.sign-out,.rc-HeaderRightNavButton .rc-HeaderRightNavButton button,.rc-HeaderRightNavButton .rc-HeaderRightNavButton button button.my-coursera,.rc-HeaderRightNavButton .rc-HeaderRightNavButton button button.my-coursera button.sign-out{padding-right:14px}}@media (max-width:767px){.rc-HeaderRightNavButton .rc-HeaderRightNavButton{padding:8px 24px!important;height:40px!important}.rc-HeaderRightNavButton .rc-HeaderRightNavButton a{color:#757575!important;background-color:transparent!important}}.c-ph-career-academy.isLohpRebrand a,.c-ph-enterprise.isLohpRebrand a,.c-ph-student.isLohpRebrand a{font-family:Source Sans Pro,Arial,sans-serif;font-size:14px;line-height:20px;color:#000}.c-ph-career-academy.isLohpRebrand a:hover,.c-ph-enterprise.isLohpRebrand a:hover,.c-ph-student.isLohpRebrand a:hover{text-decoration:underline}.c-ph-right-nav-button.isLohpRebrand a,.c-ph-right-nav-button.isLohpRebrand button{font-family:Source Sans Pro,Arial,sans-serif;font-size:14px;line-height:20px}.c-ph-right-nav-button.isLohpRebrand.c-ph-log-in{white-space:nowrap}.c-ph-right-nav-button.isLohpRebrand.c-ph-log-in:hover{text-decoration:underline;color:#0056d2}.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up a{color:#fff}.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up .join-btn,.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up .signup-jff-fp-btn,.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up .standardSignupBtnLink{background-color:#0056d2;border:none;border-radius:4px}.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up .join-btn:hover,.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up .signup-jff-fp-btn:hover,.c-ph-right-nav-button.isLohpRebrand.c-ph-sign-up .standardSignupBtnLink:hover{background-color:#00419e}.c-ph-right-nav-button.isLohpRebrand.cta-color-exp a{color:#0056d2}.c-ph-right-nav-button.isLohpRebrand.cta-color-exp .join-btn,.c-ph-right-nav-button.isLohpRebrand.cta-color-exp .signup-jff-fp-btn,.c-ph-right-nav-button.isLohpRebrand.cta-color-exp .standardSignupBtnLink{background-color:#fff;border:0 solid #0056d2;-webkit-box-shadow:inset 0 0 0 1px #0056d2;box-shadow:inset 0 0 0 1px #0056d2;margin-top:4px}.c-ph-right-nav-button.isLohpRebrand.cta-color-exp .join-btn:hover,.c-ph-right-nav-button.isLohpRebrand.cta-color-exp .signup-jff-fp-btn:hover,.c-ph-right-nav-button.isLohpRebrand.cta-color-exp .standardSignupBtnLink:hover{color:#00419e;background-color:#f3f8ff;-webkit-box-shadow:inset 0 0 0 1px #00419e;box-shadow:inset 0 0 0 1px #00419e}.c-ph-right-nav-button.isLohpRebrand.not-enterprise-cta .join-btn,.c-ph-right-nav-button.isLohpRebrand.not-enterprise-cta .signup-jff-fp-btn,.c-ph-right-nav-button.isLohpRebrand.not-enterprise-cta .standardSignupBtnLink{padding:8px 4px}.rc-AuthenticatedAccountDropdown{height:65px;top:-20px}@media (max-width:991px){.rc-AuthenticatedAccountDropdown{top:-10px}}.rc-AuthenticatedAccountDropdown:hover{background-color:#f0f0f0}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container{position:relative;width:220px;padding:20px 0 0}@media (min-width:768px) and (max-width:1440px){.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container{width:auto}}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container.no-profile-name{width:90px}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container button{border-left:2px solid #e1e1e1}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .switcher\_trigger{padding-left:24px}@media (max-width:991px){.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .switcher\_trigger{padding-left:10px}}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .c-authenticated-dropdown-button{background-color:transparent;cursor:pointer;display:inline-block}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .c-authenticated-dropdown-button.in-rebrand{font-family:Source Sans Pro,arial,sans-serif}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .c-authenticated-dropdown-menu{list-style:none;position:absolute;display:block;max-height:90vh;padding:0;right:0;width:auto;overflow-y:auto;background-color:#fff;color:#7a7d7f;-webkit-box-shadow:0 0 2px 0 rgba(0,0,0,.12);box-shadow:0 0 2px 0 rgba(0,0,0,.12);border-color:#eee;border-radius:1px;top:65px}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .c-authenticated-dropdown-menu .sign-out{width:100%;height:42px;text-align:left;background-color:#fff}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .c-authenticated-dropdown-menu .sign-out:focus,.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container .c-authenticated-dropdown-menu .sign-out:hover{text-decoration:none;color:#000;background-color:#f0f0f0;outline:none}.rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container-v2{position:relative;width:125px;padding:20px 0 0}@media (max-width:1200px){.c-ph-nav .c-container .c-ph-right-nav ul.c-navbar-list>.c-ph-right-nav-button .c-authenticated-dropdown-button,.c-ph-nav .c-container .c-ph-right-nav ul.c-navbar-list>.c-ph-right-nav-button .c-authenticated-dropdown-button padding-right 12px .switcher\_trigger,.c-ph-nav .c-container .c-ph-right-nav ul.c-navbar-list>.c-ph-right-nav-button a:not(.bt3-btn):not(.signup-btn):not(.signup-jff-fp-btn),.c-ph-nav .c-container .c-ph-right-nav ul.c-navbar-list>.c-ph-right-nav-button a:not(.bt3-btn):not(.signup-btn):not(.signup-jff-fp-btn) padding-right 12px .switcher\_trigger{padding-left:12px}.c-ph-nav .c-container .c-ph-right-nav ul.c-navbar-list>.c-ph-right-nav-button .c-authenticated-dropdown-button padding-right 12px .switcher\_trigger .c-authenticated-dropdown-button .switcher\_trigger,.c-ph-nav .c-container .c-ph-right-nav ul.c-navbar-list>.c-ph-right-nav-button a:not(.bt3-btn):not(.signup-btn):not(.signup-jff-fp-btn) padding-right 12px .switcher\_trigger .c-authenticated-dropdown-button .switcher\_trigger{padding-left:24px}}@media (max-width:991px){.c-authenticated-dropdown-button .switcher\_trigger{padding-left:24px}}.rc-DynamicPageHeader .c-ph-right-nav,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav{position:relative;display:inline;z-index:2}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list{display:inline;height:65px;padding:20px 0;margin:0}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .current-page a,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .current-page a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .current-page a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .current-page a{color:#2a73cc!important;font-weight:700}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button{padding:0}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-avatar-button,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-avatar-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-avatar-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-avatar-button{position:relative}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-right-nav-mobile-only,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-right-nav-mobile-only,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-right-nav-mobile-only,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-right-nav-mobile-only{padding:0;display:none}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-right-nav-no-border,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-right-nav-no-border,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-right-nav-no-border,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-right-nav-no-border{border:none}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-sign-up,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-sign-up,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-sign-up,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-sign-up{padding-right:8px}@media (max-width:1600px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-sign-up,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-sign-up,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-sign-up,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-sign-up{height:65px;top:-20px;padding:2px;margin-right:4px;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;vertical-align:middle;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;-ms-flex-line-pack:center;-webkit-align-content:center;align-content:center}}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.explore-catalog-link a,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.explore-catalog-link a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.explore-catalog-link a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.explore-catalog-link a{color:#0056d2}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link){line-height:normal;padding:3px 10px;height:100%;font-size:14px}@media (min-width:768px) and (max-width:1024px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link){padding:3px 8px}}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button:focus,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button:hover,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):focus,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):hover,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button:focus,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button:hover,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):focus,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):hover,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button:focus,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button:hover,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):focus,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):hover,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button:focus,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button:hover,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):focus,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):hover{background-color:transparent;color:$c-primary}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button.c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link).c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button.c-authenticated-dropdown-button,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link).c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .c-authenticated-dropdown-button.c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link).c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .c-authenticated-dropdown-button.c-authenticated-dropdown-button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link).c-authenticated-dropdown-button{padding-right:0!important;padding-top:0;padding-bottom:0}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .signup-jff-fp-btn,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .signup-jff-fp-btn,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .signup-jff-fp-btn,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .signup-jff-fp-btn{position:relative;height:unset;min-width:88px;width:auto;top:-10px;font-size:14px;font-weight:700;border-radius:4px;line-height:normal}@media (max-width:1600px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .signup-jff-fp-btn,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .signup-jff-fp-btn,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .signup-jff-fp-btn,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .signup-jff-fp-btn{white-space:break-spaces;height:unset;line-height:normal;padding:10px 4px;max-width:124px;top:-17px;position:static}}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .join-btn,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .join-btn,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .join-btn,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .join-btn{position:relative;height:36px;top:-6px;font-size:14px;border-radius:4px;line-height:4px;min-width:88px!important;width:auto!important;color:$color-white}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .switcher\_trigger,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .switcher\_trigger,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .switcher\_trigger,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .switcher\_trigger{height:auto;background-color:transparent;padding:0 0 0 24px;position:relative;bottom:7.5px}@media (max-width:1300px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .switcher\_trigger,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .switcher\_trigger,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .switcher\_trigger,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .switcher\_trigger{padding:0 0 0 8px}}.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .switcher\_trigger:hover,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .switcher\_trigger:hover,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button .switcher\_trigger:hover,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button .switcher\_trigger:hover{text-decoration:none}@media (max-width:960px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-enterprise,.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-student,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-enterprise,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-student,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-enterprise,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-student,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-enterprise,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-student{display:none}}@media (max-width:820px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-log-in,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-log-in,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-log-in,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-log-in{display:none}}@media (min-width:992px) and (max-width:1100px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-log-in a,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-log-in a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .c-ph-right-nav-button.c-ph-log-in a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .c-ph-right-nav-button.c-ph-log-in a{padding:3px 12px!important}}@media (max-width:960px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .rc-ShoppingCart,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .rc-ShoppingCart,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .rc-ShoppingCart,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .rc-ShoppingCart{border-left:none}}@media (max-width:840px){.rc-DynamicPageHeader .c-ph-right-nav span.c-navbar-item .rc-ShoppingCart,.rc-DynamicPageHeader .c-ph-right-nav ul.c-navbar-list .rc-ShoppingCart,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav span.c-navbar-item .rc-ShoppingCart,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav ul.c-navbar-list .rc-ShoppingCart{display:none}}@media (min-width:768px) and (max-width:1120px){.rc-DynamicPageHeader .c-ph-right-nav.is-cart-active.is-cart-active .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-DynamicPageHeader .c-ph-right-nav.is-cart-active.is-cart-active .rc-NotificationCenter>button,.rc-DynamicPageHeader .c-ph-right-nav.is-cart-active.is-cart-active .rc-ShoppingCart>a,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav.is-cart-active.is-cart-active .c-ph-right-nav-button a:not(.bt3-btn):not(.join-btn):not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav.is-cart-active.is-cart-active .rc-NotificationCenter>button,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav.is-cart-active.is-cart-active .rc-ShoppingCart>a{font-size:12px;padding:3px 4px}}.rc-DynamicPageHeader .c-ph-right-nav.is-cart-active.is-cart-active .rc-NotificationCenter,.rc-PageHeader>.c-ph-nav>.c-container .c-ph-right-nav.is-cart-active.is-cart-active .rc-NotificationCenter{margin-right:6px}.rc-DynamicPageHeader .rc-AuthenticatedAccountDropdown{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;float:none;top:0;padding:0}.rc-DynamicPageHeader .rc-AuthenticatedAccountDropdown button{width:100%;bottom:0!important}.rc-DynamicPageHeader .rc-AuthenticatedAccountDropdown .c-authenticated-dropdown-menu-container{padding:0}.rc-DynamicPageHeader .rc-AuthenticatedAccountDropdown ul.c-authenticated-dropdown-menu{top:53px}.rc-DynamicPageHeader .context-header .c-ph-enterprise a,.rc-DynamicPageHeader .context-header .c-ph-student a,.rc-DynamicPageHeader .context-header span.c-ph-career-academy a{padding:8px}.rc-DynamicPageHeader .context-header .c-ph-enterprise a:hover,.rc-DynamicPageHeader .context-header .c-ph-student a:hover,.rc-DynamicPageHeader .context-header span.c-ph-career-academy a:hover{color:#2a73cc}.rc-DynamicPageHeader .context-header .c-ph-enterprise ul a:hover,.rc-DynamicPageHeader .context-header .c-ph-student ul a:hover,.rc-DynamicPageHeader .context-header span.c-ph-career-academy ul a:hover{color:#fff}.rc-DynamicPageHeader .context-header ul.c-navbar-list{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;float:none}.rc-DynamicPageHeader .context-header ul.c-navbar-list .c-ph-log-in{white-space:nowrap;-webkit-box-flex:0;-moz-box-flex:0;-o-box-flex:0;-ms-box-flex:0;box-flex:0;-webkit-flex-grow:0;flex-grow:0;-webkit-flex-shrink:0;flex-shrink:0}.rc-DynamicPageHeader .context-header ul.c-navbar-list .c-ph-log-in a{line-height:normal;padding:3px 12px;height:100%;font-size:14px}.rc-DynamicPageHeader .context-header ul.c-navbar-list .c-ph-log-in a:hover{background-color:transparent}.rc-DynamicPageHeader .context-header ul.c-navbar-list .c-ph-sign-up{-webkit-box-flex:0;-moz-box-flex:0;-o-box-flex:0;-ms-box-flex:0;box-flex:0;-webkit-flex-grow:0;flex-grow:0;-webkit-flex-shrink:0;flex-shrink:0}.rc-DynamicPageHeader .context-header ul.c-navbar-list .c-ph-sign-up a{position:relative;font-size:14px;font-weight:700;display:block;border-radius:4px;line-height:4px;padding:15px}@media (max-width:1600px){.rc-DynamicPageHeader .context-header ul.c-navbar-list .c-ph-sign-up a{white-space:break-spaces;line-height:normal;height:unset;padding:10px 4px}}.rc-DynamicPageHeader .context-header .rc-ShoppingCart .icon{top:0}.rc-MegaMenuWrapper{position:relative;min-width:92px;margin-right:4px;height:100%;padding:15px 0 0}.rc-MegaMenuWrapper.menuIsOpen{padding-bottom:0}.rc-MegaMenuWrapper--MetaNav .mega-menu-overlay--lazy-loading{top:105px}.mega-menu-overlay--lazy-loading{position:fixed;background-color:rgba(0,0,0,.7);top:65px;left:0;z-index:3000;width:100vw;height:calc(100% - 65px);display:none}.mega-menu-overlay--lazy-loading.is-active{display:block}.mega-menu-overlay--lazy-loading .mega-menu-container{position:absolute;top:-12px;background:#fff;min-height:575px;min-width:280px}.mega-menu-overlay--lazy-loading .mega-menu{position:relative;padding:14px 0 0;min-height:575px;z-index:3000;-webkit-box-shadow:none;box-shadow:none}.rc-SearchBar{margin:auto auto auto 4px;width:280px}@media (min-width:1200px){.rc-SearchBar{width:440px}}@media (max-width:1030px){.rc-SearchBar{width:100px}}@media (min-width:1200px) and (max-width:1492px){.rc-SearchBar{width:330px}}@media (min-width:1528px) and (max-width:1570px){.rc-SearchBar{width:400px}}.rc-SearchBar.small-search-bar{float:right;margin-right:10px;width:280px}.rc-SearchBar.small-search-bar .search-form .rc-AutoComplete,.rc-SearchBar.small-search-bar .search-form .rc-SearchBar{width:280px}@media (min-width:1325px){.rc-SearchBar.small-search-bar{margin-right:40px;width:350px}}@media (max-width:767px){.rc-SearchBar{padding:12px 0}}.rc-SearchBar .enableOneStepSearch .search-button .magnifier-wrapper,.rc-SearchBar .shouldShowExposedSearchAndReg .search-button .magnifier-wrapper{border-left:0}.rc-SearchBar.enableOneStepSearch .search-form{width:100%}.rc-SearchBar.enableOneStepSearch .search-form .search-button{min-width:40px}.rc-SearchBar.enableOneStepSearch .magnifier-wrapper{position:static}.rc-SearchBar.shouldShowExposedSearchAndReg{padding:.5rem;margin:0;width:350px}@media (max-width:767px){.rc-SearchBar.shouldShowExposedSearchAndReg{padding:0;width:100%}}.rc-SearchBar.shouldShowExposedSearchAndReg .magnifier-wrapper{border:1px solid #636363;padding:10px;background-color:#4a90e2}@media (min-width:768px) and (max-width:1200px){.rc-SearchBar.shouldShowExposedSearchAndReg .magnifier-wrapper{border-left:0}}@media (min-width:1061px){.rc-SearchBar .mobile-magnifier{display:none}}.rc-SearchBar.isLohpRebrand .search-button .magnifier-wrapper{background-color:#0056d2}.rc-SearchBar.isLohpRebrand #algolia-placeholder-search-input{font-family:Source Sans Pro,Arial,sans-serif;color:#000;font-size:16px;line-height:20px;font-weight:400}.rc-SearchBar .search-form{width:100%;top:0;left:0;margin:0;position:relative}.rc-SearchBar .magnifier-wrapper{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;padding-left:8px;height:40px;position:absolute;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.rc-SearchBar .search-button{height:100%}.rc-SearchBar .search-button .magnifier-wrapper{padding:10px;border-radius:0 4px 4px 0;background-color:#2a73cc;width:40px;height:40px;border:1px solid #636363}@media (max-width:1060px){.rc-SearchBar .search-button{display:none}}.rc-SearchBar #algolia-placeholder-search-input{width:100%;height:40px;padding:0 10px 0 36px;font-family:Helvetica,sans-serif;font-weight:300;font-size:16px;-webkit-box-shadow:none;box-shadow:none;margin-bottom:0;border:1px solid #636363;border-radius:4px 0 0 4px;background:#fff}@media (min-width:768px){.rc-SearchBar #algolia-placeholder-search-input{padding:0 10px}}.rc-SearchBar #algolia-placeholder-search-input:focus{outline:none;-webkit-box-shadow:none;box-shadow:none}.rc-SearchBar #algolia-placeholder-search-input::placeholder{color:#636363;opacity:1;-ms-filter:none;filter:none;font-weight:300}.browse-content-wrapper{position:relative;height:100%}.rc-AuthenticationModal-content header,.rc-AuthenticationModal-content header a,.rc-AuthenticationModal .c-user-modal-content,.rc-AuthenticationModal .rc-AuthenticationModal-content header,.rc-AuthenticationModal .rc-AuthenticationModal-content header a{font-weight:500}.align-items-absolute-center,.pagination-controls-container .box{-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}.align-items-absolute-center,.align-items-vertical-center,.pagination-controls-container .box,.search-bar .input-area{-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.align-items-top{-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start}.align-items-bottom{-webkit-box-align:end;-moz-box-align:end;-o-box-align:end;-ms-flex-align:end;-webkit-align-items:flex-end;align-items:flex-end}.align-items-right{-webkit-box-pack:end;-moz-box-pack:end;-o-box-pack:end;-ms-flex-pack:end;-webkit-justify-content:flex-end;justify-content:flex-end}.align-self-start{-webkit-align-self:flex-start;align-self:flex-start;-ms-flex-item-align:start}.align-self-end{-webkit-align-self:flex-end;align-self:flex-end;-ms-flex-item-align:end}.align-self-stretch{-webkit-align-self:stretch;align-self:stretch;-ms-flex-item-align:stretch}.align-self-center{-webkit-align-self:center;align-self:center;-ms-flex-item-align:center}.horizontal-box,.pagination-controls-container,.pagination-controls-container .box,.search-bar,.search-bar .input-area,h1.tab-headline,h2.tab-headline,h3.tab-headline,h4.tab-headline,h5.tab-headline,h6.tab-headline{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-orient:horizontal;-moz-box-orient:horizontal;-o-box-orient:horizontal;-webkit-flex-direction:row;-ms-flex-direction:row;flex-direction:row}.vertical-box{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-orient:vertical;-moz-box-orient:vertical;-o-box-orient:vertical;-webkit-flex-direction:column;-ms-flex-direction:column;flex-direction:column}.align-left{text-align:left}.align-horizontal-center{text-align:center}.align-right{text-align:right}.styleguide a{color:#0062e4;text-decoration:none}.styleguide a:hover{text-decoration:underline;color:#004eb6}.pagination-controls-container .arrow a,.pagination-controls-container .arrow a:hover,.pagination-controls-container .number a,.pagination-controls-container .number a:hover,.styleguide a.nostyle,.styleguide a.nostyle:hover,a.nostyle,a.nostyle:focus,a.nostyle:hover,ol.tabs li.colored-tab.selected a,ol.tabs li.colored-tab.selected a:hover,ol.tabs li.colored-tab a,ol.tabs li.colored-tab a:hover,ol.tabs li.tab.selected a,ol.tabs li.tab.selected a:hover,ol.tabs li.tab a,ol.tabs li.tab a:hover,ul.tabs li.colored-tab.selected a,ul.tabs li.colored-tab.selected a:hover,ul.tabs li.colored-tab a,ul.tabs li.colored-tab a:hover,ul.tabs li.tab.selected a,ul.tabs li.tab.selected a:hover,ul.tabs li.tab a,ul.tabs li.tab a:hover{color:inherit;text-decoration:none}a.dim,a.dim:hover{color:#525252;text-decoration:none}a.dim:hover,a.dim:hover:hover{color:#2972d1;text-decoration:underline}.search-bar .search-button,a.link-button,button.facebook,button.linkedin,button.passive,button.primary,button.secondary{font-size:12px;line-height:14px;font-family:OpenSans,Arial,sans-serif}.checkbox-small{display:inline-block;-webkit-appearance:none;-moz-appearance:none;appearance:none;margin:0;padding:0;cursor:pointer;background-color:#f5f5f5;border:1px solid rgba(0,0,0,.55)}.checkbox-small:checked:after{content:"";border:solid #2a73cc;-webkit-transform:rotate(45deg);-moz-transform:rotate(45deg);-o-transform:rotate(45deg);-ms-transform:rotate(45deg);transform:rotate(45deg);-webkit-box-sizing:content-box;-moz-box-sizing:content-box;box-sizing:content-box;display:block;position:relative;margin:auto}.display-1-text,.display-3-text,.display-4-text,.display-6-text,.headline-1-text,.headline-2-text,.headline-3-text,.headline-4-text,.headline-5-text,.headline-6-text,h1.tab-headline,h2.tab-headline,h3.tab-headline,h4.tab-headline,h5.tab-headline,h6.tab-headline{font-weight:400}.display-3-text,.display-4-text,.display-6-text,.headline-5-text,.headline-6-text{margin-top:10px;margin-bottom:10px}.headline-2-text,.headline-3-text,.headline-4-text,h1.tab-headline,h2.tab-headline,h3.tab-headline,h4.tab-headline,h5.tab-headline,h6.tab-headline{margin-bottom:10px}.display-2-text,.display-3-text,.display-6-text{font-family:Merriweather-Light,Georgia,serif}.display-1-text,.display-4-text{font-family:Merriweather,Georgia,serif}.headline-2-text,.headline-5-text,.headline-6-text{font-family:OpenSans-Light,Arial,sans-serif}.headline-1-text,.headline-3-text,.headline-4-text,h1.tab-headline,h2.tab-headline,h3.tab-headline,h4.tab-headline,h5.tab-headline,h6.tab-headline{font-family:OpenSans,Arial,sans-serif}.display-6-text{font-size:54px;line-height:60px}.display-3-text,.display-4-text{font-size:32px;line-height:36px}.display-2-text{font-size:24px;line-height:30px}.display-1-text{font-size:20px;line-height:24px}.headline-6-text{font-size:54px;line-height:60px}.headline-5-text{font-size:32px;line-height:36px}.headline-4-text{font-size:24px;line-height:30px}.headline-3-text,h1.tab-headline,h2.tab-headline,h3.tab-headline,h4.tab-headline,h5.tab-headline,h6.tab-headline{font-size:22px;line-height:24px}.headline-2-text{font-size:20px;line-height:24px}.headline-1-text{font-size:16px;line-height:24px}.body-1-text,.body-2-text,.rc-AuthenticationModal-content header,.rc-AuthenticationModal-content header a,.rc-AuthenticationModal .c-user-modal-content,.rc-AuthenticationModal .c-user-modal-content input,.rc-AuthenticationModal .rc-AuthenticationModal-content header,.rc-AuthenticationModal .rc-AuthenticationModal-content header a,.search-bar .input-area .search-input,body,p,ul.styleguide.dropdown li>a,ul.styleguide.dropdown li>button,ul.styleguide.dropdown li>button.secondary{font-size:14px;line-height:21px;font-family:OpenSans,Arial,sans-serif}.body-2-text,.rc-AuthenticationModal-content header,.rc-AuthenticationModal-content header a,.rc-AuthenticationModal .c-user-modal-content,.rc-AuthenticationModal .rc-AuthenticationModal-content header,.rc-AuthenticationModal .rc-AuthenticationModal-content header a{font-family:OpenSans,Arial,sans-serif;font-weight:700}.bgcolor-primary-light{background-color:#f6faff}.bgcolor-primary,ul.styleguide.dropdown li>button.secondary:not([disabled]):hover,ul.styleguide.dropdown li>button:not([disabled]):hover{background-color:#2a73cc}.bgcolor-success-light{background-color:#ecf4e8}.bgcolor-warn-light{background-color:#fff5c3}.bgcolor-white{background-color:#fff}.bgcolor-accent-brown-light{background-color:#ece9e3}.bgcolor-accent-yellow{background-color:gold}.color-primary{color:#2a73cc}.color-success{color:#2ab573}.color-success-dark{color:#1f8354}.color-warn{color:#f5a623}.color-warn-dark{color:#956712}.color-danger{color:#ff5c6e}.color-accent-brown{color:#a07e46}.bgcolor-black-g1{background-color:rgba(0,0,0,.05)}.bgcolor-black-g2{background-color:rgba(0,0,0,.1)}.bgcolor-black-g5{background-color:rgba(0,0,0,.55)}.bgcolor-danger-g1{background-color:#ffeaec}.bgcolor-divider{background-color:rgba(0,0,0,.12)}.theme-light{background-color:#f5f5f5}.theme-dark{background-color:#202f3a}.color-hint-text,.search-bar .input-area .cif-cancel-hint{color:rgba(0,0,0,.26)}.color-secondary-text{color:#525252}.color-primary-text,ul.styleguide.dropdown li>button.secondary:not([disabled]),ul.styleguide.dropdown li>button:not([disabled]){color:rgba(0,0,0,.87)}.theme-dark .color-primary-text{color:#fff}.theme-dark .color-secondary-text{color:hsla(0,0%,100%,.7)}.overlay{background-color:rgba(0,0,0,.83)}.overlay.white{background-color:hsla(0,0%,100%,.83)}.card-no-action,.card-one-clicker,.card-one-clicker:hover,.card-rich-interaction,.modal.card-one-clicker,.modal.card-one-clicker:hover,.modal.card-rich-interaction,[class\*=card-].selected,ul.styleguide.dropdown{border:1px solid rgba(0,0,0,.1);background-color:#fff}.card-one-clicker:hover,.card-one-clicker:hover:hover,.card-rich-interaction:hover,.modal.card-one-clicker:hover,.modal.card-one-clicker:hover:hover,.modal.card-rich-interaction:hover,[class\*=card-].selected:hover,ul.styleguide.dropdown:hover{border:1px solid rgba(0,0,0,.25)}.card-one-clicker:hover{-webkit-box-shadow:0 2px 10px 0 rgba(0,0,0,.1);box-shadow:0 2px 10px 0 rgba(0,0,0,.1)}.modal.card-one-clicker,.modal.card-rich-interaction{-webkit-box-shadow:0 4px 16px 0 rgba(0,0,0,.1);box-shadow:0 4px 16px 0 rgba(0,0,0,.1)}.modal.card-one-clicker:hover{-webkit-box-shadow:0 6px 20px 0 rgba(0,0,0,.25);box-shadow:0 6px 20px 0 rgba(0,0,0,.25)}.card-one-clicker{cursor:pointer}[class\*=card-].secondary{background-color:#f5f5f5;border:1px solid rgba(0,0,0,.25)}[class\*=card-].secondary:hover{border:1px solid rgba(0,0,0,.4)}[class\*=card-].secondary:hover.card-no-action{border:1px solid rgba(0,0,0,.25)}[class\*=card-].selected{border:1px solid rgba(160,126,70,.7)}[class\*=card-].selected:hover{border:1px solid #a07e46;-webkit-box-shadow:0 2px 10px 0 rgba(0,0,0,.1);box-shadow:0 2px 10px 0 rgba(0,0,0,.1)}[class\*=card-].luxury{padding:48px}[class\*=card-].comfy{padding:30px}[class\*=card-].roomy{padding:24px}[class\*=card-].cozy{padding:18px}[class\*=card-].compact{padding:18px 12px}[class\*=card-],[class\*=card-]:hover{-webkit-transition:all .25s ease-in-out;-moz-transition:all .25s ease-in-out;-o-transition:all .25s ease-in-out;-ms-transition:all .25s ease-in-out;transition:all .25s ease-in-out}.flex-1,.search-bar .input-area{-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:1;-ms-flex:1;flex:1}.flex-2{-webkit-box-flex:2;-moz-box-flex:2;-o-box-flex:2;box-flex:2;-webkit-flex:2;-ms-flex:2;flex:2}.flex-3{-webkit-box-flex:3;-moz-box-flex:3;-o-box-flex:3;box-flex:3;-webkit-flex:3;-ms-flex:3;flex:3}.flex-4{-webkit-box-flex:4;-moz-box-flex:4;-o-box-flex:4;box-flex:4;-webkit-flex:4;-ms-flex:4;flex:4}.flex-5{-webkit-box-flex:5;-moz-box-flex:5;-o-box-flex:5;box-flex:5;-webkit-flex:5;-ms-flex:5;flex:5}.flex-6{-webkit-box-flex:6;-moz-box-flex:6;-o-box-flex:6;box-flex:6;-webkit-flex:6;-ms-flex:6;flex:6}.flex-7{-webkit-box-flex:7;-moz-box-flex:7;-o-box-flex:7;box-flex:7;-webkit-flex:7;-ms-flex:7;flex:7}.flex-11{-webkit-box-flex:11;-moz-box-flex:11;-o-box-flex:11;box-flex:11;-webkit-flex:11;-ms-flex:11;flex:11}.flex-12{-webkit-box-flex:12;-moz-box-flex:12;-o-box-flex:12;box-flex:12;-webkit-flex:12;-ms-flex:12;flex:12}.horizontal-box.align-items-spacebetween,.pagination-controls-container.align-items-spacebetween,.pagination-controls-container .box.align-items-spacebetween,.search-bar.align-items-spacebetween,.search-bar .input-area.align-items-spacebetween{-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.horizontal-box.align-items-spacearound,.pagination-controls-container.align-items-spacearound,.pagination-controls-container .box.align-items-spacearound,.search-bar.align-items-spacearound,.search-bar .input-area.align-items-spacearound{-webkit-box-pack:distribute;-moz-box-pack:distribute;-o-box-pack:distribute;-ms-flex-pack:distribute;-webkit-justify-content:space-around;justify-content:space-around;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.horizontal-box.wrap,.pagination-controls-container .box.wrap,.pagination-controls-container.wrap,.search-bar .input-area.wrap,.search-bar.wrap{-webkit-flex-wrap:wrap;-ms-flex-wrap:wrap;flex-wrap:wrap}.search-bar .search-button,button.facebook,button.linkedin,button.passive,button.primary,button.secondary{display:inline-block;text-align:center;vertical-align:middle;white-space:nowrap;background-image:none;border:none;opacity:1;-ms-filter:none;filter:none;text-decoration:none;color:#fff;min-width:72px;padding:10px 20px;-webkit-transition-property:background-color,box-shadow(),color,opacity(n,args);-moz-transition-property:background-color,box-shadow(),color,opacity(n,args);-o-transition-property:background-color,box-shadow(),color,opacity(n,args);-ms-transition-property:background-color,box-shadow(),color,opacity(n,args);transition-property:background-color,box-shadow(),color,opacity(n,args);-webkit-transition-duration:.1s;-moz-transition-duration:.1s;-o-transition-duration:.1s;-ms-transition-duration:.1s;transition-duration:.1s;-webkit-transition-timing-function:ease;-moz-transition-timing-function:ease;-o-transition-timing-function:ease;-ms-transition-timing-function:ease;transition-timing-function:ease;-webkit-transition-delay:0ms;-moz-transition-delay:0ms;-o-transition-delay:0ms;-ms-transition-delay:0ms;transition-delay:0ms;-webkit-user-select:none;-moz-user-select:none;-ms-user-select:none;user-select:none;cursor:pointer;border-radius:0;outline-offset:4px}.search-bar .search-button[disabled],button.facebook[disabled],button.linkedin[disabled],button.passive[disabled],button.primary[disabled],button.secondary[disabled]{background-color:#e5e5e5;border:1px solid #e5e5e5;color:rgba(0,0,0,.26);cursor:not-allowed;pointer-events:none}.search-bar .search-button[disabled]:active,.search-bar .search-button[disabled]:focus,.search-bar .search-button[disabled]:hover,button.facebook[disabled]:active,button.facebook[disabled]:focus,button.facebook[disabled]:hover,button.linkedin[disabled]:active,button.linkedin[disabled]:focus,button.linkedin[disabled]:hover,button.passive[disabled]:active,button.passive[disabled]:focus,button.passive[disabled]:hover,button.primary[disabled]:active,button.primary[disabled]:focus,button.primary[disabled]:hover,button.secondary[disabled]:active,button.secondary[disabled]:focus,button.secondary[disabled]:hover{background:#e0e0e0 none repeat 0 0 scroll}button.facebook.cozy,button.linkedin.cozy,button.passive.cozy,button.primary.cozy,button.secondary.cozy{padding:16px 30px;font-size:14px;line-height:18px;font-family:OpenSans-Semibold,Arial,sans-serif}button.facebook.roomy,button.linkedin.roomy,button.passive.roomy,button.primary.roomy,button.secondary.roomy{padding:12px 36px;font-size:14px;line-height:24px;font-family:OpenSans-Semibold,Arial,sans-serif}button.facebook.comfy,button.linkedin.comfy,button.passive.comfy,button.primary.comfy,button.secondary.comfy{padding:20px 40px;font-size:18px;line-height:24px;font-family:OpenSans-Semibold,Arial,sans-serif}button.facebook.fullbleed,button.linkedin.fullbleed,button.passive.fullbleed,button.primary.fullbleed,button.secondary.fullbleed{padding:10px 20px;width:100%}button.primary{border:1px solid #2073d4;background-color:#2073d4}button.primary:active,button.primary:focus,button.primary:hover{background-color:#005bbe}button.primary.comfy:not([disabled]),button.primary.cozy:not([disabled]){background-image:-webkit-linear-gradient(#2a73cc,#2260aa);background-image:-moz-linear-gradient(#2a73cc,#2260aa);background-image:-o-linear-gradient(#2a73cc,#2260aa);background-image:-ms-linear-gradient(#2a73cc,#2260aa);background-image:linear-gradient(#2a73cc,#2260aa)}button.primary.comfy:not([disabled]):active,button.primary.comfy:not([disabled]):focus,button.primary.comfy:not([disabled]):hover,button.primary.cozy:not([disabled]):active,button.primary.cozy:not([disabled]):focus,button.primary.cozy:not([disabled]):hover{background-image:none}button.secondary{color:#0156b8;border:1px solid #0156b8;background-color:transparent}button.secondary:active,button.secondary:focus,button.secondary:hover{background-color:#0156b8;color:#fff}button.passive{border:1px solid #6f6f6f;color:#6f6f6f;background-color:transparent}button.passive:active,button.passive:focus,button.passive:hover{border-color:#8c8c8c;background-color:#8c8c8c;color:#fff}button.button-link,button.nostyle,div.button-link{background:transparent none repeat 0 0 scroll;color:rgba(0,0,0,.87);border:0;font-size:1em;margin:0;padding:0;text-align:left;text-decoration:none;text-indent:0;min-width:0}button.button-link:disabled,button.nostyle:disabled,div.button-link:disabled{background:transparent none repeat 0 0 scroll;color:rgba(0,0,0,.26)}button.facebook{padding-left:20px;padding-right:20px;color:#fff;background-color:#3b5998}button.facebook i,button.facebook span{display:inline-block;vertical-align:middle}button.facebook i{font-size:20px}button.facebook i:last-child,button.facebook span{margin-left:8px}button.linkedin{padding-left:20px;padding-right:20px;color:#fff;background-color:#2a73cc}button.linkedin i,button.linkedin span{display:inline-block;vertical-align:middle}button.linkedin i{font-size:20px}button.linkedin i:last-child,button.linkedin span{margin-left:8px}button.button-link,div.button-link{color:#0062e4;text-decoration:none;cursor:pointer}button.button-link:hover,div.button-link:hover{text-decoration:underline;color:#004eb6}button.button-link.nostyle,button.button-link.nostyle:hover,div.button-link.nostyle,div.button-link.nostyle:hover{color:inherit;text-decoration:none}.theme-dark button.passive[disabled],.theme-dark button.primary[disabled],.theme-dark button.secondary[disabled]{background-color:hsla(0,0%,100%,.8)}h1,h2,h3,h4,h5,h6{margin:0;padding:0}.caption-text,.label-text,.pagination-controls-container .arrow,.pagination-controls-container .number,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-help-text{font-size:12px;line-height:18px;font-family:OpenSans,Arial,sans-serif}.label-text{font-weight:700;text-transform:uppercase}p{margin-bottom:10px}ol.tabs,ul.tabs{margin:0;padding:0}@media (max-width:767px){ol.tabs,ul.tabs{margin:20px 0}}@media (min-width:768px){ol.tabs.tabs-divider,ul.tabs.tabs-divider{border-bottom:1px solid rgba(0,0,0,.06)}}@media (max-width:767px){ol.tabs.tabs-divider,ul.tabs.tabs-divider{border-left:1px solid rgba(0,0,0,.06)}}ol.tabs li.colored-tab,ol.tabs li.colored-tab.selected,ol.tabs li.tab,ol.tabs li.tab.selected,ul.tabs li.colored-tab,ul.tabs li.colored-tab.selected,ul.tabs li.tab,ul.tabs li.tab.selected{margin:15px 8px;cursor:pointer;display:inline-block;list-style-type:none;font-weight:700;color:#525252}@media (min-width:768px){ol.tabs li.colored-tab.selected:first-child,ol.tabs li.colored-tab:first-child,ol.tabs li.tab.selected:first-child,ol.tabs li.tab:first-child,ul.tabs li.colored-tab.selected:first-child,ul.tabs li.colored-tab:first-child,ul.tabs li.tab.selected:first-child,ul.tabs li.tab:first-child{margin-left:0}ol.tabs li.colored-tab.selected:last-child,ol.tabs li.colored-tab:last-child,ol.tabs li.tab.selected:last-child,ol.tabs li.tab:last-child,ul.tabs li.colored-tab.selected:last-child,ul.tabs li.colored-tab:last-child,ul.tabs li.tab.selected:last-child,ul.tabs li.tab:last-child{margin-right:0}}@media (max-width:767px){ol.tabs li.colored-tab,ol.tabs li.colored-tab.selected,ol.tabs li.tab,ol.tabs li.tab.selected,ul.tabs li.colored-tab,ul.tabs li.colored-tab.selected,ul.tabs li.tab,ul.tabs li.tab.selected{display:block;margin:15px 8px 15px 15px}}ol.tabs li.colored-tab.selected,ol.tabs li.tab.selected,ol.tabs li.tab:hover,ul.tabs li.colored-tab.selected,ul.tabs li.tab.selected,ul.tabs li.tab:hover{color:rgba(0,0,0,.87)}@media (max-width:767px){ol.tabs li.colored-tab,ol.tabs li.colored-tab.selected,ul.tabs li.colored-tab,ul.tabs li.colored-tab.selected{margin-left:0}}ol.tabs li.colored-tab \*,ul.tabs li.colored-tab \*{padding:0 8px 15px}@media (max-width:767px){ol.tabs li.colored-tab \*,ul.tabs li.colored-tab \*{padding:2px 8px 2px 15px}}@media (min-width:768px){ol.tabs li.colored-tab.selected \*,ol.tabs li.colored-tab:hover \*,ul.tabs li.colored-tab.selected \*,ul.tabs li.colored-tab:hover \*{border-bottom:1px solid #a07e46}}@media (max-width:767px){ol.tabs li.colored-tab.selected \*,ol.tabs li.colored-tab:hover \*,ul.tabs li.colored-tab.selected \*,ul.tabs li.colored-tab:hover \*{border-left:1px solid #a07e46}}h1.tab-headline,h2.tab-headline,h3.tab-headline,h4.tab-headline,h5.tab-headline,h6.tab-headline{border-bottom:1px solid rgba(0,0,0,.12);width:100%}h1.tab-headline span,h2.tab-headline span,h3.tab-headline span,h4.tab-headline span,h5.tab-headline span,h6.tab-headline span{padding-bottom:10px;display:inline-block;border-bottom:1px solid #a07e46;margin-bottom:-1px}body [class\*=" cif-"],body [class^=cif-]{font-family:coursera-iconfont}.cif-icon,[class\*=" cif-"],[class^=cif-]{font-family:coursera-iconfont;speak:none;font-style:normal;font-weight:400;font-variant:normal;line-height:1;-webkit-font-smoothing:antialiased;-moz-osx-font-smoothing:grayscale;display:inline-block}.cif-lg{font-size:1.333333333333333em;line-height:.75em;vertical-align:-15%}.cif-2x{font-size:2em}.cif-3x{font-size:3em}.cif-4x{font-size:4em}.cif-5x{font-size:5em}.cif-spin{-webkit-animation:cif-spin 2s linear infinite;-moz-animation:cif-spin 2s infinite linear;-o-animation:cif-spin 2s infinite linear;-ms-animation:cif-spin 2s infinite linear;animation:cif-spin 2s linear infinite}.cif-pulse{-webkit-animation:cif-spin 1s steps(8) infinite;-moz-animation:cif-spin 1s infinite steps(8);-o-animation:cif-spin 1s infinite steps(8);-ms-animation:cif-spin 1s infinite steps(8);animation:cif-spin 1s steps(8) infinite}.cif-rotate-90{filter:progid:DXImageTransform.Microsoft.BasicImage(1);-webkit-transform:rotate(90deg);-moz-transform:rotate(90deg);-o-transform:rotate(90deg);-ms-transform:rotate(90deg);transform:rotate(90deg)}.cif-rotate-180{filter:progid:DXImageTransform.Microsoft.BasicImage(2);-webkit-transform:rotate(180deg);-moz-transform:rotate(180deg);-o-transform:rotate(180deg);-ms-transform:rotate(180deg);transform:rotate(180deg)}.cif-rotate-270{filter:progid:DXImageTransform.Microsoft.BasicImage(3);-webkit-transform:rotate(270deg);-moz-transform:rotate(270deg);-o-transform:rotate(270deg);-ms-transform:rotate(270deg);transform:rotate(270deg)}.cif-flip-horizontal{filter:progid:DXImageTransform.Microsoft.BasicImage(0,1);-webkit-transform:scaleX(-1);-moz-transform:scaleX(-1);-o-transform:scaleX(-1);-ms-transform:scaleX(-1);transform:scaleX(-1)}.cif-flip-vertical{filter:progid:DXImageTransform.Microsoft.BasicImage(2,1);-webkit-transform:scaleY(-1);-moz-transform:scaleY(-1);-o-transform:scaleY(-1);-ms-transform:scaleY(-1);transform:scaleY(-1)}.cif-stack{position:relative;display:inline-block;width:2em;height:2em;line-height:2em;vertical-align:middle}.cif-stack-1x,.cif-stack-2x{position:absolute;left:0;width:100%;text-align:center}.cif-stack-1x{line-height:inherit}.cif-stack-2x{font-size:2em}.cif-inverse{color:#fff}.cif-fw{width:1.285714285714286em;text-align:center}@-moz-keyframes cif-spin{0%{-webkit-transform:rotate(0deg);-moz-transform:rotate(0deg);-o-transform:rotate(0deg);-ms-transform:rotate(0deg);transform:rotate(0deg)}to{-webkit-transform:rotate(359deg);-moz-transform:rotate(359deg);-o-transform:rotate(359deg);-ms-transform:rotate(359deg);transform:rotate(359deg)}}@-webkit-keyframes cif-spin{0%{-webkit-transform:rotate(0deg);-moz-transform:rotate(0deg);-o-transform:rotate(0deg);-ms-transform:rotate(0deg);transform:rotate(0deg)}to{-webkit-transform:rotate(359deg);-moz-transform:rotate(359deg);-o-transform:rotate(359deg);-ms-transform:rotate(359deg);transform:rotate(359deg)}}@-o-keyframes cif-spin{0%{-webkit-transform:rotate(0deg);-moz-transform:rotate(0deg);-o-transform:rotate(0deg);-ms-transform:rotate(0deg);transform:rotate(0deg)}to{-webkit-transform:rotate(359deg);-moz-transform:rotate(359deg);-o-transform:rotate(359deg);-ms-transform:rotate(359deg);transform:rotate(359deg)}}@keyframes cif-spin{0%{-webkit-transform:rotate(0deg);-moz-transform:rotate(0deg);-o-transform:rotate(0deg);-ms-transform:rotate(0deg);transform:rotate(0deg)}to{-webkit-transform:rotate(359deg);-moz-transform:rotate(359deg);-o-transform:rotate(359deg);-ms-transform:rotate(359deg);transform:rotate(359deg)}}.cif-pin:before{content:"\e624"}.cif-eye:before{content:"\e62c"}.cif-checked-circle-semiopen:before{content:"\e92c"}.cif-math:before{content:"\e922"}.cif-artsandhumanities:before{content:"\e927"}.cif-business:before{content:"\e923"}.cif-data\_science:before{content:"\e924"}.cif-language1:before{content:"\e925"}.cif-life\_science:before{content:"\e926"}.cif-personaldevelopment:before{content:"\e928"}.cif-physicalsciences:before{content:"\e929"}.cif-programming:before{content:"\e92a"}.cif-socialscience:before{content:"\e92b"}.cif-book:before{content:"\e91c"}.cif-browser:before{content:"\e91d"}.cif-bullet-list:before{content:"\e91e"}.cif-check-box:before{content:"\e91f"}.cif-discussion-bubble-o:before{content:"\e920"}.cif-question-circle-o:before{content:"\e921"}.cif-open-book:before{content:"\e91b"}.cif-chevron-right-thin:before{content:"\e91a"}.cif-certificate-form:before{content:"\e919"}.cif-person:before{content:"\e918"}.cif-honors:before{content:"\e90f"}.cif-tools:before{content:"\e915"}.cif-graduation-hat:before{content:"\e916"}.cif-check-list:before{content:"\e917"}.cif-clock:before{content:"\e914"}.cif-email2:before{content:"\e904"}.cif-facebook2:before{content:"\e905"}.cif-google-plus2:before{content:"\e906"}.cif-wechat2:before{content:"\e907"}.cif-caret2:before{content:"\e908"}.cif-stacked-file:before{content:"\e909"}.cif-practice-quiz:before{content:"\e90a"}.cif-broken-file:before{content:"\e90b"}.cif-full-star:before{content:"\e90c"}.cif-graded-quiz:before{content:"\e90d"}.cif-half-star:before{content:"\e90e"}.cif-peer-review:before{content:"\e911"}.cif-reading:before{content:"\e912"}.cif-video:before{content:"\e913"}.cif-language:before{content:"\e910"}.cif-event:before{content:"\e903"}.cif-circle-outline:before{content:"\e902"}.cif-ellipsis-h:before{content:"\e901"}.cif-doc:before{content:"\e900"}.cif-unlock:before{content:"\e61d"}.cif-assignment:before{content:"\e643"}.cif-list-ol:before{content:"\e600"}.cif-list-ul:before{content:"\e601"}.cif-caret-up:before{content:"\e62f"}.cif-caret-down:before{content:"\e630"}.cif-linkedin-square:before{content:"\e631"}.cif-times-circle-o:before{content:"\e632"}.cif-chain-broken:before{content:"\e633"}.cif-envelope-o:before{content:"\e634"}.cif-google-plus:before{content:"\e635"}.cif-twitter:before{content:"\e636"}.cif-facebook:before{content:"\e637"}.cif-thumbs-o-down:before{content:"\e638"}.cif-thumbs-o-up:before{content:"\e639"}.cif-thumbs-down:before{content:"\e63a"}.cif-thumbs-up:before{content:"\e63b"}.cif-flag-o:before{content:"\e63c"}.cif-flag:before{content:"\e63d"}.cif-check-circle-o:before{content:"\e63e"}.cif-check:before{content:"\e63f"}.cif-camera:before{content:"\e62e"}.cif-film:before{content:"\e62d"}.cif-minus:before{content:"\e62a"}.cif-compress:before{content:"\e62b"}.cif-captions:before{content:"\e602"}.cif-expand:before{content:"\e625"}.cif-refresh:before{content:"\e626"}.cif-download:before{content:"\e627"}.cif-file-o:before{content:"\e628"}.cif-upload:before{content:"\e61e"}.cif-minus-square:before{content:"\e629"}.cif-plus-square:before{content:"\e620"}.cif-plus:before{content:"\e621"}.cif-square:before{content:"\e622"}.cif-cog:before,.cif-settings:before{content:"\e623"}.cif-circle:before{content:"\e61f"}.cif-search:before{content:"\e61c"}.cif-item-doc:before{content:"\e615"}.cif-warning:before{content:"\f071"}.cif-circle-o:before{content:"\f10c"}.cif-heart:before{content:"\f004"}.cif-star:before{content:"\f005"}.cif-star-o:before{content:"\f006"}.cif-user:before{content:"\f007"}.cif-close2:before,.cif-remove:before,.cif-times:before{content:"\f00d"}.cif-clock-o:before{content:"\f017"}.cif-volume-off:before{content:"\f026"}.cif-volume-down:before{content:"\f027"}.cif-volume-up:before{content:"\f028"}.cif-bookmark:before{content:"\f02e"}.cif-edit:before,.cif-pencil-square-o:before{content:"\f044"}.cif-play:before{content:"\f04b"}.cif-pause:before{content:"\f04c"}.cif-chevron-left:before{content:"\f053"}.cif-chevron-right:before{content:"\f054"}.cif-check-circle:before{content:"\f058"}.cif-question-circle:before{content:"\f059"}.cif-ban:before{content:"\f05e"}.cif-arrow-left:before{content:"\f060"}.cif-arrow-right:before{content:"\f061"}.cif-arrow-up:before{content:"\f062"}.cif-arrow-down:before{content:"\f063"}.cif-calendar:before{content:"\f073"}.cif-comment:before{content:"\f075"}.cif-chevron-up:before{content:"\f077"}.cif-chevron-down:before{content:"\f078"}.cif-heart-o:before{content:"\f08a"}.cif-external-link:before{content:"\f08e"}.cif-certificate:before{content:"\f0a3"}.cif-globe:before{content:"\f0ac"}.cif-group:before,.cif-users:before{content:"\f0c0"}.cif-chain:before,.cif-link:before{content:"\f0c1"}.cif-file-text-o:before{content:"\f0f6"}.cif-quote-left:before{content:"\f10d"}.cif-quote-right:before{content:"\f10e"}.cif-spinner:before{content:"\f110"}.cif-star-half-empty:before,.cif-star-half-full:before,.cif-star-half-o:before{content:"\f123"}.cif-chevron-circle-left:before{content:"\f137"}.cif-chevron-circle-right:before{content:"\f138"}.cif-chevron-circle-up:before{content:"\f139"}.cif-chevron-circle-down:before{content:"\f13a"}.cif-play-circle:before{content:"\f144"}.cif-file-image-o:before,.cif-file-photo-o:before,.cif-file-picture-o:before{content:"\f1c5"}.cif-circle-o-notch:before{content:"\f1ce"}.cif-paper-plane:before,.cif-send:before{content:"\f1d8"}.cif-circle-thin:before,.cif-genderless:before{content:"\f1db"}.cif-facebook-official:before{content:"\f230"}.cif-lock:before{content:"\e61a"}.cif-info:before{content:"\e61b"}.cif-discussions:before{content:"\e617"}.cif-checkmark:before{content:"\e60a"}.cif-get-vc .path1:before{content:"\e603";color:#fff}.cif-get-vc .path2:before{content:"\e604";margin-left:-1.0166015625em;color:#fff}.cif-get-vc .path3:before{content:"\e605";margin-left:-1.0166015625em;color:#4187bb}.cif-get-vc .path4:before{content:"\e606";margin-left:-1.0166015625em;color:#4187bb}.cif-get-vc .path5:before{content:"\e607";margin-left:-1.0166015625em;color:#fff}.cif-get-vc .path6:before{content:"\e608";margin-left:-1.0166015625em;color:#fff}.cif-get-vc .path7:before{content:"\e609";margin-left:-1.0166015625em;color:#cad9e7}.cif-get-vc .path8:before{content:"\e640";margin-left:-1.0166015625em;color:#cad9e7}.cif-get-vc .path9:before{content:"\e641";margin-left:-1.0166015625em;color:#4187bb}.cif-home:before{content:"\e60b"}.cif-course-list:before{content:"\e60c"}.cif-item-video:before{content:"\e60d"}.cif-summative-incomplete .path1:before{content:"\e60e";color:rgba(0,0,0,.54)}.cif-summative-incomplete .path2:before{content:"\e642";margin-left:-1.0419921875em;color:#fff}.cif-summative-complete .path1:before{content:"\e60f";color:#2ab573}.cif-summative-complete .path2:before{content:"\e610";margin-left:-1em;color:#2ab573}.cif-summative-complete .path3:before{content:"\e611";margin-left:-1em;color:#fff}.cif-prog-assignment:before{content:"\e612"}.cif-item-peer:before{content:"\e613"}.cif-item-formative:before{content:"\e614"}.cif-close:before{content:"\e616"}.cif-cancel-hint:before{content:"\e618"}.cif-back:before{content:"\e619"}.cif-rtl.cif-captions,.cif-rtl.cif-volume-down,.cif-rtl.cif-volume-off,.cif-rtl.cif-volume-up{-webkit-transform:scaleX(-1);-moz-transform:scaleX(-1);-o-transform:scaleX(-1);-ms-transform:scaleX(-1);transform:scaleX(-1)}.search-bar{border:1px solid rgba(0,0,0,.12)}.search-bar .input-area{position:relative;margin-right:4px}.search-bar .input-area .cif-cancel-hint{cursor:pointer}.search-bar .input-area .search-input{border:none;padding:7px 24px 7px 20px;width:100%}.search-bar .input-area .search-input:focus{outline:none}.search-bar .search-button{color:#525252;font-size:16px;background-color:transparent;border:none;min-width:0;padding:0 12px}.search-bar .search-button:hover{background:transparent;color:rgba(0,0,0,.26)}.pagination-controls-container>\*{margin-left:6px;width:24px;height:24px;text-align:center}.pagination-controls-container .ellipsis{position:relative;cursor:default}.pagination-controls-container .box{cursor:pointer;border:1px solid rgba(0,0,0,.12);background-color:#fff}.pagination-controls-container .box:hover{border-color:#2a73cc;color:#2a73cc}.pagination-controls-container .arrow,.pagination-controls-container .number{padding-top:2px}.pagination-controls-container .arrow.current,.pagination-controls-container .number.current{border-color:#2a73cc;color:#fff;background-color:#2a73cc}.pagination-controls-container .arrow.arrow-disabled{color:rgba(0,0,0,.12)}.pagination-controls-container .arrow.arrow-disabled:hover{border-color:rgba(0,0,0,.12);color:rgba(0,0,0,.12);cursor:default}ul.styleguide.dropdown{min-width:108px;padding:4px 0;margin:0}ul.styleguide.dropdown li{margin:0;padding:0;list-style-type:none}ul.styleguide.dropdown li>button.secondary:not([disabled]):hover,ul.styleguide.dropdown li>button:not([disabled]):hover{color:#fff}ul.styleguide.dropdown li>a,ul.styleguide.dropdown li>button,ul.styleguide.dropdown li>button.secondary{border-radius:0;width:100%;background-color:transparent;border:none;-webkit-box-shadow:none;box-shadow:none;text-align:left;padding:4px 8px 4px 12px}.checkbox-small{max-width:18px;min-width:18px;max-height:18px;min-height:18px}.checkbox-small:checked:after{border-width:0 3px 3px 0;width:5px;height:9px}.checkbox-large{max-width:40px;min-width:40px;max-height:40px;min-height:40px}.checkbox-large:checked:after{border-width:0 5px 5px 0;width:9px;height:21px}ol,ul{font-size:1em;outline:0}ol.inline,ol.nostyle,ul.inline,ul.nostyle{list-style:none;padding:0;margin:0}.inline.ol,.inline.ul,.inline li{display:inline}.nostyle.ol,.nostyle.ul{display:block}.pill-light{border-radius:10px;background-color:rgba(0,0,0,.1)}.pill-light,.pill-white{display:inline-block;font-size:12px;height:20px;line-height:20px;padding-left:10px;padding-right:10px;-o-text-overflow:ellipsis;text-overflow:ellipsis;white-space:nowrap;color:rgba(0,0,0,.87)}.pill-white{border-radius:10px;background-color:#fff;border:1px solid rgba(0,0,0,.1)}.pill-success{color:#1f8354;background-color:#ecf4e8}.pill-dark,.pill-success{display:inline-block;font-size:12px;height:20px;line-height:20px;border-radius:10px;padding-left:10px;padding-right:10px;-o-text-overflow:ellipsis;text-overflow:ellipsis;white-space:nowrap}.pill-dark{color:#fff;background-color:rgba(0,0,0,.55)}a.link-button{display:inline-block;text-align:center;vertical-align:middle;white-space:nowrap;background-image:none;border:none;opacity:1;-ms-filter:none;filter:none;min-width:72px;padding:10px 20px;-webkit-transition-property:background-color,box-shadow(),color,opacity(n,args);-moz-transition-property:background-color,box-shadow(),color,opacity(n,args);-o-transition-property:background-color,box-shadow(),color,opacity(n,args);-ms-transition-property:background-color,box-shadow(),color,opacity(n,args);transition-property:background-color,box-shadow(),color,opacity(n,args);-webkit-transition-duration:.1s;-moz-transition-duration:.1s;-o-transition-duration:.1s;-ms-transition-duration:.1s;transition-duration:.1s;-webkit-transition-timing-function:ease;-moz-transition-timing-function:ease;-o-transition-timing-function:ease;-ms-transition-timing-function:ease;transition-timing-function:ease;-webkit-transition-delay:0ms;-moz-transition-delay:0ms;-o-transition-delay:0ms;-ms-transition-delay:0ms;transition-delay:0ms;-webkit-user-select:none;-moz-user-select:none;-ms-user-select:none;user-select:none;cursor:pointer;border-radius:0}a.link-button,a.link-button:active,a.link-button:any-link,a.link-button:focus,a.link-button:hover{text-decoration:none;color:#fff}a.link-button.cozy{padding:16px 30px;line-height:18px}a.link-button.cozy,a.link-button.roomy{font-size:14px;font-family:OpenSans-Semibold,Arial,sans-serif}a.link-button.roomy{padding:12px 36px;line-height:24px}a.link-button.comfy{padding:20px 40px;font-size:18px;line-height:24px;font-family:OpenSans-Semibold,Arial,sans-serif}a.link-button.fullbleed{padding:10px 20px;width:100%}a.link-button.primary{border:1px solid #2073d4;background-color:#2073d4}a.link-button.primary:active,a.link-button.primary:focus,a.link-button.primary:hover{background-color:#005bbe}a.link-button.primary.comfy,a.link-button.primary.cozy{background-image:-webkit-linear-gradient(#2a73cc,#2260aa);background-image:-moz-linear-gradient(#2a73cc,#2260aa);background-image:-o-linear-gradient(#2a73cc,#2260aa);background-image:-ms-linear-gradient(#2a73cc,#2260aa);background-image:linear-gradient(#2a73cc,#2260aa)}a.link-button.primary.comfy:active,a.link-button.primary.comfy:focus,a.link-button.primary.comfy:hover,a.link-button.primary.cozy:active,a.link-button.primary.cozy:focus,a.link-button.primary.cozy:hover{background-image:none}a.link-button.secondary{color:#0156b8;border:1px solid #0156b8;background-color:transparent}a.link-button.secondary:active,a.link-button.secondary:focus,a.link-button.secondary:hover{background-color:#0156b8;color:#fff}a.link-button.passive{border:1px solid #6f6f6f;color:#6f6f6f;background-color:transparent}a.link-button.passive:active,a.link-button.passive:focus,a.link-button.passive:hover{border-color:#8c8c8c;background-color:#8c8c8c;color:#fff}a.link-button.facebook{padding-left:20px;padding-right:20px;color:#fff;background-color:#3b5998}a.link-button.facebook i,a.link-button.facebook span{display:inline-block;vertical-align:middle}a.link-button.facebook i{font-size:20px}a.link-button.facebook i:last-child,a.link-button.facebook span{margin-left:8px}a.link-button.linkedin{padding-left:20px;padding-right:20px;color:#fff;background-color:#2a73cc}a.link-button.linkedin i,a.link-button.linkedin span{display:inline-block;vertical-align:middle}a.link-button.linkedin i{font-size:20px}a.link-button.linkedin i:last-child,a.link-button.linkedin span{margin-left:8px}a.link-button.nostyle{background:transparent none repeat 0 0 scroll;color:rgba(0,0,0,.87);border:0;font-size:1em;margin:0;padding:0;text-align:left;text-decoration:none;text-indent:0}a.link-button.nostyle:disabled{background:transparent none repeat 0 0 scroll;color:rgba(0,0,0,.26)}@media print{a:link:after,a:visited:after{content:""!important}}.screenreader-only{position:absolute;width:1px;height:1px;margin:-1px;padding:0;overflow:hidden;clip:rect(0,0,0,0);border:0}html{font-family:sans-serif;line-height:1.15;-ms-text-size-adjust:100%;-webkit-text-size-adjust:100%}body{margin:0}article,aside,details,figcaption,figure,footer,header,main,menu,nav,section,summary{display:block}audio,canvas,progress,video{display:inline-block}audio:not([controls]){display:none;height:0}progress{vertical-align:baseline}[hidden],template{display:none}a{background-color:transparent;-webkit-text-decoration-skip:objects}a:active,a:hover{outline-width:0}abbr[title]{border-bottom:none;text-decoration:underline;text-decoration:underline dotted}b,strong{font-weight:inherit;font-weight:bolder}dfn{font-style:italic}h1{font-size:2em;margin:.67em 0}mark{background-color:#ff0;color:#000}small{font-size:80%}sub,sup{font-size:75%;line-height:0;position:relative;vertical-align:baseline}sub{bottom:-.25em}sup{top:-.5em}img{border-style:none}svg:not(:root){overflow:hidden}code,kbd,pre,samp{font-family:monospace,monospace;font-size:1em}figure{margin:1em 40px}hr{-webkit-box-sizing:content-box;-moz-box-sizing:content-box;box-sizing:content-box;height:0;overflow:visible}button,input,optgroup,select,textarea{font:inherit;margin:0}optgroup{font-weight:700}button,input{overflow:visible}button,select{text-transform:none}[type=reset],[type=submit],button,html [type=button]{-webkit-appearance:button}[type=button]::-moz-focus-inner,[type=reset]::-moz-focus-inner,[type=submit]::-moz-focus-inner,button::-moz-focus-inner{border-style:none;padding:0}[type=button]:-moz-focusring,[type=reset]:-moz-focusring,[type=submit]:-moz-focusring,button:-moz-focusring{outline:1px dotted ButtonText}fieldset{border:1px solid silver;margin:0 2px;padding:.35em .625em .75em}legend{-webkit-box-sizing:border-box;-moz-box-sizing:border-box;box-sizing:border-box;color:inherit;display:table;max-width:100%;white-space:normal}textarea{overflow:auto}[type=checkbox],[type=radio]{-webkit-box-sizing:border-box;-moz-box-sizing:border-box;box-sizing:border-box;padding:0}[type=number]::-webkit-inner-spin-button,[type=number]::-webkit-outer-spin-button{height:auto}[type=search]{-webkit-appearance:textfield;outline-offset:-2px}[type=search]::-webkit-search-cancel-button,[type=search]::-webkit-search-decoration{-webkit-appearance:none}::-webkit-input-placeholder{color:inherit;opacity:.54;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=54)";filter:alpha(opacity=54)}::-webkit-file-upload-button{-webkit-appearance:button;font:inherit}html{-webkit-box-sizing:border-box;-moz-box-sizing:border-box;box-sizing:border-box}\*,:after,:before{-webkit-box-sizing:inherit;-moz-box-sizing:inherit;box-sizing:inherit}@-ms-viewport{width:device-width}html{font-size:16px;-ms-overflow-style:scrollbar;-webkit-tap-highlight-color:transparent}body{font-family:-apple-system,BlinkMacSystemFont,Segoe UI,Roboto,Helvetica Neue,Arial,sans-serif;font-size:1rem;line-height:1.5;color:#373a3c}h1,h2,h3,h4,h5,h6{margin-top:0;margin-bottom:.5rem}p{margin-top:0;margin-bottom:1rem}abbr[data-original-title],abbr[title]{cursor:help;border-bottom:1px dotted #818a91}address{font-style:normal;line-height:inherit}address,dl,ol,ul{margin-bottom:1rem}dl,ol,ul{margin-top:0}ol ol,ol ul,ul ol,ul ul{margin-bottom:0}dt{font-weight:700}dd{margin-bottom:.5rem;margin-left:0}blockquote{margin:0 0 1rem}a{color:#0062e4;text-decoration:none}a:focus,a:hover{text-decoration:underline}a:focus{outline:5px auto -webkit-focus-ring-color;outline-offset:-2px}a:not([href]):not([tabindex]),a:not([href]):not([tabindex]):focus,a:not([href]):not([tabindex]):hover{color:inherit;text-decoration:none}a:not([href]):not([tabindex]):focus{outline:none}pre{margin-top:0;margin-bottom:1rem;overflow:auto}figure{margin:0 0 1rem}img{vertical-align:middle}[role=button]{cursor:pointer}[role=button],a,area,button,input,label,select,summary,textarea{-ms-touch-action:manipulation;touch-action:manipulation}table{border-collapse:collapse;background-color:transparent}caption{padding-top:.75rem;padding-bottom:.75rem;color:#636363;caption-side:bottom}caption,th{text-align:left}label{display:inline-block;margin-bottom:.5rem}button:focus{outline:1px dotted;outline:5px auto -webkit-focus-ring-color}button,input,select,textarea{line-height:inherit}input[type=checkbox]:disabled,input[type=radio]:disabled{cursor:not-allowed}input[type=date],input[type=datetime-local],input[type=month],input[type=time]{-webkit-appearance:listbox}textarea{resize:vertical}fieldset{min-width:0;padding:0;margin:0;border:0}legend{display:block;width:100%;padding:0;margin-bottom:.5rem;font-size:1.5rem;line-height:inherit}input[type=search]{-webkit-appearance:none}output{display:inline-block}[hidden]{display:none!important}.container,.container-fluid{margin-left:auto;margin-right:auto;padding-left:15px;padding-right:15px}.container-fluid:after,.container:after,.row:after{content:"";display:table;clear:both}@media (min-width:576px){.container{width:540px;max-width:100%}}@media (min-width:768px){.container{width:720px;max-width:100%}}@media (min-width:992px){.container{width:960px;max-width:100%}}@media (min-width:1200px){.container{width:1140px;max-width:100%}}@media (min-width:1440px){.container{width:1380px;max-width:100%}}.row{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-flex-wrap:wrap;-ms-flex-wrap:wrap;flex-wrap:wrap;margin-right:-15px;margin-left:-15px}.col-lg,.col-lg-1,.col-lg-2,.col-lg-3,.col-lg-4,.col-lg-5,.col-lg-6,.col-lg-7,.col-lg-8,.col-lg-9,.col-lg-10,.col-lg-11,.col-lg-12,.col-md,.col-md-1,.col-md-2,.col-md-3,.col-md-4,.col-md-5,.col-md-6,.col-md-7,.col-md-8,.col-md-9,.col-md-10,.col-md-11,.col-md-12,.col-sm,.col-sm-1,.col-sm-2,.col-sm-3,.col-sm-4,.col-sm-5,.col-sm-6,.col-sm-7,.col-sm-8,.col-sm-9,.col-sm-10,.col-sm-11,.col-sm-12,.col-xl,.col-xl-1,.col-xl-2,.col-xl-3,.col-xl-4,.col-xl-5,.col-xl-6,.col-xl-7,.col-xl-8,.col-xl-9,.col-xl-10,.col-xl-11,.col-xl-12,.col-xs,.col-xs-1,.col-xs-2,.col-xs-3,.col-xs-4,.col-xs-5,.col-xs-6,.col-xs-7,.col-xs-8,.col-xs-9,.col-xs-10,.col-xs-11,.col-xs-12,.col-xxl-1,.col-xxl-2,.col-xxl-3,.col-xxl-4,.col-xxl-5,.col-xxl-6,.col-xxl-7,.col-xxl-8,.col-xxl-9,.col-xxl-10,.col-xxl-11,.col-xxl-12{position:relative;min-height:1px;width:100%;padding-right:15px;padding-left:15px}.col-xs{-ms-flex-preferred-size:0;-webkit-flex-basis:0;flex-basis:0;-ms-flex-positive:1;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;-ms-box-flex:1;box-flex:1;-webkit-flex-grow:1;flex-grow:1;max-width:100%}.col-xs-auto{-webkit-flex:0 0 auto;-ms-flex:0 0 auto;flex:0 0 auto;width:auto}.col-xs-1,.col-xs-auto{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xs-1{-webkit-flex:0 0 8.333333%;-ms-flex:0 0 8.333333%;flex:0 0 8.333333%;max-width:8.333333%}.col-xs-2{-webkit-flex:0 0 16.666667%;-ms-flex:0 0 16.666667%;flex:0 0 16.666667%;max-width:16.666667%}.col-xs-2,.col-xs-3{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xs-3{-webkit-flex:0 0 25%;-ms-flex:0 0 25%;flex:0 0 25%;max-width:25%}.col-xs-4{-webkit-flex:0 0 33.333333%;-ms-flex:0 0 33.333333%;flex:0 0 33.333333%;max-width:33.333333%}.col-xs-4,.col-xs-5{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xs-5{-webkit-flex:0 0 41.666667%;-ms-flex:0 0 41.666667%;flex:0 0 41.666667%;max-width:41.666667%}.col-xs-6{-webkit-flex:0 0 50%;-ms-flex:0 0 50%;flex:0 0 50%;max-width:50%}.col-xs-6,.col-xs-7{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xs-7{-webkit-flex:0 0 58.333333%;-ms-flex:0 0 58.333333%;flex:0 0 58.333333%;max-width:58.333333%}.col-xs-8{-webkit-flex:0 0 66.666667%;-ms-flex:0 0 66.666667%;flex:0 0 66.666667%;max-width:66.666667%}.col-xs-8,.col-xs-9{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xs-9{-webkit-flex:0 0 75%;-ms-flex:0 0 75%;flex:0 0 75%;max-width:75%}.col-xs-10{-webkit-flex:0 0 83.333333%;-ms-flex:0 0 83.333333%;flex:0 0 83.333333%;max-width:83.333333%}.col-xs-10,.col-xs-11{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xs-11{-webkit-flex:0 0 91.666667%;-ms-flex:0 0 91.666667%;flex:0 0 91.666667%;max-width:91.666667%}.col-xs-12{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:0 0 100%;-ms-flex:0 0 100%;flex:0 0 100%;max-width:100%}.pull-xs-0{right:auto}.pull-xs-1{right:8.333333%}.pull-xs-2{right:16.666667%}.pull-xs-3{right:25%}.pull-xs-4{right:33.333333%}.pull-xs-5{right:41.666667%}.pull-xs-6{right:50%}.pull-xs-7{right:58.333333%}.pull-xs-8{right:66.666667%}.pull-xs-9{right:75%}.pull-xs-10{right:83.333333%}.pull-xs-11{right:91.666667%}.pull-xs-12{right:100%}.push-xs-0{left:auto}.push-xs-1{left:8.333333%}.push-xs-2{left:16.666667%}.push-xs-3{left:25%}.push-xs-4{left:33.333333%}.push-xs-5{left:41.666667%}.push-xs-6{left:50%}.push-xs-7{left:58.333333%}.push-xs-8{left:66.666667%}.push-xs-9{left:75%}.push-xs-10{left:83.333333%}.push-xs-11{left:91.666667%}.push-xs-12{left:100%}.offset-xs-1{margin-left:8.333333%}.offset-xs-2{margin-left:16.666667%}.offset-xs-3{margin-left:25%}.offset-xs-4{margin-left:33.333333%}.offset-xs-5{margin-left:41.666667%}.offset-xs-6{margin-left:50%}.offset-xs-7{margin-left:58.333333%}.offset-xs-8{margin-left:66.666667%}.offset-xs-9{margin-left:75%}.offset-xs-10{margin-left:83.333333%}.offset-xs-11{margin-left:91.666667%}@media (min-width:576px){.col-sm{-ms-flex-preferred-size:0;-webkit-flex-basis:0;flex-basis:0;-ms-flex-positive:1;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;-ms-box-flex:1;box-flex:1;-webkit-flex-grow:1;flex-grow:1;max-width:100%}.col-sm-auto{-webkit-flex:0 0 auto;-ms-flex:0 0 auto;flex:0 0 auto;width:auto}.col-sm-1,.col-sm-auto{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-sm-1{-webkit-flex:0 0 8.333333%;-ms-flex:0 0 8.333333%;flex:0 0 8.333333%;max-width:8.333333%}.col-sm-2{-webkit-flex:0 0 16.666667%;-ms-flex:0 0 16.666667%;flex:0 0 16.666667%;max-width:16.666667%}.col-sm-2,.col-sm-3{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-sm-3{-webkit-flex:0 0 25%;-ms-flex:0 0 25%;flex:0 0 25%;max-width:25%}.col-sm-4{-webkit-flex:0 0 33.333333%;-ms-flex:0 0 33.333333%;flex:0 0 33.333333%;max-width:33.333333%}.col-sm-4,.col-sm-5{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-sm-5{-webkit-flex:0 0 41.666667%;-ms-flex:0 0 41.666667%;flex:0 0 41.666667%;max-width:41.666667%}.col-sm-6{-webkit-flex:0 0 50%;-ms-flex:0 0 50%;flex:0 0 50%;max-width:50%}.col-sm-6,.col-sm-7{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-sm-7{-webkit-flex:0 0 58.333333%;-ms-flex:0 0 58.333333%;flex:0 0 58.333333%;max-width:58.333333%}.col-sm-8{-webkit-flex:0 0 66.666667%;-ms-flex:0 0 66.666667%;flex:0 0 66.666667%;max-width:66.666667%}.col-sm-8,.col-sm-9{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-sm-9{-webkit-flex:0 0 75%;-ms-flex:0 0 75%;flex:0 0 75%;max-width:75%}.col-sm-10{-webkit-flex:0 0 83.333333%;-ms-flex:0 0 83.333333%;flex:0 0 83.333333%;max-width:83.333333%}.col-sm-10,.col-sm-11{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-sm-11{-webkit-flex:0 0 91.666667%;-ms-flex:0 0 91.666667%;flex:0 0 91.666667%;max-width:91.666667%}.col-sm-12{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:0 0 100%;-ms-flex:0 0 100%;flex:0 0 100%;max-width:100%}.pull-sm-0{right:auto}.pull-sm-1{right:8.333333%}.pull-sm-2{right:16.666667%}.pull-sm-3{right:25%}.pull-sm-4{right:33.333333%}.pull-sm-5{right:41.666667%}.pull-sm-6{right:50%}.pull-sm-7{right:58.333333%}.pull-sm-8{right:66.666667%}.pull-sm-9{right:75%}.pull-sm-10{right:83.333333%}.pull-sm-11{right:91.666667%}.pull-sm-12{right:100%}.push-sm-0{left:auto}.push-sm-1{left:8.333333%}.push-sm-2{left:16.666667%}.push-sm-3{left:25%}.push-sm-4{left:33.333333%}.push-sm-5{left:41.666667%}.push-sm-6{left:50%}.push-sm-7{left:58.333333%}.push-sm-8{left:66.666667%}.push-sm-9{left:75%}.push-sm-10{left:83.333333%}.push-sm-11{left:91.666667%}.push-sm-12{left:100%}.offset-sm-0{margin-left:0}.offset-sm-1{margin-left:8.333333%}.offset-sm-2{margin-left:16.666667%}.offset-sm-3{margin-left:25%}.offset-sm-4{margin-left:33.333333%}.offset-sm-5{margin-left:41.666667%}.offset-sm-6{margin-left:50%}.offset-sm-7{margin-left:58.333333%}.offset-sm-8{margin-left:66.666667%}.offset-sm-9{margin-left:75%}.offset-sm-10{margin-left:83.333333%}.offset-sm-11{margin-left:91.666667%}}@media (min-width:768px){.col-md{-ms-flex-preferred-size:0;-webkit-flex-basis:0;flex-basis:0;-ms-flex-positive:1;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;-ms-box-flex:1;box-flex:1;-webkit-flex-grow:1;flex-grow:1;max-width:100%}.col-md-auto{-webkit-flex:0 0 auto;-ms-flex:0 0 auto;flex:0 0 auto;width:auto}.col-md-1,.col-md-auto{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-md-1{-webkit-flex:0 0 8.333333%;-ms-flex:0 0 8.333333%;flex:0 0 8.333333%;max-width:8.333333%}.col-md-2{-webkit-flex:0 0 16.666667%;-ms-flex:0 0 16.666667%;flex:0 0 16.666667%;max-width:16.666667%}.col-md-2,.col-md-3{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-md-3{-webkit-flex:0 0 25%;-ms-flex:0 0 25%;flex:0 0 25%;max-width:25%}.col-md-4{-webkit-flex:0 0 33.333333%;-ms-flex:0 0 33.333333%;flex:0 0 33.333333%;max-width:33.333333%}.col-md-4,.col-md-5{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-md-5{-webkit-flex:0 0 41.666667%;-ms-flex:0 0 41.666667%;flex:0 0 41.666667%;max-width:41.666667%}.col-md-6{-webkit-flex:0 0 50%;-ms-flex:0 0 50%;flex:0 0 50%;max-width:50%}.col-md-6,.col-md-7{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-md-7{-webkit-flex:0 0 58.333333%;-ms-flex:0 0 58.333333%;flex:0 0 58.333333%;max-width:58.333333%}.col-md-8{-webkit-flex:0 0 66.666667%;-ms-flex:0 0 66.666667%;flex:0 0 66.666667%;max-width:66.666667%}.col-md-8,.col-md-9{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-md-9{-webkit-flex:0 0 75%;-ms-flex:0 0 75%;flex:0 0 75%;max-width:75%}.col-md-10{-webkit-flex:0 0 83.333333%;-ms-flex:0 0 83.333333%;flex:0 0 83.333333%;max-width:83.333333%}.col-md-10,.col-md-11{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-md-11{-webkit-flex:0 0 91.666667%;-ms-flex:0 0 91.666667%;flex:0 0 91.666667%;max-width:91.666667%}.col-md-12{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:0 0 100%;-ms-flex:0 0 100%;flex:0 0 100%;max-width:100%}.pull-md-0{right:auto}.pull-md-1{right:8.333333%}.pull-md-2{right:16.666667%}.pull-md-3{right:25%}.pull-md-4{right:33.333333%}.pull-md-5{right:41.666667%}.pull-md-6{right:50%}.pull-md-7{right:58.333333%}.pull-md-8{right:66.666667%}.pull-md-9{right:75%}.pull-md-10{right:83.333333%}.pull-md-11{right:91.666667%}.pull-md-12{right:100%}.push-md-0{left:auto}.push-md-1{left:8.333333%}.push-md-2{left:16.666667%}.push-md-3{left:25%}.push-md-4{left:33.333333%}.push-md-5{left:41.666667%}.push-md-6{left:50%}.push-md-7{left:58.333333%}.push-md-8{left:66.666667%}.push-md-9{left:75%}.push-md-10{left:83.333333%}.push-md-11{left:91.666667%}.push-md-12{left:100%}.offset-md-0{margin-left:0}.offset-md-1{margin-left:8.333333%}.offset-md-2{margin-left:16.666667%}.offset-md-3{margin-left:25%}.offset-md-4{margin-left:33.333333%}.offset-md-5{margin-left:41.666667%}.offset-md-6{margin-left:50%}.offset-md-7{margin-left:58.333333%}.offset-md-8{margin-left:66.666667%}.offset-md-9{margin-left:75%}.offset-md-10{margin-left:83.333333%}.offset-md-11{margin-left:91.666667%}}@media (min-width:992px){.col-lg{-ms-flex-preferred-size:0;-webkit-flex-basis:0;flex-basis:0;-ms-flex-positive:1;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;-ms-box-flex:1;box-flex:1;-webkit-flex-grow:1;flex-grow:1;max-width:100%}.col-lg-auto{-webkit-flex:0 0 auto;-ms-flex:0 0 auto;flex:0 0 auto;width:auto}.col-lg-1,.col-lg-auto{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-lg-1{-webkit-flex:0 0 8.333333%;-ms-flex:0 0 8.333333%;flex:0 0 8.333333%;max-width:8.333333%}.col-lg-2{-webkit-flex:0 0 16.666667%;-ms-flex:0 0 16.666667%;flex:0 0 16.666667%;max-width:16.666667%}.col-lg-2,.col-lg-3{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-lg-3{-webkit-flex:0 0 25%;-ms-flex:0 0 25%;flex:0 0 25%;max-width:25%}.col-lg-4{-webkit-flex:0 0 33.333333%;-ms-flex:0 0 33.333333%;flex:0 0 33.333333%;max-width:33.333333%}.col-lg-4,.col-lg-5{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-lg-5{-webkit-flex:0 0 41.666667%;-ms-flex:0 0 41.666667%;flex:0 0 41.666667%;max-width:41.666667%}.col-lg-6{-webkit-flex:0 0 50%;-ms-flex:0 0 50%;flex:0 0 50%;max-width:50%}.col-lg-6,.col-lg-7{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-lg-7{-webkit-flex:0 0 58.333333%;-ms-flex:0 0 58.333333%;flex:0 0 58.333333%;max-width:58.333333%}.col-lg-8{-webkit-flex:0 0 66.666667%;-ms-flex:0 0 66.666667%;flex:0 0 66.666667%;max-width:66.666667%}.col-lg-8,.col-lg-9{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-lg-9{-webkit-flex:0 0 75%;-ms-flex:0 0 75%;flex:0 0 75%;max-width:75%}.col-lg-10{-webkit-flex:0 0 83.333333%;-ms-flex:0 0 83.333333%;flex:0 0 83.333333%;max-width:83.333333%}.col-lg-10,.col-lg-11{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-lg-11{-webkit-flex:0 0 91.666667%;-ms-flex:0 0 91.666667%;flex:0 0 91.666667%;max-width:91.666667%}.col-lg-12{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:0 0 100%;-ms-flex:0 0 100%;flex:0 0 100%;max-width:100%}.pull-lg-0{right:auto}.pull-lg-1{right:8.333333%}.pull-lg-2{right:16.666667%}.pull-lg-3{right:25%}.pull-lg-4{right:33.333333%}.pull-lg-5{right:41.666667%}.pull-lg-6{right:50%}.pull-lg-7{right:58.333333%}.pull-lg-8{right:66.666667%}.pull-lg-9{right:75%}.pull-lg-10{right:83.333333%}.pull-lg-11{right:91.666667%}.pull-lg-12{right:100%}.push-lg-0{left:auto}.push-lg-1{left:8.333333%}.push-lg-2{left:16.666667%}.push-lg-3{left:25%}.push-lg-4{left:33.333333%}.push-lg-5{left:41.666667%}.push-lg-6{left:50%}.push-lg-7{left:58.333333%}.push-lg-8{left:66.666667%}.push-lg-9{left:75%}.push-lg-10{left:83.333333%}.push-lg-11{left:91.666667%}.push-lg-12{left:100%}.offset-lg-0{margin-left:0}.offset-lg-1{margin-left:8.333333%}.offset-lg-2{margin-left:16.666667%}.offset-lg-3{margin-left:25%}.offset-lg-4{margin-left:33.333333%}.offset-lg-5{margin-left:41.666667%}.offset-lg-6{margin-left:50%}.offset-lg-7{margin-left:58.333333%}.offset-lg-8{margin-left:66.666667%}.offset-lg-9{margin-left:75%}.offset-lg-10{margin-left:83.333333%}.offset-lg-11{margin-left:91.666667%}}@media (min-width:1200px){.col-xl{-ms-flex-preferred-size:0;-webkit-flex-basis:0;flex-basis:0;-ms-flex-positive:1;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;-ms-box-flex:1;box-flex:1;-webkit-flex-grow:1;flex-grow:1;max-width:100%}.col-xl-auto{-webkit-flex:0 0 auto;-ms-flex:0 0 auto;flex:0 0 auto;width:auto}.col-xl-1,.col-xl-auto{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xl-1{-webkit-flex:0 0 8.333333%;-ms-flex:0 0 8.333333%;flex:0 0 8.333333%;max-width:8.333333%}.col-xl-2{-webkit-flex:0 0 16.666667%;-ms-flex:0 0 16.666667%;flex:0 0 16.666667%;max-width:16.666667%}.col-xl-2,.col-xl-3{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xl-3{-webkit-flex:0 0 25%;-ms-flex:0 0 25%;flex:0 0 25%;max-width:25%}.col-xl-4{-webkit-flex:0 0 33.333333%;-ms-flex:0 0 33.333333%;flex:0 0 33.333333%;max-width:33.333333%}.col-xl-4,.col-xl-5{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xl-5{-webkit-flex:0 0 41.666667%;-ms-flex:0 0 41.666667%;flex:0 0 41.666667%;max-width:41.666667%}.col-xl-6{-webkit-flex:0 0 50%;-ms-flex:0 0 50%;flex:0 0 50%;max-width:50%}.col-xl-6,.col-xl-7{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xl-7{-webkit-flex:0 0 58.333333%;-ms-flex:0 0 58.333333%;flex:0 0 58.333333%;max-width:58.333333%}.col-xl-8{-webkit-flex:0 0 66.666667%;-ms-flex:0 0 66.666667%;flex:0 0 66.666667%;max-width:66.666667%}.col-xl-8,.col-xl-9{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xl-9{-webkit-flex:0 0 75%;-ms-flex:0 0 75%;flex:0 0 75%;max-width:75%}.col-xl-10{-webkit-flex:0 0 83.333333%;-ms-flex:0 0 83.333333%;flex:0 0 83.333333%;max-width:83.333333%}.col-xl-10,.col-xl-11{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xl-11{-webkit-flex:0 0 91.666667%;-ms-flex:0 0 91.666667%;flex:0 0 91.666667%;max-width:91.666667%}.col-xl-12{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:0 0 100%;-ms-flex:0 0 100%;flex:0 0 100%;max-width:100%}.pull-xl-0{right:auto}.pull-xl-1{right:8.333333%}.pull-xl-2{right:16.666667%}.pull-xl-3{right:25%}.pull-xl-4{right:33.333333%}.pull-xl-5{right:41.666667%}.pull-xl-6{right:50%}.pull-xl-7{right:58.333333%}.pull-xl-8{right:66.666667%}.pull-xl-9{right:75%}.pull-xl-10{right:83.333333%}.pull-xl-11{right:91.666667%}.pull-xl-12{right:100%}.push-xl-0{left:auto}.push-xl-1{left:8.333333%}.push-xl-2{left:16.666667%}.push-xl-3{left:25%}.push-xl-4{left:33.333333%}.push-xl-5{left:41.666667%}.push-xl-6{left:50%}.push-xl-7{left:58.333333%}.push-xl-8{left:66.666667%}.push-xl-9{left:75%}.push-xl-10{left:83.333333%}.push-xl-11{left:91.666667%}.push-xl-12{left:100%}.offset-xl-0{margin-left:0}.offset-xl-1{margin-left:8.333333%}.offset-xl-2{margin-left:16.666667%}.offset-xl-3{margin-left:25%}.offset-xl-4{margin-left:33.333333%}.offset-xl-5{margin-left:41.666667%}.offset-xl-6{margin-left:50%}.offset-xl-7{margin-left:58.333333%}.offset-xl-8{margin-left:66.666667%}.offset-xl-9{margin-left:75%}.offset-xl-10{margin-left:83.333333%}.offset-xl-11{margin-left:91.666667%}}@media (min-width:1440px){.col-xxl{-ms-flex-preferred-size:0;-webkit-flex-basis:0;flex-basis:0;-ms-flex-positive:1;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;-ms-box-flex:1;box-flex:1;-webkit-flex-grow:1;flex-grow:1;max-width:100%}.col-xxl-auto{-webkit-flex:0 0 auto;-ms-flex:0 0 auto;flex:0 0 auto;width:auto}.col-xxl-1,.col-xxl-auto{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xxl-1{-webkit-flex:0 0 8.333333%;-ms-flex:0 0 8.333333%;flex:0 0 8.333333%;max-width:8.333333%}.col-xxl-2{-webkit-flex:0 0 16.666667%;-ms-flex:0 0 16.666667%;flex:0 0 16.666667%;max-width:16.666667%}.col-xxl-2,.col-xxl-3{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xxl-3{-webkit-flex:0 0 25%;-ms-flex:0 0 25%;flex:0 0 25%;max-width:25%}.col-xxl-4{-webkit-flex:0 0 33.333333%;-ms-flex:0 0 33.333333%;flex:0 0 33.333333%;max-width:33.333333%}.col-xxl-4,.col-xxl-5{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xxl-5{-webkit-flex:0 0 41.666667%;-ms-flex:0 0 41.666667%;flex:0 0 41.666667%;max-width:41.666667%}.col-xxl-6{-webkit-flex:0 0 50%;-ms-flex:0 0 50%;flex:0 0 50%;max-width:50%}.col-xxl-6,.col-xxl-7{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xxl-7{-webkit-flex:0 0 58.333333%;-ms-flex:0 0 58.333333%;flex:0 0 58.333333%;max-width:58.333333%}.col-xxl-8{-webkit-flex:0 0 66.666667%;-ms-flex:0 0 66.666667%;flex:0 0 66.666667%;max-width:66.666667%}.col-xxl-8,.col-xxl-9{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xxl-9{-webkit-flex:0 0 75%;-ms-flex:0 0 75%;flex:0 0 75%;max-width:75%}.col-xxl-10{-webkit-flex:0 0 83.333333%;-ms-flex:0 0 83.333333%;flex:0 0 83.333333%;max-width:83.333333%}.col-xxl-10,.col-xxl-11{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1}.col-xxl-11{-webkit-flex:0 0 91.666667%;-ms-flex:0 0 91.666667%;flex:0 0 91.666667%;max-width:91.666667%}.col-xxl-12{-webkit-box-flex:0;-webkit-box-flex:1;-moz-box-flex:1;-o-box-flex:1;box-flex:1;-webkit-flex:0 0 100%;-ms-flex:0 0 100%;flex:0 0 100%;max-width:100%}.pull-xxl-0{right:auto}.pull-xxl-1{right:8.333333%}.pull-xxl-2{right:16.666667%}.pull-xxl-3{right:25%}.pull-xxl-4{right:33.333333%}.pull-xxl-5{right:41.666667%}.pull-xxl-6{right:50%}.pull-xxl-7{right:58.333333%}.pull-xxl-8{right:66.666667%}.pull-xxl-9{right:75%}.pull-xxl-10{right:83.333333%}.pull-xxl-11{right:91.666667%}.pull-xxl-12{right:100%}.push-xxl-0{left:auto}.push-xxl-1{left:8.333333%}.push-xxl-2{left:16.666667%}.push-xxl-3{left:25%}.push-xxl-4{left:33.333333%}.push-xxl-5{left:41.666667%}.push-xxl-6{left:50%}.push-xxl-7{left:58.333333%}.push-xxl-8{left:66.666667%}.push-xxl-9{left:75%}.push-xxl-10{left:83.333333%}.push-xxl-11{left:91.666667%}.push-xxl-12{left:100%}.offset-xxl-0{margin-left:0}.offset-xxl-1{margin-left:8.333333%}.offset-xxl-2{margin-left:16.666667%}.offset-xxl-3{margin-left:25%}.offset-xxl-4{margin-left:33.333333%}.offset-xxl-5{margin-left:41.666667%}.offset-xxl-6{margin-left:50%}.offset-xxl-7{margin-left:58.333333%}.offset-xxl-8{margin-left:66.666667%}.offset-xxl-9{margin-left:75%}.offset-xxl-10{margin-left:83.333333%}.offset-xxl-11{margin-left:91.666667%}}.flex-xs-first{-webkit-box-ordinal-group:0;-webkit-box-ordinal-group:-1;-moz-box-ordinal-group:-1;-o-box-ordinal-group:-1;-ms-flex-order:-1;-webkit-order:-1;order:-1}.flex-xs-last{-webkit-box-ordinal-group:2;-webkit-box-ordinal-group:1;-moz-box-ordinal-group:1;-o-box-ordinal-group:1;-ms-flex-order:1;-webkit-order:1;order:1}.flex-xs-unordered{-webkit-box-ordinal-group:1;-webkit-box-ordinal-group:0;-moz-box-ordinal-group:0;-o-box-ordinal-group:0;-ms-flex-order:0;-webkit-order:0;order:0}.flex-items-xs-top{-ms-grid-row-align:flex-start;-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start}.flex-items-xs-middle{-ms-grid-row-align:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.flex-items-xs-bottom{-ms-grid-row-align:flex-end;-webkit-box-align:end;-moz-box-align:end;-o-box-align:end;-ms-flex-align:end;-webkit-align-items:flex-end;align-items:flex-end}.flex-xs-top{-webkit-align-self:flex-start;align-self:flex-start;-ms-flex-item-align:start}.flex-xs-middle{-webkit-align-self:center;align-self:center;-ms-flex-item-align:center}.flex-xs-bottom{-webkit-align-self:flex-end;align-self:flex-end;-ms-flex-item-align:end}.flex-items-xs-left{-webkit-box-pack:start;-moz-box-pack:start;-o-box-pack:start;-ms-flex-pack:start;-webkit-justify-content:flex-start;justify-content:flex-start}.flex-items-xs-center{-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}.flex-items-xs-right{-webkit-box-pack:end;-moz-box-pack:end;-o-box-pack:end;-ms-flex-pack:end;-webkit-justify-content:flex-end;justify-content:flex-end}.flex-items-xs-around{-webkit-box-pack:distribute;-moz-box-pack:distribute;-o-box-pack:distribute;-ms-flex-pack:distribute;-webkit-justify-content:space-around;justify-content:space-around}.flex-items-xs-between{-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between}@media (min-width:544px){.flex-sm-first{-webkit-box-ordinal-group:0;-webkit-box-ordinal-group:-1;-moz-box-ordinal-group:-1;-o-box-ordinal-group:-1;-ms-flex-order:-1;-webkit-order:-1;order:-1}.flex-sm-last{-webkit-box-ordinal-group:2;-webkit-box-ordinal-group:1;-moz-box-ordinal-group:1;-o-box-ordinal-group:1;-ms-flex-order:1;-webkit-order:1;order:1}.flex-sm-unordered{-webkit-box-ordinal-group:1;-webkit-box-ordinal-group:0;-moz-box-ordinal-group:0;-o-box-ordinal-group:0;-ms-flex-order:0;-webkit-order:0;order:0}.flex-items-sm-top{-ms-grid-row-align:flex-start;-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start}.flex-items-sm-middle{-ms-grid-row-align:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.flex-items-sm-bottom{-ms-grid-row-align:flex-end;-webkit-box-align:end;-moz-box-align:end;-o-box-align:end;-ms-flex-align:end;-webkit-align-items:flex-end;align-items:flex-end}.flex-sm-top{-webkit-align-self:flex-start;align-self:flex-start;-ms-flex-item-align:start}.flex-sm-middle{-webkit-align-self:center;align-self:center;-ms-flex-item-align:center}.flex-sm-bottom{-webkit-align-self:flex-end;align-self:flex-end;-ms-flex-item-align:end}.flex-items-sm-left{-webkit-box-pack:start;-moz-box-pack:start;-o-box-pack:start;-ms-flex-pack:start;-webkit-justify-content:flex-start;justify-content:flex-start}.flex-items-sm-center{-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}.flex-items-sm-right{-webkit-box-pack:end;-moz-box-pack:end;-o-box-pack:end;-ms-flex-pack:end;-webkit-justify-content:flex-end;justify-content:flex-end}.flex-items-sm-around{-webkit-box-pack:distribute;-moz-box-pack:distribute;-o-box-pack:distribute;-ms-flex-pack:distribute;-webkit-justify-content:space-around;justify-content:space-around}.flex-items-sm-between{-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between}}@media (min-width:768px){.flex-md-first{-webkit-box-ordinal-group:0;-webkit-box-ordinal-group:-1;-moz-box-ordinal-group:-1;-o-box-ordinal-group:-1;-ms-flex-order:-1;-webkit-order:-1;order:-1}.flex-md-last{-webkit-box-ordinal-group:2;-webkit-box-ordinal-group:1;-moz-box-ordinal-group:1;-o-box-ordinal-group:1;-ms-flex-order:1;-webkit-order:1;order:1}.flex-md-unordered{-webkit-box-ordinal-group:1;-webkit-box-ordinal-group:0;-moz-box-ordinal-group:0;-o-box-ordinal-group:0;-ms-flex-order:0;-webkit-order:0;order:0}.flex-items-md-top{-ms-grid-row-align:flex-start;-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start}.flex-items-md-middle{-ms-grid-row-align:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.flex-items-md-bottom{-ms-grid-row-align:flex-end;-webkit-box-align:end;-moz-box-align:end;-o-box-align:end;-ms-flex-align:end;-webkit-align-items:flex-end;align-items:flex-end}.flex-md-top{-webkit-align-self:flex-start;align-self:flex-start;-ms-flex-item-align:start}.flex-md-middle{-webkit-align-self:center;align-self:center;-ms-flex-item-align:center}.flex-md-bottom{-webkit-align-self:flex-end;align-self:flex-end;-ms-flex-item-align:end}.flex-items-md-left{-webkit-box-pack:start;-moz-box-pack:start;-o-box-pack:start;-ms-flex-pack:start;-webkit-justify-content:flex-start;justify-content:flex-start}.flex-items-md-center{-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}.flex-items-md-right{-webkit-box-pack:end;-moz-box-pack:end;-o-box-pack:end;-ms-flex-pack:end;-webkit-justify-content:flex-end;justify-content:flex-end}.flex-items-md-around{-webkit-box-pack:distribute;-moz-box-pack:distribute;-o-box-pack:distribute;-ms-flex-pack:distribute;-webkit-justify-content:space-around;justify-content:space-around}.flex-items-md-between{-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between}}@media (min-width:992px){.flex-lg-first{-webkit-box-ordinal-group:0;-webkit-box-ordinal-group:-1;-moz-box-ordinal-group:-1;-o-box-ordinal-group:-1;-ms-flex-order:-1;-webkit-order:-1;order:-1}.flex-lg-last{-webkit-box-ordinal-group:2;-webkit-box-ordinal-group:1;-moz-box-ordinal-group:1;-o-box-ordinal-group:1;-ms-flex-order:1;-webkit-order:1;order:1}.flex-lg-unordered{-webkit-box-ordinal-group:1;-webkit-box-ordinal-group:0;-moz-box-ordinal-group:0;-o-box-ordinal-group:0;-ms-flex-order:0;-webkit-order:0;order:0}.flex-items-lg-top{-ms-grid-row-align:flex-start;-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start}.flex-items-lg-middle{-ms-grid-row-align:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.flex-items-lg-bottom{-ms-grid-row-align:flex-end;-webkit-box-align:end;-moz-box-align:end;-o-box-align:end;-ms-flex-align:end;-webkit-align-items:flex-end;align-items:flex-end}.flex-lg-top{-webkit-align-self:flex-start;align-self:flex-start;-ms-flex-item-align:start}.flex-lg-middle{-webkit-align-self:center;align-self:center;-ms-flex-item-align:center}.flex-lg-bottom{-webkit-align-self:flex-end;align-self:flex-end;-ms-flex-item-align:end}.flex-items-lg-left{-webkit-box-pack:start;-moz-box-pack:start;-o-box-pack:start;-ms-flex-pack:start;-webkit-justify-content:flex-start;justify-content:flex-start}.flex-items-lg-center{-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}.flex-items-lg-right{-webkit-box-pack:end;-moz-box-pack:end;-o-box-pack:end;-ms-flex-pack:end;-webkit-justify-content:flex-end;justify-content:flex-end}.flex-items-lg-around{-webkit-box-pack:distribute;-moz-box-pack:distribute;-o-box-pack:distribute;-ms-flex-pack:distribute;-webkit-justify-content:space-around;justify-content:space-around}.flex-items-lg-between{-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between}}@media (min-width:1200px){.flex-xl-first{-webkit-box-ordinal-group:0;-webkit-box-ordinal-group:-1;-moz-box-ordinal-group:-1;-o-box-ordinal-group:-1;-ms-flex-order:-1;-webkit-order:-1;order:-1}.flex-xl-last{-webkit-box-ordinal-group:2;-webkit-box-ordinal-group:1;-moz-box-ordinal-group:1;-o-box-ordinal-group:1;-ms-flex-order:1;-webkit-order:1;order:1}.flex-xl-unordered{-webkit-box-ordinal-group:1;-webkit-box-ordinal-group:0;-moz-box-ordinal-group:0;-o-box-ordinal-group:0;-ms-flex-order:0;-webkit-order:0;order:0}.flex-items-xl-top{-ms-grid-row-align:flex-start;-webkit-box-align:start;-moz-box-align:start;-o-box-align:start;-ms-flex-align:start;-webkit-align-items:flex-start;align-items:flex-start}.flex-items-xl-middle{-ms-grid-row-align:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center}.flex-items-xl-bottom{-ms-grid-row-align:flex-end;-webkit-box-align:end;-moz-box-align:end;-o-box-align:end;-ms-flex-align:end;-webkit-align-items:flex-end;align-items:flex-end}.flex-xl-top{-webkit-align-self:flex-start;align-self:flex-start;-ms-flex-item-align:start}.flex-xl-middle{-webkit-align-self:center;align-self:center;-ms-flex-item-align:center}.flex-xl-bottom{-webkit-align-self:flex-end;align-self:flex-end;-ms-flex-item-align:end}.flex-items-xl-left{-webkit-box-pack:start;-moz-box-pack:start;-o-box-pack:start;-ms-flex-pack:start;-webkit-justify-content:flex-start;justify-content:flex-start}.flex-items-xl-center{-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center}.flex-items-xl-right{-webkit-box-pack:end;-moz-box-pack:end;-o-box-pack:end;-ms-flex-pack:end;-webkit-justify-content:flex-end;justify-content:flex-end}.flex-items-xl-around{-webkit-box-pack:distribute;-moz-box-pack:distribute;-o-box-pack:distribute;-ms-flex-pack:distribute;-webkit-justify-content:space-around;justify-content:space-around}.flex-items-xl-between{-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between}}html{position:relative;min-height:100%}@media print{\*{overflow:visible!important}}@media (max-width:360px){.xs-min-width{min-width:360px}}.max-text-width{max-width:720px}.max-alert-modal-width{max-width:560px}.center-bg{background-position:50%}.center-bg,.top-bg{background-size:cover;background-repeat:no-repeat}.top-bg{background-position:top}.right-bg{background-size:cover;background-position:100%;background-repeat:no-repeat}.block{background-color:#e3e4e5;color:#e3e4e5}.block-text-bg{color:#f5f7fa}.active-link{font-weight:700;color:#4281ba;border-bottom:2px solid #4281ba;padding-bottom:.5rem}.border-radius-50{border-radius:50%}.color-primary{color:#4a89dc}.color-accent{color:#3bafda}.text-primary{color:#363b42}.text-primary-dark{color:#fff}.text-secondary{color:#6e767f}.text-secondary-dark{color:#e3e4e5}.bg-white{background-color:#fff}.bg-primary{background-color:#4a89dc}.bg-dark-primary{background-color:#4281ba}.bg-light-primary{background-color:#95ccef}.bg-accent{background-color:#3bafda}.bg-info{background-color:#4a89dc}.bg-light-blue{background-color:#f5f7fa}.bg-light-blue-2{background-color:#f8fafc}.color-info{color:#4a89dc}.color-danger{color:#da4453}.bg-gray{background-color:#f5f5f5}.bg-light{background-color:#fdfeff}.bg-dark{background-color:#363b42}.color-white{color:#fff}.color-black{color:#000}.border-a{border:1px solid #e3e4e5}.border-bottom{border-bottom:1px solid #e3e4e5}.border-top{border-top:1px solid #e3e4e5}.list-style-none{list-style:none}.row-margin{margin-left:-12px;margin-right:-12px}.m-p-0{margin:0;padding:0}.pos-relative{position:relative}.m-t-auto{margin-top:auto}h1,h2,h3,h4,h5,h6,p{max-width:100%}.font-xxl{font-size:4rem}.font-xl{font-size:2.5rem}.font-lg{font-size:1.5rem}.font-md{font-size:1rem}.font-sm{font-size:.9rem}.font-xs{font-size:.8rem}.pos-vertical-center{position:relative}.absolute-center,.pos-vertical-center{top:50%;-webkit-transform:translateY(-50%);-moz-transform:translateY(-50%);-o-transform:translateY(-50%);-ms-transform:translateY(-50%);transform:translateY(-50%)}.absolute-center{position:absolute;border:1px dashed #ff1493}.clearfix:after{content:"";display:table;clear:both}.d-block{display:block!important}.d-inline-block{display:inline-block!important}.d-inline{display:inline!important}.pull-xs-left{float:left!important}.pull-xs-right{float:right!important}.pull-xs-none{float:none!important}@media (min-width:544px){.pull-sm-left{float:left!important}.pull-sm-right{float:right!important}.pull-sm-none{float:none!important}}@media (min-width:768px){.pull-md-left{float:left!important}.pull-md-right{float:right!important}.pull-md-none{float:none!important}}@media (min-width:992px){.pull-lg-left{float:left!important}.pull-lg-right{float:right!important}.pull-lg-none{float:none!important}}@media (min-width:1200px){.pull-xl-left{float:left!important}.pull-xl-right{float:right!important}.pull-xl-none{float:none!important}}.overflow-hidden{overflow:hidden}.sr-only-focusable:active,.sr-only-focusable:focus{position:static;width:auto;height:auto;margin:0;overflow:visible;clip:auto}.w-100{width:100%!important}.h-100{height:100%}.m-x-auto{margin-right:auto!important;margin-left:auto!important}.m-a-0{margin:0!important}.m-t-0{margin-top:0!important}.m-r-0{margin-right:0!important}.m-b-0{margin-bottom:0!important}.m-l-0,.m-x-0{margin-left:0!important}.m-x-0{margin-right:0!important}.m-y-0{margin-top:0!important;margin-bottom:0!important}.m-a-1s{margin:.5rem!important}.m-t-1s{margin-top:.5rem!important}.m-r-1s{margin-right:.5rem!important}.m-b-1s{margin-bottom:.5rem!important}.m-l-1s,.m-x-1s{margin-left:.5rem!important}.m-x-1s{margin-right:.5rem!important}.m-y-1s{margin-top:.5rem!important;margin-bottom:.5rem!important}.m-a-1{margin:1rem!important}.m-t-1{margin-top:1rem!important}.m-r-1{margin-right:1rem!important}.m-b-1{margin-bottom:1rem!important}.m-l-1,.m-x-1{margin-left:1rem!important}.m-x-1{margin-right:1rem!important}.m-y-1{margin-top:1rem!important;margin-bottom:1rem!important}.m-a-2{margin:1.5rem!important}.m-t-2{margin-top:1.5rem!important}.m-r-2{margin-right:1.5rem!important}.m-b-2{margin-bottom:1.5rem!important}.m-l-2,.m-x-2{margin-left:1.5rem!important}.m-x-2{margin-right:1.5rem!important}.m-y-2{margin-top:1.5rem!important;margin-bottom:1.5rem!important}.m-a-3{margin:3rem!important}.m-t-3{margin-top:3rem!important}.m-r-3{margin-right:3rem!important}.m-b-3{margin-bottom:3rem!important}.m-l-3,.m-x-3{margin-left:3rem!important}.m-x-3{margin-right:3rem!important}.m-y-3{margin-top:3rem!important;margin-bottom:3rem!important}.p-a-0{padding:0!important}.p-t-0{padding-top:0!important}.p-r-0{padding-right:0!important}.p-b-0{padding-bottom:0!important}.p-l-0,.p-x-0{padding-left:0!important}.p-x-0{padding-right:0!important}.p-y-0{padding-top:0!important;padding-bottom:0!important}.p-a-1s{padding:.5rem!important}.p-t-1s{padding-top:.5rem!important}.p-r-1s{padding-right:.5rem!important}.p-b-1s{padding-bottom:.5rem!important}.p-l-1s,.p-x-1s{padding-left:.5rem!important}.p-x-1s{padding-right:.5rem!important}.p-y-1s{padding-top:.5rem!important;padding-bottom:.5rem!important}.p-a-1{padding:1rem!important}.p-t-1{padding-top:1rem!important}.p-r-1{padding-right:1rem!important}.p-b-1{padding-bottom:1rem!important}.p-l-1,.p-x-1{padding-left:1rem!important}.p-x-1{padding-right:1rem!important}.p-y-1{padding-top:1rem!important;padding-bottom:1rem!important}.p-a-2{padding:1.5rem!important}.p-t-2{padding-top:1.5rem!important}.p-r-2{padding-right:1.5rem!important}.p-b-2{padding-bottom:1.5rem!important}.p-l-2,.p-x-2{padding-left:1.5rem!important}.p-x-2{padding-right:1.5rem!important}.p-y-2{padding-top:1.5rem!important;padding-bottom:1.5rem!important}.p-a-3{padding:3rem!important}.p-t-3{padding-top:3rem!important}.p-r-3{padding-right:3rem!important}.p-b-3{padding-bottom:3rem!important}.p-l-3,.p-x-3{padding-left:3rem!important}.p-x-3{padding-right:3rem!important}.p-y-3{padding-top:3rem!important;padding-bottom:3rem!important}.pos-f-t{position:fixed;top:0;right:0;left:0;z-index:1030}.text-justify{text-align:justify!important}.text-nowrap{white-space:nowrap!important}.text-truncate{overflow:hidden;-o-text-overflow:ellipsis;text-overflow:ellipsis;white-space:nowrap}.text-xs-left{text-align:left!important}.text-xs-right{text-align:right!important}.text-xs-center{text-align:center!important}@media (min-width:544px){.text-sm-left{text-align:left!important}.text-sm-right{text-align:right!important}.text-sm-center{text-align:center!important}}@media (min-width:768px){.text-md-left{text-align:left!important}.text-md-right{text-align:right!important}.text-md-center{text-align:center!important}}@media (min-width:992px){.text-lg-left{text-align:left!important}.text-lg-right{text-align:right!important}.text-lg-center{text-align:center!important}}@media (min-width:1200px){.text-xl-left{text-align:left!important}.text-xl-right{text-align:right!important}.text-xl-center{text-align:center!important}}.text-lowercase{text-transform:lowercase!important}.text-uppercase{text-transform:uppercase!important}.text-capitalize{text-transform:capitalize!important}.text-decoration-none{text-decoration:none}.font-weight-normal{font-weight:400}.font-weight-bold{font-weight:700}.font-italic{font-style:italic}.text-hide{font:0/0 a;color:transparent;text-shadow:none;background-color:transparent;border:0}.text-muted{color:#687075!important}a.text-muted:focus,a.text-muted:hover{color:#687077!important}a.text-primary:focus,a.text-primary:hover{color:#025aa5!important}.text-success{color:#5cb85c!important}a.text-success:focus,a.text-success:hover{color:#449d44!important}.text-info{color:#5bc0de!important}a.text-info:focus,a.text-info:hover{color:#31b0d5!important}.text-warning{color:#f0ad4e!important}a.text-warning:focus,a.text-warning:hover{color:#ec971f!important}.text-danger{color:#d9534f!important}a.text-danger:focus,a.text-danger:hover{color:#c9302c!important}.text-gray-dark{color:#373a3c!important}a.text-gray-dark:focus,a.text-gray-dark:hover{color:#1f2021!important}.invisible{visibility:hidden!important}.hidden-xs-up{display:none!important}@media (max-width:575px){.hidden-xs-down{display:none!important}}@media (min-width:576px){.hidden-sm-up{display:none!important}}@media (max-width:767px){.hidden-sm-down{display:none!important}}@media (min-width:768px){.hidden-md-up{display:none!important}}@media (max-width:991px){.hidden-md-down{display:none!important}}@media (min-width:992px){.hidden-lg-up{display:none!important}}@media (max-width:1167px){.hidden-lg-down{display:none!important}}@media (min-width:1168px){.hidden-xl-up{display:none!important}}@media (max-width:1407px){.hidden-xll-down{display:none!important}}@media (min-width:1408px){.hidden-xll-up{display:none!important}}\*{-webkit-font-smoothing:antialiased;-moz-osx-font-smoothing:grayscale}body{font-family:OpenSans,-apple-system,BlinkMacSystemFont,Segoe UI,Roboto,Helvetica Neue,Arial,sans-serif}.heading,h1,h2,h3,h4,h5,h6{font-family:OpenSans-light,Arial,sans-serif}.h1,.h2,.h3,.h4,.h5,.h6{margin-bottom:.5rem}.h1,h1{font-size:3rem;line-height:3.75rem}.h2,h2{font-size:2.125rem;line-height:2.625rem}.h3,h3{font-size:1.5rem;line-height:1.875rem}.h4,h4{font-size:1.25rem;line-height:1.5rem}.h5,h5{font-size:.875rem;line-height:1rem}.h6,h6{font-size:.75rem;line-height:.9rem}.body{font-size:.875rem;line-height:1.5rem}.caption,.label{font-size:.75rem;line-height:1.125rem}.label{font-weight:700;text-transform:uppercase}.display{font-family:Merriweather-Light,Georgia,serif}.bold{font-family:OpenSans,Arial,sans-serif;font-weight:700}.hide{display:none}.rc-Modal{z-index:10000;color:#363b42}.rc-Modal .c-modal-x-out{top:8px!important;right:16px!important}.vjs-button,.vjs-control{background:transparent;border:none}.text-decoration-none:hover{text-decoration:none!important}.max-width-980{max-width:980px}table>caption{caption-side:top!important}.c-ph-search-bar{position:relative;line-height:40px;border:1px solid #d9d9d9}.c-ph-search-bar.c-has-catalog-button .c-search-form{margin-left:90px;width:calc(100% - 90px)}.c-ph-search-bar .c-ph-search-wrapper{margin:0;text-align:left;position:relative}.c-ph-search-bar .c-ph-search-wrapper .c-search-form{width:100%;margin-bottom:0;display:inline-block}.c-ph-search-bar .c-ph-search-wrapper button.button-link{color:#757575;width:100%;height:100%;background-color:#fafafa}.c-ph-search-bar .c-ph-search-wrapper button.button-link:focus,.c-ph-search-bar .c-ph-search-wrapper button.button-link:hover{background-color:#ededed}.c-ph-search-bar .c-ph-search-wrapper .c-catalog-button{background-color:#fafafa;border-right:1px solid #d9d9d9;cursor:pointer;display:inline-block;line-height:40px;overflow:hidden;position:absolute;text-align:center;text-decoration:none;-o-text-overflow:ellipsis;text-overflow:ellipsis;white-space:nowrap;width:90px}.c-ph-search-bar .c-ph-search-wrapper .c-catalog-button:focus,.c-ph-search-bar .c-ph-search-wrapper .c-catalog-button:hover{background-color:#e6e9ed}.c-ph-search-bar .c-ph-search-wrapper .c-catalog-button:active{font-weight:600}.c-ph-search-bar .c-ph-search-wrapper .c-catalog-button .c-catalog-icon{margin-right:6px;margin-left:8px;margin-top:-2px;vertical-align:middle;font-size:16px}.c-ph-search-bar .c-ph-search-wrapper .c-catalog-button .c-catalog-dropdown-icon{margin-left:8px;margin-top:-2px;vertical-align:middle;font-size:16px}.c-ph-search-bar .c-ph-search-wrapper .c-search-icon-wrapper{width:40px;height:40px;position:absolute;right:0;top:0;cursor:pointer;border-left:1px solid #d9d9d9}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container{display:block;width:100%}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input{font-size:14px;width:100%;height:40px;color:#000;background-color:#fff;border:none;outline:none;padding:0 48px 0 8px;margin:0;font-weight:800}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input::placeholder{color:#757575;opacity:1;-ms-filter:none;filter:none;font-weight:400}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input:focus{background-color:#fff}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input:focus::-webkit-input-placeholder{color:transparent}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input:focus:-moz-placeholder,.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input:focus::-moz-placeholder{color:transparent}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input:focus:-ms-input-placeholder{color:transparent}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-catalog-input.c-search-hint{color:#cecece}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-menu{width:calc(100% + 2px);left:-1px!important;margin-top:5px;z-index:101!important}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-menu .c-search-suggestion{line-height:20px;color:#b4b4b4;padding:10px;font-weight:800}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-menu .c-search-suggestion .c-search-highlight{color:#757575}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-menu .c-search-suggestion:hover{background:#f5f7fa}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-icon{position:absolute;right:12px;top:11px;font-size:16px;cursor:pointer;color:#333}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-icon:active{font-weight:bolder}.c-ph-search-bar .c-ph-search-wrapper .c-search-input-container .c-search-icon .c-search-submit{position:absolute;width:100%;left:-1px;opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0)}.c-user-modal-overlay,.rc-Modal.layer .c-modal-overlay{background-color:rgba(0,0,0,.83)}.c-user-modal,.rc-AuthenticationModal .c-user-modal-content{background-color:#f5f5f5}.c-user-modal .c-user-modal-content h2,.c-user-modal .c-user-modal-content input,.c-user-modal .c-user-modal-footer a,.rc-AuthenticationModal .c-user-modal-content h2,.rc-AuthenticationModal .c-user-modal-content input,.rc-AuthenticationModal .caption-text a{color:rgba(0,0,0,.87)}.c-user-modal .c-user-modal-content,.c-user-modal .c-user-modal-footer,.rc-AuthenticationModal .c-user-modal-content{color:rgba(0,0,0,.54)}.c-user-modal .c-user-modal-content .c-user-modal-error-inline,.c-user-modal header,.c-user-modal header a.active,.c-user-modal header a:active,.c-user-modal header a:focus,.c-user-modal header a:hover,.rc-AuthenticationModal-content header,.rc-AuthenticationModal-content header a.active,.rc-AuthenticationModal-content header a:active,.rc-AuthenticationModal-content header a:focus,.rc-AuthenticationModal-content header a:hover,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-error-inline,.rc-AuthenticationModal .rc-AuthenticationModal-content header,.rc-AuthenticationModal .rc-AuthenticationModal-content header a.active,.rc-AuthenticationModal .rc-AuthenticationModal-content header a:active,.rc-AuthenticationModal .rc-AuthenticationModal-content header a:focus,.rc-AuthenticationModal .rc-AuthenticationModal-content header a:hover{color:#fff}.c-user-modal .c-user-modal-close,.c-user-modal header a,.rc-AuthenticationModal-content header a,.rc-AuthenticationModal .c-user-modal-close,.rc-AuthenticationModal .rc-AuthenticationModal-content header a{color:hsla(0,0%,100%,.7)}.c-user-modal .c-user-modal-content button.c-user-modal-facebook-button:disabled{color:hsla(0,0%,100%,.3)}.c-user-modal,.c-user-modal .c-user-modal-content .c-user-modal-error-inline,.rc-AuthenticationModal .c-user-modal-content,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-error-inline,.tooltip.left .tooltip-inner{border-radius:4px}.c-user-modal .c-user-modal-content .c-user-modal-controls,.c-user-modal .c-user-modal-content .c-user-modal-help-text,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-controls,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-help-text{border-radius:2px}.sr-only{position:absolute;width:1px;height:1px;margin:-1px;padding:0;overflow:hidden;clip:rect(0,0,0,0);border:0}.c-user-modal .c-user-modal-content,.c-user-modal .c-user-modal-footer a,.c-user-modal header,.c-user-modal header a,.rc-AuthenticationModal-content header,.rc-AuthenticationModal-content header a,.rc-AuthenticationModal .c-user-modal-content,.rc-AuthenticationModal .rc-AuthenticationModal-content header,.rc-AuthenticationModal .rc-AuthenticationModal-content header a{font-weight:500}.c-user-modal .c-user-modal-content h2,.rc-AuthenticationModal .c-user-modal-content h2{font-size:24px;line-height:32px}.c-user-modal .c-user-modal-close,.rc-AuthenticationModal .c-user-modal-close{font-size:20px;line-height:24px}.c-user-modal .c-user-modal-content,.c-user-modal .c-user-modal-content input,.c-user-modal header,.c-user-modal header a,.rc-AuthenticationModal-content header,.rc-AuthenticationModal-content header a,.rc-AuthenticationModal .c-user-modal-content,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-error-icon,.rc-AuthenticationModal .c-user-modal-content input,.rc-AuthenticationModal .rc-AuthenticationModal-content header,.rc-AuthenticationModal .rc-AuthenticationModal-content header a{font-size:14px;line-height:20px}.c-user-modal .c-user-modal-content .c-user-modal-error-inline,.c-user-modal .c-user-modal-content .c-user-modal-help-text,.c-user-modal .c-user-modal-footer,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-error-inline,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-help-text{font-size:12px;line-height:14px}.c-user-modal .c-user-modal-divider,.rc-AuthenticationModal .c-user-modal-divider{margin-top:8px;margin-bottom:8px}.c-user-modal .c-user-modal-footer{margin-top:16px;margin-bottom:0}.c-user-modal .c-user-modal-content .c-user-modal-help-text,.c-user-modal .c-user-modal-content h2,.c-user-modal .c-user-modal-content p,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-help-text,.rc-AuthenticationModal .c-user-modal-content h2,.rc-AuthenticationModal .c-user-modal-content p{margin-top:0;margin-bottom:16px}.c-user-modal .c-user-modal-content .c-user-modal-error-icon,.c-user-modal .c-user-modal-content form,.c-user-modal .c-user-modal-content input,.rc-AuthenticationModal .c-user-modal-content .c-user-modal-error-icon,.rc-AuthenticationModal .c-user-modal-content form,.rc-AuthenticationModal .c-user-modal-content input{margin:0}body.c-phoenix-modal-open{overflow:hidden}.rc-Modal .c-modal-overlay{position:fixed;top:0;bottom:0;left:0;right:0;height:100%;width:100%;z-index:3000}.rc-Modal .c-modal-content{position:fixed;top:50%;right:0;left:50%;-moz-transform:translate(-50%,-50%);-o-transform:translate(-50%,-50%);-ms-transform:translate(-50%,-50%);transform:translate(-50%,-50%);-webkit-transform:translate(-50%,-50%);width:720px;max-width:98%;min-height:200px;z-index:10000}.rc-Modal .c-modal-x-out{position:absolute;top:28px;right:28px;text-align:right;padding-top:4px;font-size:24px;color:#757575;cursor:pointer;z-index:10000}.rc-Modal .c-modal-x-out a{color:#757575;cursor:pointer;text-decoration:none}.rc-Modal .c-modal-x-out:hover{color:#666;text-decoration:none}.rc-Modal.layer .c-modal-overlay{opacity:inherit;-ms-filter:inherit;filter:inherit}.rc-Modal.layer .c-modal-content{top:33%;color:#fff;text-align:center}.rc-Modal.box .c-modal-overlay,.rc-Modal.side .c-modal-overlay{background-color:#888;opacity:.5;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=50)";filter:alpha(opacity=50)}.rc-Modal.box .c-modal-content,.rc-Modal.side .c-modal-content{background-color:#fff;border-radius:3px;max-height:98%;overflow-y:auto}.rc-Modal.box .c-modal-title,.rc-Modal.side .c-modal-title{margin:0 0 18px;text-align:left}.rc-Modal.box .c-modal-subtitle,.rc-Modal.side .c-modal-subtitle{margin-bottom:16px}.rc-Modal.box .c-modal-cancel,.rc-Modal.side .c-modal-cancel{cursor:pointer;margin:6px 36px 0 0;color:#888}.rc-Modal.box .c-modal-submit,.rc-Modal.side .c-modal-submit{width:80px}.rc-Modal.box .c-modal-action-bar,.rc-Modal.side .c-modal-action-bar{text-align:right}.rc-Modal.box .c-modal-action-bar .c-modal-action-button,.rc-Modal.side .c-modal-action-bar .c-modal-action-button{margin-left:16px}.rc-Modal.box .c-modal-error-message,.rc-Modal.side .c-modal-error-message{margin-left:64px;display:inline-block;margin-top:8px}.rc-Modal.box.dark-bg,.rc-Modal.side.dark-bg{background-color:rgba(0,0,0,.8);opacity:.8;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=80)";filter:alpha(opacity=80)}.rc-Modal.side .c-modal-content{-moz-transform:none;-o-transform:none;-ms-transform:none;transform:none;-webkit-transform:none;top:0;border-radius:0;max-height:100%;height:100%}@media (min-width:480px){.rc-Modal.side .c-modal-content{left:0;width:100%}}@media (min-width:768px){.rc-Modal.side .c-modal-content{left:60%;width:40%}}@media (min-width:992px){.rc-Modal.side .c-modal-content{left:70%;width:30%}}.rc-Modal.box .c-modal-content,.rc-Modal.box .c-modal-content--optimized{padding:28px;border-radius:3px;max-height:98%;overflow-y:auto}.rc-Modal.popup.top-right .c-modal-content{min-height:100px;width:350px;top:80px;bottom:auto}.rc-Modal.popup .c-modal-content,.rc-Modal.popup.top-right .c-modal-content{left:auto;right:10px;overflow-y:auto;-moz-transform:none;-o-transform:none;-ms-transform:none;transform:none;-webkit-transform:none}.rc-Modal.popup .c-modal-content{background-color:#fff;border-radius:3px;max-height:98%;width:470px;top:auto;bottom:10px}.rc-Modal.popup .c-modal-x-out{top:10px;right:15px}.rc-Modal.popup .c-modal-title{margin:0 0 18px;text-align:left}.rc-Modal.popup .c-modal-subtitle{margin-bottom:16px}.rc-Modal.popup .c-modal-cancel{cursor:pointer;margin:6px 36px 0 0;color:#888}.rc-Modal.popup .c-modal-submit{width:80px}.rc-Modal.popup .c-modal-action-bar{text-align:right}.rc-Modal.popup .c-modal-action-bar .c-modal-action-button{margin-left:16px}.rc-Modal.popup .c-modal-error-message{margin-left:64px;display:inline-block;margin-top:8px}@media (max-width:767px){.rc-Modal .c-modal-content{width:98%;top:4px;left:0;padding:16px;-moz-transform:none;-o-transform:none;-ms-transform:none;transform:none;-webkit-transform:none;max-height:98%;overflow-y:scroll}.rc-Modal .c-modal-x-out{top:16px;right:16px}.rc-Modal.popup .c-modal-content{padding:0}}@media (-ms-high-contrast:none),screen and (-ms-high-contrast:active){.rc-Modal .c-modal-x-out a{outline:thin dotted #000}}.rc-ProfileImage .c-profile-image,.rc-ProfileImage .c-profile-image img{border-radius:100%}.rc-ProfileImage .c-profile-initials{color:#fff;background-color:#3277b2;text-transform:uppercase}.rc-ProfileImage .c-profile-initials div{width:100%;height:100%}.rc-ProfileImage .c-profile-initials div p{margin-bottom:0}.rc-DesktopHeaderControls{display:block;height:auto;position:relative;border-bottom:1px solid rgba(0,0,0,.1)}.rc-DesktopHeaderControls.rc-DesktopHeaderControls--MetaNav .show-smart-scroll-container .mega-menu-overlay--lazy-loading{top:105px}.rc-DesktopHeaderControls.rc-DesktopHeaderControls--MetaNav .hide-smart-scroll-container .mega-menu-overlay--lazy-loading{top:65px}.rc-DesktopHeaderControls.rc-DesktopHeaderControls--PageNavigation{border-bottom:none}.rc-DesktopHeaderControls.rc-DesktopHeaderControls--PageNavigation .show-smart-scroll-container{border-bottom:1px solid rgba(0,0,0,.12)}.rc-DesktopHeaderControls .height-placeholder{height:0;-webkit-transition:height .4s ease-out;-moz-transition:height .4s ease-out;-ms-transition:height .4s ease-out;-o-transition:height .4s ease-out;transition:height .4s ease-out}.rc-DesktopHeaderControls .height-placeholder.with-desktop-header-controls{height:65px}.rc-DesktopHeaderControls .height-placeholder.with-desktop-header-controls--MetaNav{height:105px}.rc-DesktopHeaderControls .height-placeholder.with-desktop-header-controls--PageNavigation{height:117px}.rc-DesktopHeaderControls .height-placeholder.with-enrollment-state-banner{height:45px}@media (max-width:767px){.rc-DesktopHeaderControls .height-placeholder.with-enrollment-state-banner{height:120px}}.rc-DesktopHeaderControls .height-placeholder.with-product-discount-promo-banner{height:100px;transition-durtion:.3s}.rc-DesktopHeaderControls .height-placeholder.with-get-s12n-certificate-banner{height:80px;-webkit-transition-duration:.3s;-moz-transition-duration:.3s;-ms-transition-duration:.3s;-o-transition-duration:.3s;transition-duration:.3s}@media (max-width:767px){.rc-DesktopHeaderControls .height-placeholder.with-get-s12n-certificate-banner{height:140px}}.rc-DesktopHeaderControls .height-placeholder.with-gdpr-banner{height:70px;-webkit-transition-duration:.4s;-moz-transition-duration:.4s;-ms-transition-duration:.4s;-o-transition-duration:.4s;transition-duration:.4s}@media (max-width:991px){.rc-DesktopHeaderControls .height-placeholder.with-gdpr-banner{height:85px}}@media (max-width:767px){.rc-DesktopHeaderControls .height-placeholder.with-gdpr-banner{height:120px}.rc-DesktopHeaderControls .height-placeholder.with-gdpr-banner .GDPRShapesSVG{display:none}}.rc-DesktopHeaderControls .height-placeholder.with-enterprise-return-to-program-banner{height:60px}.rc-PageHeader{height:65px;color:#333;background-color:#fff;font-size:14px;font-family:OpenSans,Arial,sans-serif}.rc-PageHeader--PageNavigation,.rc-PageHeader.rc-PageHeader--MetaNav{height:auto}.rc-PageHeader--PageNavigation.rc-PageHeader--PageNavigation .c-ph-nav.full-width{border-bottom:none}.rc-PageHeader .c-ph-right-nav-expanded{background-color:#f0f0f0}.rc-PageHeader .nav-item{padding:22.5px 24px;border-left:2px solid rgba(0,0,0,.12);height:100%}.rc-PageHeader .c-ph-nav{position:relative;z-index:10;max-width:100%;height:100%;margin:0 auto;background-color:#fff}.rc-PageHeader .c-ph-nav.full-width{height:100%;max-width:100%;border:0;-webkit-border-radius:0;-moz-border-radius:0;-ms-border-radius:0;-o-border-radius:0;border-radius:0;border-bottom:1px solid rgba(0,0,0,.12)}.rc-PageHeader .c-ph-nav .c-authenticated-dropdown-button,.rc-PageHeader .c-ph-nav a:not(.bt3-btn):not(.signup-btn)::not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link),.rc-PageHeader .c-ph-nav button.bt3-navbar-toggle{color:#333;text-decoration:none}.rc-PageHeader .c-ph-nav .c-authenticated-dropdown-button:focus,.rc-PageHeader .c-ph-nav .c-authenticated-dropdown-button:hover,.rc-PageHeader .c-ph-nav a:not(.bt3-btn):not(.signup-btn)::not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):focus,.rc-PageHeader .c-ph-nav a:not(.bt3-btn):not(.signup-btn)::not(.signup-btn):not(.signup-jff-fp-btn):not(.dropdown-link):hover,.rc-PageHeader .c-ph-nav button.bt3-navbar-toggle:focus,.rc-PageHeader .c-ph-nav button.bt3-navbar-toggle:hover{color:#4a90e2}.rc-PageHeader .c-ph-nav .c-container{position:relative;max-width:100%;padding:0}.rc-PageHeader .c-ph-nav .c-container .c-ph-logo{height:100%;padding:16.25px 24px;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;position:relative;z-index:2}@media (max-width:1300px){.rc-PageHeader .c-ph-nav .c-container .c-ph-logo{padding-left:16px;padding-right:16px}}@media (max-width:1200px){.rc-PageHeader .c-ph-nav .c-container .c-ph-logo{padding-left:10px;padding-right:6px}}.rc-PageHeader .c-ph-nav .c-container .c-ph-logo .c-ph-mobile-toggle-button{position:absolute;right:0}.rc-PageHeader .c-ph-nav .c-container .c-ph-logo .c-ph-mobile-toggle-button .c-collapsed-toggle-button{margin:0 24px;border-color:transparent}.rc-PageHeader .c-ph-nav .c-container .c-ph-logo .c-ph-mobile-toggle-button .c-collapsed-toggle-button .bt3-icon-bar{background-color:#757575}.rc-PageHeader .c-ph-nav .c-container .c-ph-logo .c-ph-mobile-toggle-button .c-collapsed-toggle-button .bt3-icon-bar:last-child{margin-bottom:1px}.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{width:auto;display:inline-block;max-width:600px;border:none;height:65px;padding:12.5px 24px 12.5px 32px}@media (max-width:1530px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{max-width:460px;width:auto}}@media (max-width:1460px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{max-width:400px;width:auto}}@media (max-width:1400px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{max-width:360px;width:auto}}@media (max-width:1350px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{max-width:310px;width:auto}}@media (max-width:1300px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{max-width:270px;width:auto}}@media (max-width:1240px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{max-width:240px}}@media (max-width:1170px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{min-width:auto;max-width:220px}}@media (max-width:1020px){.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog{min-width:auto;max-width:200px}}.rc-PageHeader .c-ph-nav .c-container .c-ph-search-catalog.nav-item.browse-search{padding:0;min-width:200px}.rc-PageHeader .c-ph-nav .c-container .c-ph-search-enterprise{max-width:40%;width:400px;display:-webkit-inline-box;display:-moz-inline-box;display:-webkit-inline-flex;display:-ms-inline-flexbox;display:inline-box;display:inline-flex}.rc-PageHeader .c-ph-nav .c-container .skip-content-main{position:absolute;top:65px;background:#fff;min-width:14%;padding:10px 0}.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div{margin:12px 20px;-webkit-border-radius:4px;-moz-border-radius:4px;-ms-border-radius:4px;-o-border-radius:4px;border-radius:4px;padding:1px}.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div a{color:#fff;padding:11px 20px;-webkit-border-radius:4px;-moz-border-radius:4px;-ms-border-radius:4px;-o-border-radius:4px;border-radius:4px;font-size:16px;font-weight:700;text-align:center;background:#00419e}.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div a:focus{outline:1px solid #fff}.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div a:active,.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div a:hover,.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div a:link,.rc-PageHeader .c-ph-nav .c-container .skip-button-outer-div a:visited{text-decoration:none}.rc-PageHeader .c-ph-nav .c-container .skip-content-div{margin-left:20px;height:65px}.rc-PageHeader .c-ph-nav .c-container .skip-content-div,.rc-PageHeader .c-ph-nav .c-container .skip-content-div div{display:-webkit-inline-box;display:-moz-inline-box;display:-webkit-inline-flex;display:-ms-inline-flexbox;display:inline-box;display:inline-flex;position:relative}.rc-PageHeader .c-ph-nav .c-container .skip-content-div div{min-width:150px}.rc-PageHeader .c-ph-nav .c-container .skip-content-div a{text-decoration:none;font-weight:700;position:absolute}.rc-PageHeader .c-ph-nav .c-container .skip-content-div a .last-nav-item{border-right:2px solid #e1e1e1}.rc-EnterpriseV2App .rc-DesktopHeaderControls .c-ph-log-in{border-left:none}@media (min-width:992px){.rc-MobileHeader{display:none}}@media (max-width:1060px){.rc-MobileHeader{display:block}.rc-DesktopHeaderControls{display:none}}.c-mobile-logo{margin-left:60px}.c-mobile-logo.isLohpRebrand{margin-left:0}.c-mobile-logo.isLohpRebrand .rc-CourseraLogo{width:108px}.c-mobile-logo.mobile-header-logo-center{width:auto;margin-left:auto;margin-right:auto;padding-left:20px}body.is-mobileMenuOpen{height:100%;height:100vh;width:100%;width:100vw;overflow:hidden}body.is-mobileMenuOpen .mobile-header-menu{overflow:auto}body.is-mobileSubMenuOpen{overflow:unset}.c-mobile-logo.isLohpRebrand{padding:25px}.c-mobile-logo .mobile-header-menu{overflow:scroll}body.is-mobileSubMenuOpen .mobile-header-menu{overflow:unset}.c-mobile-logo.isLohpRebrand{height:16px}.c-mobile-toggle-button{margin:0;padding:0;position:absolute;bottom:14px;border:none;background-color:transparent}.logged-out-auth-buttons-wrap{z-index:1000;position:fixed;background-color:#f7f7f7;bottom:0;left:0;width:100%;height:150px;-webkit-box-shadow:0 1px 6px 0 rgba(31,31,31,.5);box-shadow:0 1px 6px 0 rgba(31,31,31,.5)}.logged-out-auth-buttons-wrap li{padding-left:20px;list-style-type:none}.logged-out-auth-buttons-wrap .mobile-auth-btn{display:inline-block;width:100%;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;height:55px;-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;font-weight:800}.logged-out-auth-buttons-wrap .signUp-btn{background-color:#0056d2;color:#fff;margin-top:20px;width:90%;height:48px;position:fixed;bottom:75px}.logged-out-auth-buttons-wrap .logIn-btn{background-color:#fff;color:#0056d2;border:2px solid #0056d2;width:90%;height:48px;position:fixed;bottom:20px}.mobile-header-menu{font-family:Source Sans Pro,Arial,sans-serif;position:fixed;top:0;width:250px;height:calc(100vh + 35px);height:100%;margin-bottom:0;background-color:#fff;padding:0;left:-250px;-webkit-transition:-webkit-transform .3s;-moz-transition:-moz-transform .3s;-o-transition:-o-transform .3s;-ms-transition:-ms-transform .3s;transition:transform .3s;z-index:1000;overflow:unset}.mobile-header-menu-child{padding-left:0}.mobile-header-menu.show-nav{width:100%;-webkit-transform:translate(250px);-moz-transform:translate(250px);-o-transform:translate(250px);-ms-transform:translate(250px);transform:translate(250px)}.mobile-header-menu .mobile-header-btn{list-style-type:none;padding-top:15px;padding-bottom:15px}.mobile-header-menu .mobile-header-btn.first{border:none}.mobile-header-menu .mobile-header-btn a{text-decoration:none;color:#000;width:100%;display:inline-block;padding:15px;margin-top:-15px;margin-bottom:-15px}.mobile-header-menu .mobile-header-btn.htmlButton{width:100%;position:relative;background-color:transparent;border:none;text-align:left;color:#000;padding-left:15px}.mobile-header-menu .mobile-header-btn.htmlButton svg{position:absolute;bottom:50%;-webkit-transform:translateY(50%);-moz-transform:translateY(50%);-o-transform:translateY(50%);-ms-transform:translateY(50%);transform:translateY(50%);right:10px}.mobile-header-menu .mobile-header-btn.htmlButton.mobile-account-header{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;border-bottom:1px solid rgba(0,0,0,.1)}.mobile-header-menu .mobile-header-btn.htmlButton.mobile-account-header svg{position:relative;left:-75px;bottom:-1px}.mobile-header-menu .mobile-header-btn svg{position:relative;bottom:-4px;right:-145px}.mobile-header-menu .mobile-header-btn .mobile-cart-pill{height:18px;width:20px;color:#fff;background-color:#2a73cc;display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-align:center;-moz-box-align:center;-o-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;-webkit-box-pack:center;-moz-box-pack:center;-o-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;font-size:12px;border-radius:10px;margin-right:7px;position:relative;bottom:-2px}.mobile-header-menu .mobile-header-btn .signOut-btn{margin:0;padding:0;border:none;background-color:transparent;width:100%;text-align:left}.c-close-mobile-nav{z-index:1000;position:fixed;right:10px;left:calc(100vw - 40px);top:20px;border:none;background:transparent;padding:0;margin:0}.c-close-mobile-nav:active,.c-close-mobile-nav:hover{outline:none}.c-close-mobile-nav.fade-light-enter{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0)}.c-close-mobile-nav.fade-light-enter.fade-light-enter-active{-webkit-transition:opacity .3s;-moz-transition:opacity .3s;-o-transition:opacity .3s;-ms-transition:opacity .3s;transition:opacity .3s}.c-close-mobile-nav.fade-light-enter.fade-light-enter-active,.c-close-mobile-nav.fade-light-leave{opacity:.7;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=70)";filter:alpha(opacity=70)}.c-close-mobile-nav.fade-light-leave.fade-light-leave-active{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0);-webkit-transition:opacity .3s;-moz-transition:opacity .3s;-o-transition:opacity .3s;-ms-transition:opacity .3s;transition:opacity .3s}.mobile-menu-overlay{position:fixed;left:0;top:0;width:100vw;height:calc(100vh + 35px);height:100%;background:#000;opacity:.7;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=70)";filter:alpha(opacity=70);z-index:100;border:0;padding:0}.mobile-menu-overlay button{position:fixed;top:4px;width:calc(100vw - 258px);left:254px;height:calc(100vh - 8px);border:none;background:transparent;padding:0;margin:0}.mobile-menu-overlay button:active,.mobile-menu-overlay button:hover{outline:none}.mobile-menu-overlay.fade-light-enter{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0)}.mobile-menu-overlay.fade-light-enter.fade-light-enter-active{-webkit-transition:opacity .3s;-moz-transition:opacity .3s;-o-transition:opacity .3s;-ms-transition:opacity .3s;transition:opacity .3s}.mobile-menu-overlay.fade-light-enter.fade-light-enter-active,.mobile-menu-overlay.fade-light-leave{opacity:.7;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=70)";filter:alpha(opacity=70)}.mobile-menu-overlay.fade-light-leave.fade-light-leave-active{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0);-webkit-transition:opacity .3s;-moz-transition:opacity .3s;-o-transition:opacity .3s;-ms-transition:opacity .3s;transition:opacity .3s}@media (max-width:767px){body.c-phoenix-modal-open .rc-ProductDiscountPromoBanner{display:none}}.is-mobileMenuOpen .rc-MobileHeader--MetaNav .c-mobile-header-controls{top:40px!important}.is-mobileMenuOpen .rc-MobileHeader--MetaNav .c-close-mobile-nav{top:60px}.rc-MobileHeader{height:65px}.rc-MobileHeader.with-product-discount-promo-banner{height:165px;max-height:165px}.rc-MobileHeader.with-get-s12n-certificate-banner,.rc-MobileHeader.with-product-discount-promo-banner{-webkit-transition:max-height .3s ease-out;-moz-transition:max-height .3s ease-out;-o-transition:max-height .3s ease-out;-ms-transition:max-height .3s ease-out;transition:max-height .3s ease-out}.rc-MobileHeader.with-get-s12n-certificate-banner{height:145px;max-height:145px}@media (max-width:767px){.rc-MobileHeader.with-get-s12n-certificate-banner{height:205px;max-height:205px}}.rc-MobileHeader .c-mobile-header-wrapper .c-mobile-header-controls{z-index:1000;position:fixed;background-color:#fff;padding:0;top:0;left:0}.rc-MobileHeader .c-mobile-header-wrapper .c-mobile-logo.isLohpRebrand{margin:auto}.rc-MobileHeader .c-mobile-header-wrapper .c-mobile-logo .rc-CourseraLogo{z-index:1000}.rc-MobileHeader .c-mobile-header-controls{position:relative;height:65px;border-bottom:1px solid rgba(0,0,0,.1);padding:0 15px;width:100vw}.rc-MobileHeader .c-mobile-header-controls .custom-mobile-header{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;width:90px}.rc-MobileHeader .c-mobile-header-controls.isLohpRebrand{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;-webkit-box-pack:justify;-moz-box-pack:justify;-o-box-pack:justify;-ms-flex-pack:justify;-webkit-justify-content:space-between;justify-content:space-between;max-width:100%}.rc-MobileHeader .c-mobile-header-controls.isLohpRebrand.c-mobile-logo{margin-left:0}.rc-MobileHeader .c-mobile-header-controls.with-account-dropdown{padding:0 0 0 15px}.rc-MobileHeader .c-mobile-header-controls .fade-enter{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0)}.rc-MobileHeader .c-mobile-header-controls .fade-enter.fade-enter-active{opacity:1;-ms-filter:none;filter:none;-webkit-transition:opacity .6s;-moz-transition:opacity .6s;-o-transition:opacity .6s;-ms-transition:opacity .6s;transition:opacity .6s}.rc-MobileHeader .c-mobile-header-controls .fade-leave{opacity:1;-ms-filter:none;filter:none}.rc-MobileHeader .c-mobile-header-controls .fade-leave.fade-leave-active{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0);-webkit-transition:opacity .3s;-moz-transition:opacity .3s;-o-transition:opacity .3s;-ms-transition:opacity .3s;transition:opacity .3s}.rc-MobileHeader .c-mobile-header-controls .mobile-search-close{margin:0;padding:0;position:absolute;bottom:15px;right:15px;border:none;background-color:transparent}.rc-MobileHeader .c-mobile-header-controls .iconContainer{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex}.rc-MobileHeader .c-mobile-header-controls .mobile-search-icon{bottom:17px;right:15px;padding:0}.rc-MobileHeader .c-mobile-header-controls .mobile-search-icon .magnifier-wrapper{display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex}.rc-MobileHeader .c-mobile-header-controls .mobile-search-icon .magnifier-wrapper svg{height:18px;width:18px}.rc-PageHeaderWrapper .page-auth-lazy-container{position:fixed;height:100%;width:100%;top:0;left:0;background-color:rgba(0,0,0,.83);z-index:10000}.rc-PageHeaderWrapper .page-auth-lazy-container .rc-AuthenticationModal .c-modal-overlay{background:transparent}.bt3-container{margin-right:auto;margin-left:auto;padding-left:15px;padding-right:15px}@media (min-width:768px){.bt3-container{width:750px}}@media (min-width:992px){.bt3-container{width:970px}}@media (min-width:1200px){.bt3-container{width:1170px}}.bt3-container-fluid{margin-right:auto;margin-left:auto;padding-left:15px;padding-right:15px}.bt3-row{margin-left:-15px;margin-right:-15px}.bt3-col-lg-1,.bt3-col-lg-2,.bt3-col-lg-3,.bt3-col-lg-4,.bt3-col-lg-5,.bt3-col-lg-6,.bt3-col-lg-7,.bt3-col-lg-8,.bt3-col-lg-9,.bt3-col-lg-10,.bt3-col-lg-11,.bt3-col-lg-12,.bt3-col-md-1,.bt3-col-md-2,.bt3-col-md-3,.bt3-col-md-4,.bt3-col-md-5,.bt3-col-md-6,.bt3-col-md-7,.bt3-col-md-8,.bt3-col-md-9,.bt3-col-md-10,.bt3-col-md-11,.bt3-col-md-12,.bt3-col-sm-1,.bt3-col-sm-2,.bt3-col-sm-3,.bt3-col-sm-4,.bt3-col-sm-5,.bt3-col-sm-6,.bt3-col-sm-7,.bt3-col-sm-8,.bt3-col-sm-9,.bt3-col-sm-10,.bt3-col-sm-11,.bt3-col-sm-12,.bt3-col-xs-1,.bt3-col-xs-2,.bt3-col-xs-3,.bt3-col-xs-4,.bt3-col-xs-5,.bt3-col-xs-6,.bt3-col-xs-7,.bt3-col-xs-8,.bt3-col-xs-9,.bt3-col-xs-10,.bt3-col-xs-11,.bt3-col-xs-12{position:relative;min-height:1px;padding-left:15px;padding-right:15px}.bt3-col-xs-1,.bt3-col-xs-2,.bt3-col-xs-3,.bt3-col-xs-4,.bt3-col-xs-5,.bt3-col-xs-6,.bt3-col-xs-7,.bt3-col-xs-8,.bt3-col-xs-9,.bt3-col-xs-10,.bt3-col-xs-11,.bt3-col-xs-12{float:left}.bt3-col-xs-12{width:100%}.bt3-col-xs-11{width:91.66666666666666%}.bt3-col-xs-10{width:83.33333333333334%}.bt3-col-xs-9{width:75%}.bt3-col-xs-8{width:66.66666666666666%}.bt3-col-xs-7{width:58.333333333333336%}.bt3-col-xs-6{width:50%}.bt3-col-xs-5{width:41.66666666666667%}.bt3-col-xs-4{width:33.33333333333333%}.bt3-col-xs-3{width:25%}.bt3-col-xs-2{width:16.666666666666664%}.bt3-col-xs-1{width:8.333333333333332%}.bt3-col-xs-pull-12{right:100%}.bt3-col-xs-pull-11{right:91.66666666666666%}.bt3-col-xs-pull-10{right:83.33333333333334%}.bt3-col-xs-pull-9{right:75%}.bt3-col-xs-pull-8{right:66.66666666666666%}.bt3-col-xs-pull-7{right:58.333333333333336%}.bt3-col-xs-pull-6{right:50%}.bt3-col-xs-pull-5{right:41.66666666666667%}.bt3-col-xs-pull-4{right:33.33333333333333%}.bt3-col-xs-pull-3{right:25%}.bt3-col-xs-pull-2{right:16.666666666666664%}.bt3-col-xs-pull-1{right:8.333333333333332%}.bt3-col-xs-pull-0{right:0}.bt3-col-xs-push-12{left:100%}.bt3-col-xs-push-11{left:91.66666666666666%}.bt3-col-xs-push-10{left:83.33333333333334%}.bt3-col-xs-push-9{left:75%}.bt3-col-xs-push-8{left:66.66666666666666%}.bt3-col-xs-push-7{left:58.333333333333336%}.bt3-col-xs-push-6{left:50%}.bt3-col-xs-push-5{left:41.66666666666667%}.bt3-col-xs-push-4{left:33.33333333333333%}.bt3-col-xs-push-3{left:25%}.bt3-col-xs-push-2{left:16.666666666666664%}.bt3-col-xs-push-1{left:8.333333333333332%}.bt3-col-xs-push-0{left:0}.bt3-col-xs-offset-12{margin-left:100%}.bt3-col-xs-offset-11{margin-left:91.66666666666666%}.bt3-col-xs-offset-10{margin-left:83.33333333333334%}.bt3-col-xs-offset-9{margin-left:75%}.bt3-col-xs-offset-8{margin-left:66.66666666666666%}.bt3-col-xs-offset-7{margin-left:58.333333333333336%}.bt3-col-xs-offset-6{margin-left:50%}.bt3-col-xs-offset-5{margin-left:41.66666666666667%}.bt3-col-xs-offset-4{margin-left:33.33333333333333%}.bt3-col-xs-offset-3{margin-left:25%}.bt3-col-xs-offset-2{margin-left:16.666666666666664%}.bt3-col-xs-offset-1{margin-left:8.333333333333332%}.bt3-col-xs-offset-0{margin-left:0}@media (min-width:768px){.bt3-col-sm-1,.bt3-col-sm-2,.bt3-col-sm-3,.bt3-col-sm-4,.bt3-col-sm-5,.bt3-col-sm-6,.bt3-col-sm-7,.bt3-col-sm-8,.bt3-col-sm-9,.bt3-col-sm-10,.bt3-col-sm-11,.bt3-col-sm-12{float:left}.bt3-col-sm-12{width:100%}.bt3-col-sm-11{width:91.66666666666666%}.bt3-col-sm-10{width:83.33333333333334%}.bt3-col-sm-9{width:75%}.bt3-col-sm-8{width:66.66666666666666%}.bt3-col-sm-7{width:58.333333333333336%}.bt3-col-sm-6{width:50%}.bt3-col-sm-5{width:41.66666666666667%}.bt3-col-sm-4{width:33.33333333333333%}.bt3-col-sm-3{width:25%}.bt3-col-sm-2{width:16.666666666666664%}.bt3-col-sm-1{width:8.333333333333332%}.bt3-col-sm-pull-12{right:100%}.bt3-col-sm-pull-11{right:91.66666666666666%}.bt3-col-sm-pull-10{right:83.33333333333334%}.bt3-col-sm-pull-9{right:75%}.bt3-col-sm-pull-8{right:66.66666666666666%}.bt3-col-sm-pull-7{right:58.333333333333336%}.bt3-col-sm-pull-6{right:50%}.bt3-col-sm-pull-5{right:41.66666666666667%}.bt3-col-sm-pull-4{right:33.33333333333333%}.bt3-col-sm-pull-3{right:25%}.bt3-col-sm-pull-2{right:16.666666666666664%}.bt3-col-sm-pull-1{right:8.333333333333332%}.bt3-col-sm-pull-0{right:0}.bt3-col-sm-push-12{left:100%}.bt3-col-sm-push-11{left:91.66666666666666%}.bt3-col-sm-push-10{left:83.33333333333334%}.bt3-col-sm-push-9{left:75%}.bt3-col-sm-push-8{left:66.66666666666666%}.bt3-col-sm-push-7{left:58.333333333333336%}.bt3-col-sm-push-6{left:50%}.bt3-col-sm-push-5{left:41.66666666666667%}.bt3-col-sm-push-4{left:33.33333333333333%}.bt3-col-sm-push-3{left:25%}.bt3-col-sm-push-2{left:16.666666666666664%}.bt3-col-sm-push-1{left:8.333333333333332%}.bt3-col-sm-push-0{left:0}.bt3-col-sm-offset-12{margin-left:100%}.bt3-col-sm-offset-11{margin-left:91.66666666666666%}.bt3-col-sm-offset-10{margin-left:83.33333333333334%}.bt3-col-sm-offset-9{margin-left:75%}.bt3-col-sm-offset-8{margin-left:66.66666666666666%}.bt3-col-sm-offset-7{margin-left:58.333333333333336%}.bt3-col-sm-offset-6{margin-left:50%}.bt3-col-sm-offset-5{margin-left:41.66666666666667%}.bt3-col-sm-offset-4{margin-left:33.33333333333333%}.bt3-col-sm-offset-3{margin-left:25%}.bt3-col-sm-offset-2{margin-left:16.666666666666664%}.bt3-col-sm-offset-1{margin-left:8.333333333333332%}.bt3-col-sm-offset-0{margin-left:0}}@media (min-width:992px){.bt3-col-md-1,.bt3-col-md-2,.bt3-col-md-3,.bt3-col-md-4,.bt3-col-md-5,.bt3-col-md-6,.bt3-col-md-7,.bt3-col-md-8,.bt3-col-md-9,.bt3-col-md-10,.bt3-col-md-11,.bt3-col-md-12{float:left}.bt3-col-md-12{width:100%}.bt3-col-md-11{width:91.66666666666666%}.bt3-col-md-10{width:83.33333333333334%}.bt3-col-md-9{width:75%}.bt3-col-md-8{width:66.66666666666666%}.bt3-col-md-7{width:58.333333333333336%}.bt3-col-md-6{width:50%}.bt3-col-md-5{width:41.66666666666667%}.bt3-col-md-4{width:33.33333333333333%}.bt3-col-md-3{width:25%}.bt3-col-md-2{width:16.666666666666664%}.bt3-col-md-1{width:8.333333333333332%}.bt3-col-md-pull-12{right:100%}.bt3-col-md-pull-11{right:91.66666666666666%}.bt3-col-md-pull-10{right:83.33333333333334%}.bt3-col-md-pull-9{right:75%}.bt3-col-md-pull-8{right:66.66666666666666%}.bt3-col-md-pull-7{right:58.333333333333336%}.bt3-col-md-pull-6{right:50%}.bt3-col-md-pull-5{right:41.66666666666667%}.bt3-col-md-pull-4{right:33.33333333333333%}.bt3-col-md-pull-3{right:25%}.bt3-col-md-pull-2{right:16.666666666666664%}.bt3-col-md-pull-1{right:8.333333333333332%}.bt3-col-md-pull-0{right:0}.bt3-col-md-push-12{left:100%}.bt3-col-md-push-11{left:91.66666666666666%}.bt3-col-md-push-10{left:83.33333333333334%}.bt3-col-md-push-9{left:75%}.bt3-col-md-push-8{left:66.66666666666666%}.bt3-col-md-push-7{left:58.333333333333336%}.bt3-col-md-push-6{left:50%}.bt3-col-md-push-5{left:41.66666666666667%}.bt3-col-md-push-4{left:33.33333333333333%}.bt3-col-md-push-3{left:25%}.bt3-col-md-push-2{left:16.666666666666664%}.bt3-col-md-push-1{left:8.333333333333332%}.bt3-col-md-push-0{left:0}.bt3-col-md-offset-12{margin-left:100%}.bt3-col-md-offset-11{margin-left:91.66666666666666%}.bt3-col-md-offset-10{margin-left:83.33333333333334%}.bt3-col-md-offset-9{margin-left:75%}.bt3-col-md-offset-8{margin-left:66.66666666666666%}.bt3-col-md-offset-7{margin-left:58.333333333333336%}.bt3-col-md-offset-6{margin-left:50%}.bt3-col-md-offset-5{margin-left:41.66666666666667%}.bt3-col-md-offset-4{margin-left:33.33333333333333%}.bt3-col-md-offset-3{margin-left:25%}.bt3-col-md-offset-2{margin-left:16.666666666666664%}.bt3-col-md-offset-1{margin-left:8.333333333333332%}.bt3-col-md-offset-0{margin-left:0}}@media (min-width:1200px){.bt3-col-lg-1,.bt3-col-lg-2,.bt3-col-lg-3,.bt3-col-lg-4,.bt3-col-lg-5,.bt3-col-lg-6,.bt3-col-lg-7,.bt3-col-lg-8,.bt3-col-lg-9,.bt3-col-lg-10,.bt3-col-lg-11,.bt3-col-lg-12{float:left}.bt3-col-lg-12{width:100%}.bt3-col-lg-11{width:91.66666666666666%}.bt3-col-lg-10{width:83.33333333333334%}.bt3-col-lg-9{width:75%}.bt3-col-lg-8{width:66.66666666666666%}.bt3-col-lg-7{width:58.333333333333336%}.bt3-col-lg-6{width:50%}.bt3-col-lg-5{width:41.66666666666667%}.bt3-col-lg-4{width:33.33333333333333%}.bt3-col-lg-3{width:25%}.bt3-col-lg-2{width:16.666666666666664%}.bt3-col-lg-1{width:8.333333333333332%}.bt3-col-lg-pull-12{right:100%}.bt3-col-lg-pull-11{right:91.66666666666666%}.bt3-col-lg-pull-10{right:83.33333333333334%}.bt3-col-lg-pull-9{right:75%}.bt3-col-lg-pull-8{right:66.66666666666666%}.bt3-col-lg-pull-7{right:58.333333333333336%}.bt3-col-lg-pull-6{right:50%}.bt3-col-lg-pull-5{right:41.66666666666667%}.bt3-col-lg-pull-4{right:33.33333333333333%}.bt3-col-lg-pull-3{right:25%}.bt3-col-lg-pull-2{right:16.666666666666664%}.bt3-col-lg-pull-1{right:8.333333333333332%}.bt3-col-lg-pull-0{right:0}.bt3-col-lg-push-12{left:100%}.bt3-col-lg-push-11{left:91.66666666666666%}.bt3-col-lg-push-10{left:83.33333333333334%}.bt3-col-lg-push-9{left:75%}.bt3-col-lg-push-8{left:66.66666666666666%}.bt3-col-lg-push-7{left:58.333333333333336%}.bt3-col-lg-push-6{left:50%}.bt3-col-lg-push-5{left:41.66666666666667%}.bt3-col-lg-push-4{left:33.33333333333333%}.bt3-col-lg-push-3{left:25%}.bt3-col-lg-push-2{left:16.666666666666664%}.bt3-col-lg-push-1{left:8.333333333333332%}.bt3-col-lg-push-0{left:0}.bt3-col-lg-offset-12{margin-left:100%}.bt3-col-lg-offset-11{margin-left:91.66666666666666%}.bt3-col-lg-offset-10{margin-left:83.33333333333334%}.bt3-col-lg-offset-9{margin-left:75%}.bt3-col-lg-offset-8{margin-left:66.66666666666666%}.bt3-col-lg-offset-7{margin-left:58.333333333333336%}.bt3-col-lg-offset-6{margin-left:50%}.bt3-col-lg-offset-5{margin-left:41.66666666666667%}.bt3-col-lg-offset-4{margin-left:33.33333333333333%}.bt3-col-lg-offset-3{margin-left:25%}.bt3-col-lg-offset-2{margin-left:16.666666666666664%}.bt3-col-lg-offset-1{margin-left:8.333333333333332%}.bt3-col-lg-offset-0{margin-left:0}}.bt3-nav{margin-bottom:0;padding-left:0;list-style:none}.bt3-nav>li,.bt3-nav>li>a{position:relative;display:block}.bt3-nav>li>a{padding:10px 15px}.bt3-nav>li>a:focus,.bt3-nav>li>a:hover{text-decoration:none;background-color:#eee}.bt3-nav>li.bt3-disabled>a{color:#999}.bt3-nav>li.bt3-disabled>a:focus,.bt3-nav>li.bt3-disabled>a:hover{color:#999;text-decoration:none;background-color:transparent;cursor:not-allowed}.bt3-nav .bt3-open>a,.bt3-nav .bt3-open>a:focus,.bt3-nav .bt3-open>a:hover{background-color:#eee;border-color:"#0062E4"}.bt3-nav>li>a>img{max-width:none}.bt3-navbar{position:relative;min-height:50px;margin-bottom:20px;border:1px solid transparent}@media (min-width:768px){.bt3-navbar{border-radius:4px}.bt3-navbar-header{float:left}}.bt3-container-fluid>.bt3-navbar-header,.bt3-container>.bt3-navbar-header{margin-right:-15px;margin-left:-15px}@media (min-width:768px){.bt3-container-fluid>.bt3-navbar-header,.bt3-container>.bt3-navbar-header{margin-right:0;margin-left:0}}.bt3-navbar-fixed-top{position:fixed;right:0;left:0;z-index:1030}@media (min-width:768px){.bt3-navbar-fixed-top{border-radius:0}}.bt3-navbar-fixed-top{top:0;border-width:0 0 1px}.bt3-navbar-nav{margin:7.5px -15px}.bt3-navbar-nav>li>a{padding-top:10px;padding-bottom:10px;line-height:20px}@media (max-width:767px){.bt3-navbar-nav .bt3-open .bt3-dropdown-menu{position:static;float:none;width:auto;margin-top:0;background-color:transparent;border:0;-webkit-box-shadow:none;box-shadow:none}.bt3-navbar-nav .bt3-open .bt3-dropdown-menu>li>a{padding:5px 15px 5px 25px;line-height:20px}.bt3-navbar-nav .bt3-open .bt3-dropdown-menu>li>a:focus,.bt3-navbar-nav .bt3-open .bt3-dropdown-menu>li>a:hover{background-image:none}}@media (min-width:768px){.bt3-navbar-nav{float:left;margin:0}.bt3-navbar-nav>li{float:left}.bt3-navbar-nav>li>a{padding-top:15px;padding-bottom:15px}.bt3-navbar-nav.bt3-navbar-right:last-child{margin-right:-15px}.bt3-navbar-right{float:right!important}}.bt3-navbar-nav>li>.bt3-dropdown-menu{margin-top:0;border-top-right-radius:0;border-top-left-radius:0}body{background-color:#fff}.share-button{background-color:#eaf1fa;border-radius:.25em;z-index:1}.by-line{color:#616161}@media screen and (max-width:480px){.by-line{font-size:12px}}@-webkit-keyframes AnimateImage{0%{opacity:1;-ms-filter:none;filter:none}to{opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0)}}.recommendation-modules-container .collection-name{text-align:center}@media (max-width:991px){.recommendation-modules-container{padding-bottom:30px}.recommendation-modules-container .rc-DomainPillsContainerCDS,.recommendation-modules-container .rc-ExploreCareerPlansBanner{margin-top:60px}}.rc-BrowseCarousel{position:relative;min-width:100%}@media (max-width:991px){.rc-BrowseCarousel{height:280px}}.rc-BrowseCarousel .browse-carousel{width:100%;height:100%}.rc-BrowseCarousel .browse-carousel-leave{opacity:1;-ms-filter:none;filter:none}.rc-BrowseCarousel .browse-carousel-leave.browse-carousel-leave-active{opacity:.01;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=1)";filter:alpha(opacity=1);-webkit-transition:opacity 1s ease-in-out;-moz-transition:opacity 1s ease-in-out;-o-transition:opacity 1s ease-in-out;-ms-transition:opacity 1s ease-in-out;transition:opacity 1s ease-in-out}.rc-BrowseCarousel .browse-carousel-loading-placeholder-wrapper{position:absolute;background-color:#ccd1d9;overflow:hidden;top:0;left:0;height:100%;width:100%}.rc-BrowseCarousel .browse-carousel-loading-placeholder-wrapper .browse-carousel-loading-placeholder{height:100%;width:100%;position:absolute;top:0;left:0;opacity:0;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=0)";filter:alpha(opacity=0);background-color:#ccd1d9;-webkit-animation:AnimateImage 1.5s ease-in-out;-moz-animation:AnimateImage 1.5s ease-in-out;-o-animation:AnimateImage 1.5s ease-in-out;-ms-animation:AnimateImage 1.5s ease-in-out;animation:AnimateImage 1.5s ease-in-out}.rc-BrowseCarousel .browse-carousel-loading-placeholder-wrapper .placeholder-image{position:absolute;top:0;left:0}.rc-BrowseCarousel .carousel-dots{cursor:pointer;position:absolute;display:block;width:100%;padding:0;margin:10px 0 0;list-style:none;text-align:center}@media (max-width:767px){.rc-BrowseCarousel .carousel-dots li:nth-of-type(1n+12){display:none}}@media (max-width:479px){.rc-BrowseCarousel .carousel-dots li:nth-of-type(1n+9){display:none}}.rc-BrowseCarousel .carousel-dots li{display:inline-block;width:20px;height:20px;padding:0}.rc-BrowseCarousel .carousel-dots button{position:relative;width:100%;color:transparent;border:0;background:transparent}.rc-BrowseCarousel .carousel-dots button:focus{outline-offset:0;outline:3px solid #9ecaed;outline:5px auto -webkit-focus-ring-color}.rc-BrowseCarousel .carousel-dots button:before{color:#636363;content:"â";visibility:visible;position:absolute;left:2px;display:block;font-size:16px;width:14px}.rc-BrowseCarousel .carousel-dots .slick-active button:before{content:"â"}.rc-BrowseCarousel .slick-next,.rc-BrowseCarousel .slick-prev{position:absolute;top:calc(50% - 24px);display:block;width:48px;height:48px;padding:0;cursor:pointer;color:transparent;border:none;outline:none;background:transparent}.rc-BrowseCarousel .slick-next svg,.rc-BrowseCarousel .slick-prev svg{position:relative}.rc-BrowseCarousel .slick-prev{left:-48px}@media (max-width:479px){.rc-BrowseCarousel .slick-prev{right:-40px!important}}.rc-BrowseCarousel .slick-prev:focus{outline-offset:0;outline:3px solid #9ecaed;outline:5px auto -webkit-focus-ring-color}.rc-BrowseCarousel [dir=rtl] .slick-prev{left:-30px;right:auto}.rc-BrowseCarousel .slick-next{right:-48px}@media (max-width:479px){.rc-BrowseCarousel .slick-next{right:-62px!important}}.rc-BrowseCarousel .slick-next:focus{outline-offset:0;outline:3px solid #9ecaed;outline:5px auto -webkit-focus-ring-color}.rc-BrowseCarousel [dir=rtl] .slick-next{left:auto;right:-30px}.rc-BrowseCarousel .slick-slider{height:100%;margin:auto;position:relative;display:block;-webkit-box-sizing:border-box;-moz-box-sizing:border-box;box-sizing:border-box;-webkit-user-select:none;-moz-user-select:none;-ms-user-select:none;user-select:none;-webkit-touch-callout:none;-khtml-user-select:none;-ms-touch-action:pan-y;touch-action:pan-y;-webkit-tap-highlight-color:transparent}@media (max-width:991px){.rc-BrowseCarousel .slick-slider{max-width:550px}}@media only screen and (min-width:480px) and (max-width:660px){.rc-BrowseCarousel .slick-slider{max-width:75%}}@media (max-width:479px){.rc-BrowseCarousel .slick-slider{max-width:67%}.rc-BrowseCarousel .slick-slider .rc-CollectionItem-wrapper{padding-left:0}.rc-BrowseCarousel .slick-slider .rc-CardSection[data-type=block]{padding:10px}.rc-BrowseCarousel .slick-slider .rc-ProductCard .productCard-card{max-width:100%;margin-left:auto}}.rc-BrowseCarousel .slick-list{height:calc(100% + 10px);position:relative;display:block;overflow:hidden;padding:5px 0 0;margin-left:-10px;margin-right:-10px}@media (max-width:767px){.rc-BrowseCarousel .slick-list{margin-left:0;margin-right:0}}.rc-BrowseCarousel .slick-list::focus{outline:none}.rc-BrowseCarousel .slick-list.dragging{cursor:pointer;cursor:hand}.rc-BrowseCarousel .slick-slider .slick-list,.rc-BrowseCarousel .slick-slider .slick-track{-webkit-transform:translateZ(0);-moz-transform:translateZ(0);-o-transform:translateZ(0);-ms-transform:translateZ(0);transform:translateZ(0)}.rc-BrowseCarousel .slick-track{height:100%;min-width:700px;position:relative;top:0;left:0;display:block}@media (min-width:600px){.rc-BrowseCarousel .slick-track{min-width:1000px}}.rc-BrowseCarousel .slick-track:after,.rc-BrowseCarousel .slick-track:before{display:table;content:""}.rc-BrowseCarousel .slick-track:after{clear:both}.rc-BrowseCarousel .slick-loading .slick-track{visibility:hidden}.rc-BrowseCarousel .slick-slide{display:none;float:left;height:100%;min-height:1px}.rc-BrowseCarousel [dir=rtl] .slick-slide{float:right}.rc-BrowseCarousel .slick-slide img{display:block;width:100%;height:100%;object-fit:cover}.rc-BrowseCarousel .slick-slide.slick-loading img{display:none}.rc-BrowseCarousel .slick-slide.dragging img{pointer-events:none}.rc-BrowseCarousel .slick-initialized .slick-slide{display:block}.rc-BrowseCarousel .slick-loading .slick-slide{visibility:hidden}.rc-BrowseCarousel .slick-vertical .slick-slide{display:block;height:auto;border:1px solid transparent}.rc-BrowseCarousel .slick-arrow.slick-disabled{display:none}@media (max-width:767px){.rc-Collection .rc-BrowseCarousel{margin-left:-20px}}.rc-Collection .rc-BrowseCarousel .slick-slide{min-width:250px}.rc-Collection .rc-BrowseCarousel .unslicked .slick-slide{width:auto!important}.rc-Collection .rc-BrowseCarousel .slick-list{min-width:100%;margin-right:-20px}.rc-BrowseProductCard{min-width:268px;margin-right:20px;display:inline-block;position:relative}.rc-BrowseProductCard:last-child{margin:0}.rc-BrowseProductCard .collection-product-card{background:transparent;height:100%;width:100%;position:absolute;top:0;left:0}.rc-BrowseProductCard .collection-product-card:focus{outline-offset:0;outline:5px solid #9ecaed;outline:5px auto -webkit-focus-ring-color}.rc-BrowseProductCard .partner-name{line-height:18px}.rc-BrowseProductCard .coursera-plus-pill{margin:12px 0}.rc-BrowseProductCard .collection-product-card.non-cds>div>div:nth-last-child(2){margin-bottom:40px}.rc-BrowseProductCard .rc-Bookmark{position:absolute;bottom:18px;right:28px}.rc-DomainTopSkillPill{font-family:OpenSans,Arial,sans-serif;padding:3px 18px;border-radius:0!important;font-size:.875rem;line-height:1.5rem;min-width:120px}.rc-DomainTopSkillPill:hover{text-decoration:none}.rc-Card{position:relative;width:100%;-webkit-transition:all .45s cubic-bezier(.23,1,.32,1);-moz-transition:all .45s cubic-bezier(.23,1,.32,1);-o-transition:all .45s cubic-bezier(.23,1,.32,1);-ms-transition:all .45s cubic-bezier(.23,1,.32,1);transition:all .45s cubic-bezier(.23,1,.32,1);border-radius:3;overflow:hidden}.rc-Card[data-show-border=true]{border:1px solid #e1e1e1}.rc-Card[data-show-border=false]{-webkit-box-shadow:0 1px 6px rgba(31,31,31,.12),0 1px 4px rgba(31,31,31,.12);box-shadow:0 1px 6px rgba(31,31,31,.12),0 1px 4px rgba(31,31,31,.12)}.rc-Card[data-dark-theme=true]{color:#fff;background-color:#1f1f1f}.rc-Card[data-active=true]{-webkit-box-shadow:0 3px 10px rgba(31,31,31,.16),0 3px 10px rgba(31,31,31,.23);box-shadow:0 3px 10px rgba(31,31,31,.16),0 3px 10px rgba(31,31,31,.23)}.rc-Card[data-interactive=true]{cursor:pointer}.rc-Card[data-interactive=true]:hover{-webkit-box-shadow:0 3px 10px rgba(31,31,31,.16),0 3px 10px rgba(31,31,31,.23);box-shadow:0 3px 10px rgba(31,31,31,.16),0 3px 10px rgba(31,31,31,.23)}.rc-Card[data-interactive=true]:active[data-show-border=true]{-webkit-box-shadow:none;box-shadow:none}.rc-Card[data-interactive=true]:active[data-show-border=false]{-webkit-box-shadow:0 1px 6px rgba(31,31,31,.12),0 1px 4px rgba(31,31,31,.12);box-shadow:0 1px 6px rgba(31,31,31,.12),0 1px 4px rgba(31,31,31,.12)}.rc-ProductCard[data-size=lg] .productCard-card{min-height:384px;background-color:#fff;-webkit-transition:all .45s cubic-bezier(.23,1,.32,1);-moz-transition:all .45s cubic-bezier(.23,1,.32,1);-o-transition:all .45s cubic-bezier(.23,1,.32,1);-ms-transition:all .45s cubic-bezier(.23,1,.32,1);transition:all .45s cubic-bezier(.23,1,.32,1);text-align:left}@media (max-width:320px){.rc-ProductCard[data-size=lg] .productCard-card{min-width:240px}}.rc-ProductCard[data-size=lg] .productCard-card[data-is-ltr=true]{text-align:right}.rc-ProductCard[data-size=lg] .productCard-card a{position:static}.rc-ProductCard[data-size=lg] .productCard-PartnerLogo{width:72px;height:72px;padding:8px;top:96px;left:24px;right:unset}.rc-ProductCard[data-size=lg] .productCard-PartnerLogo[data-is-ltr=true]{left:unset;right:24px}.rc-ProductCard[data-size=lg] .productCard-cardImageContainer{height:132px}.rc-ProductCard[data-size=lg] .productCard-cardImageContainer[data-show-gradient=true]{height:168px}.rc-ProductCard[data-size=lg] .productCard-titleSection{position:relative;margin-top:48px;margin-bottom:44px;z-index:1}.rc-ProductCard[data-size=lg] .productCard-titleSection[data-show-gradient=true]{margin-top:12px}.rc-ProductCard[data-size=lg] .productCard-cardActions{width:100%;position:absolute;bottom:4px}.rc-ProductCard[data-size=lg] .productCard-badgeWrapper{margin:12px 12px 0 0}.rc-ProductCard[data-size=lg] .productCard-gradient{width:100%;height:100%;position:absolute;top:132px;-webkit-transform:skewY(-10deg);-moz-transform:skewY(-10deg);-o-transform:skewY(-10deg);-ms-transform:skewY(-10deg);transform:skewY(-10deg)}.rc-ProductCard[data-size=lg] .productCard-cardImage{width:100%;height:100%;background-color:#82a8e1;background-size:cover;background-position:50%}.rc-ProductCard[data-size=lg] .productCard-tag{position:absolute;top:120px;left:unset;right:0;height:18;padding:0 12px;text-align:right;color:#0156b8;font-size:12;font-weight:700;text-transform:uppercase;background-color:#f0f0f0}.rc-ProductCard[data-size=lg] .productCard-tag[data-is-ltr=true]{left:0;right:unset}.rc-ProductCard[data-size=lg] .productCard-tag :before{content:"";display:block;position:absolute;width:0;height:0;left:-9;right:unset;border-color:transparent #f0f0f0 transparent transparent;border-style:solid;border-width:0 9px 9px 0}.rc-ProductCard[data-size=lg] .productCard-tag :before[data-is-ltr=true]{border-width:0 0 9px 9px;left:unset;right:-9;border-color:transparent transparent transparent #f0f0f0}.rc-ProductCard[data-size=lg] .productCard-tag :after{content:"";display:block;position:absolute;opacity:.6;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=60)";filter:alpha(opacity=60);width:0;height:0;top:9;left:-9;right:unset;border-color:transparent;border-style:solid;border-width:0 0 9px 9px}.rc-ProductCard[data-size=lg] .productCard-tag :after[data-is-ltr=true]{left:unset;right:-9;border-width:0 9px 9px 0}.rc-ProductCard[data-size=lg] .productCard-shimmer{-webkit-animation-name:cardShimmerKeyframes;-moz-animation-name:cardShimmerKeyframes;-o-animation-name:cardShimmerKeyframes;-ms-animation-name:cardShimmerKeyframes;animation-name:cardShimmerKeyframes;-webkit-animation-duration:1.3s;-moz-animation-duration:1.3s;-o-animation-duration:1.3s;-ms-animation-duration:1.3s;animation-duration:1.3s;-webkit-animation-iteration-count:infinite;-moz-animation-iteration-count:infinite;-o-animation-iteration-count:infinite;-ms-animation-iteration-count:infinite;animation-iteration-count:infinite;-webkit-animation-fill-mode:forwards;-moz-animation-fill-mode:forwards;-o-animation-fill-mode:forwards;-ms-animation-fill-mode:forwards;animation-fill-mode:forwards;-webkit-animation-timing-function:linear;-moz-animation-timing-function:linear;-o-animation-timing-function:linear;-ms-animation-timing-function:linear;animation-timing-function:linear;background:-webkit-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-moz-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-o-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-ms-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:linear-gradient(to right #eee 8%,#ddd 18%,#eee 33%);background-size:1000px 104px;position:relative;overflow:hidden}.rc-ProductCard[data-size=lg][data-size=lg] .productCard-title,.rc-ProductCard[data-size=lg][data-size=md] .productCard-title{margin-bottom:6}.rc-ProductCard[data-size=lg][data-size=sm] .productCard-title{margin-bottom:6;font-size:18}.rc-ProductCard[data-size=lg][data-size=sm] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=lg][data-size=xs] .productCard-title{margin-bottom:6;font-size:16;line-height:22px}.rc-ProductCard[data-size=lg][data-size=xs] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=md] .productCard-card{min-height:336px;background-color:#fff;-webkit-transition:all .45s cubic-bezier(.23,1,.32,1);-moz-transition:all .45s cubic-bezier(.23,1,.32,1);-o-transition:all .45s cubic-bezier(.23,1,.32,1);-ms-transition:all .45s cubic-bezier(.23,1,.32,1);transition:all .45s cubic-bezier(.23,1,.32,1);text-align:left}@media (max-width:320px){.rc-ProductCard[data-size=md] .productCard-card{min-width:240px}}.rc-ProductCard[data-size=md] .productCard-card[data-is-ltr=true]{text-align:right}.rc-ProductCard[data-size=md] .productCard-card a{position:static}.rc-ProductCard[data-size=md] .productCard-PartnerLogo{width:72px;height:72px;padding:8px;top:48px;left:24px;right:unset}.rc-ProductCard[data-size=md] .productCard-PartnerLogo[data-is-ltr=true]{left:unset;right:24px}.rc-ProductCard[data-size=md] .productCard-cardImageContainer{height:108px}.rc-ProductCard[data-size=md] .productCard-cardImageContainer[data-show-gradient=true]{height:120px}.rc-ProductCard[data-size=md] .productCard-titleSection{position:relative;margin-top:28px;margin-bottom:44px;z-index:1}.rc-ProductCard[data-size=md] .productCard-titleSection[data-show-gradient=true]{margin-top:12px}.rc-ProductCard[data-size=md] .productCard-cardActions{width:100%;position:absolute;bottom:4px}.rc-ProductCard[data-size=md] .productCard-badgeWrapper{margin:12px 12px 0 0}.rc-ProductCard[data-size=md] .productCard-gradient{width:100%;height:100%;position:absolute;top:84px;-webkit-transform:skewY(-10deg);-moz-transform:skewY(-10deg);-o-transform:skewY(-10deg);-ms-transform:skewY(-10deg);transform:skewY(-10deg)}.rc-ProductCard[data-size=md] .productCard-cardImage{width:100%;height:100%;background-color:#82a8e1;background-size:cover;background-position:50%}.rc-ProductCard[data-size=md] .productCard-tag{position:absolute;top:72px;left:unset;right:0;height:18;padding:0 12px;text-align:right;color:#0156b8;font-size:12;font-weight:700;text-transform:uppercase;background-color:#f0f0f0}.rc-ProductCard[data-size=md] .productCard-tag[data-is-ltr=true]{left:0;right:unset}.rc-ProductCard[data-size=md] .productCard-tag :before{content:"";display:block;position:absolute;width:0;height:0;left:-9;right:unset;border-color:transparent #f0f0f0 transparent transparent;border-style:solid;border-width:0 9px 9px 0}.rc-ProductCard[data-size=md] .productCard-tag :before[data-is-ltr=true]{border-width:0 0 9px 9px;left:unset;right:-9;border-color:transparent transparent transparent #f0f0f0}.rc-ProductCard[data-size=md] .productCard-tag :after{content:"";display:block;position:absolute;opacity:.6;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=60)";filter:alpha(opacity=60);width:0;height:0;top:9;left:-9;right:unset;border-color:transparent;border-style:solid;border-width:0 0 9px 9px}.rc-ProductCard[data-size=md] .productCard-tag :after[data-is-ltr=true]{left:unset;right:-9;border-width:0 9px 9px 0}.rc-ProductCard[data-size=md] .productCard-shimmer{-webkit-animation-name:cardShimmerKeyframes;-moz-animation-name:cardShimmerKeyframes;-o-animation-name:cardShimmerKeyframes;-ms-animation-name:cardShimmerKeyframes;animation-name:cardShimmerKeyframes;-webkit-animation-duration:1.3s;-moz-animation-duration:1.3s;-o-animation-duration:1.3s;-ms-animation-duration:1.3s;animation-duration:1.3s;-webkit-animation-iteration-count:infinite;-moz-animation-iteration-count:infinite;-o-animation-iteration-count:infinite;-ms-animation-iteration-count:infinite;animation-iteration-count:infinite;-webkit-animation-fill-mode:forwards;-moz-animation-fill-mode:forwards;-o-animation-fill-mode:forwards;-ms-animation-fill-mode:forwards;animation-fill-mode:forwards;-webkit-animation-timing-function:linear;-moz-animation-timing-function:linear;-o-animation-timing-function:linear;-ms-animation-timing-function:linear;animation-timing-function:linear;background:-webkit-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-moz-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-o-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-ms-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:linear-gradient(to right #eee 8%,#ddd 18%,#eee 33%);background-size:1000px 104px;position:relative;overflow:hidden}.rc-ProductCard[data-size=md][data-size=lg] .productCard-title,.rc-ProductCard[data-size=md][data-size=md] .productCard-title{margin-bottom:6}.rc-ProductCard[data-size=md][data-size=sm] .productCard-title{margin-bottom:6;font-size:18}.rc-ProductCard[data-size=md][data-size=sm] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=md][data-size=xs] .productCard-title{margin-bottom:6;font-size:16;line-height:22px}.rc-ProductCard[data-size=md][data-size=xs] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=sm] .productCard-card{min-height:252px;background-color:#fff;-webkit-transition:all .45s cubic-bezier(.23,1,.32,1);-moz-transition:all .45s cubic-bezier(.23,1,.32,1);-o-transition:all .45s cubic-bezier(.23,1,.32,1);-ms-transition:all .45s cubic-bezier(.23,1,.32,1);transition:all .45s cubic-bezier(.23,1,.32,1);text-align:left}@media (max-width:320px){.rc-ProductCard[data-size=sm] .productCard-card{min-width:216px}}.rc-ProductCard[data-size=sm] .productCard-card[data-is-ltr=true]{text-align:right}.rc-ProductCard[data-size=sm] .productCard-card a{position:static}.rc-ProductCard[data-size=sm] .productCard-PartnerLogo{width:60px;height:60px;padding:4px;top:28px;left:24px;right:unset}.rc-ProductCard[data-size=sm] .productCard-PartnerLogo[data-is-ltr=true]{left:unset;right:24px}.rc-ProductCard[data-size=sm] .productCard-cardImageContainer{height:72px}.rc-ProductCard[data-size=sm] .productCard-cardImageContainer[data-show-gradient=true]{height:80px}.rc-ProductCard[data-size=sm] .productCard-titleSection{position:relative;margin-top:6px;margin-bottom:44px;z-index:1}.rc-ProductCard[data-size=sm] .productCard-titleSection[data-show-gradient=true]{margin-top:2px}.rc-ProductCard[data-size=sm] .productCard-cardActions{width:100%;position:absolute;bottom:4px}.rc-ProductCard[data-size=sm] .productCard-badgeWrapper{margin:12px 12px 0 0}.rc-ProductCard[data-size=sm] .productCard-gradient{width:100%;height:100%;position:absolute;top:60px;-webkit-transform:skewY(-6deg);-moz-transform:skewY(-6deg);-o-transform:skewY(-6deg);-ms-transform:skewY(-6deg);transform:skewY(-6deg)}.rc-ProductCard[data-size=sm] .productCard-cardImage{width:100%;height:100%;background-color:#82a8e1;background-size:cover;background-position:50%}.rc-ProductCard[data-size=sm] .productCard-tag{position:absolute;top:46px;left:unset;right:0;height:18;padding:0 12px;text-align:right;color:#0156b8;font-size:12;font-weight:700;text-transform:uppercase;background-color:#f0f0f0}.rc-ProductCard[data-size=sm] .productCard-tag[data-is-ltr=true]{left:0;right:unset}.rc-ProductCard[data-size=sm] .productCard-tag :before{content:"";display:block;position:absolute;width:0;height:0;left:-9;right:unset;border-color:transparent #f0f0f0 transparent transparent;border-style:solid;border-width:0 9px 9px 0}.rc-ProductCard[data-size=sm] .productCard-tag :before[data-is-ltr=true]{border-width:0 0 9px 9px;left:unset;right:-9;border-color:transparent transparent transparent #f0f0f0}.rc-ProductCard[data-size=sm] .productCard-tag :after{content:"";display:block;position:absolute;opacity:.6;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=60)";filter:alpha(opacity=60);width:0;height:0;top:9;left:-9;right:unset;border-color:transparent;border-style:solid;border-width:0 0 9px 9px}.rc-ProductCard[data-size=sm] .productCard-tag :after[data-is-ltr=true]{left:unset;right:-9;border-width:0 9px 9px 0}.rc-ProductCard[data-size=sm] .productCard-shimmer{-webkit-animation-name:cardShimmerKeyframes;-moz-animation-name:cardShimmerKeyframes;-o-animation-name:cardShimmerKeyframes;-ms-animation-name:cardShimmerKeyframes;animation-name:cardShimmerKeyframes;-webkit-animation-duration:1.3s;-moz-animation-duration:1.3s;-o-animation-duration:1.3s;-ms-animation-duration:1.3s;animation-duration:1.3s;-webkit-animation-iteration-count:infinite;-moz-animation-iteration-count:infinite;-o-animation-iteration-count:infinite;-ms-animation-iteration-count:infinite;animation-iteration-count:infinite;-webkit-animation-fill-mode:forwards;-moz-animation-fill-mode:forwards;-o-animation-fill-mode:forwards;-ms-animation-fill-mode:forwards;animation-fill-mode:forwards;-webkit-animation-timing-function:linear;-moz-animation-timing-function:linear;-o-animation-timing-function:linear;-ms-animation-timing-function:linear;animation-timing-function:linear;background:-webkit-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-moz-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-o-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-ms-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:linear-gradient(to right #eee 8%,#ddd 18%,#eee 33%);background-size:1000px 104px;position:relative;overflow:hidden}.rc-ProductCard[data-size=sm][data-size=lg] .productCard-title,.rc-ProductCard[data-size=sm][data-size=md] .productCard-title{margin-bottom:6}.rc-ProductCard[data-size=sm][data-size=sm] .productCard-title{margin-bottom:6;font-size:18}.rc-ProductCard[data-size=sm][data-size=sm] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=sm][data-size=xs] .productCard-title{margin-bottom:6;font-size:16;line-height:22px}.rc-ProductCard[data-size=sm][data-size=xs] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=xs] .productCard-card{min-height:186px;background-color:#fff;-webkit-transition:all .45s cubic-bezier(.23,1,.32,1);-moz-transition:all .45s cubic-bezier(.23,1,.32,1);-o-transition:all .45s cubic-bezier(.23,1,.32,1);-ms-transition:all .45s cubic-bezier(.23,1,.32,1);transition:all .45s cubic-bezier(.23,1,.32,1);text-align:left}@media (max-width:320px){.rc-ProductCard[data-size=xs] .productCard-card{min-width:216px}}.rc-ProductCard[data-size=xs] .productCard-card[data-is-ltr=true]{text-align:right}.rc-ProductCard[data-size=xs] .productCard-card a{position:static}.rc-ProductCard[data-size=xs] .productCard-PartnerLogo{width:60px;height:60px;padding:4px;top:18px;left:24px;right:unset}.rc-ProductCard[data-size=xs] .productCard-PartnerLogo[data-is-ltr=true]{left:unset;right:24px}.rc-ProductCard[data-size=xs] .productCard-cardImageContainer{height:66px}.rc-ProductCard[data-size=xs] .productCard-cardImageContainer[data-show-gradient=true]{height:72px}.rc-ProductCard[data-size=xs] .productCard-titleSection{position:relative;margin-top:6px;margin-bottom:44px;z-index:1}.rc-ProductCard[data-size=xs] .productCard-titleSection[data-show-gradient=true]{margin-top:2px}.rc-ProductCard[data-size=xs] .productCard-cardActions{width:100%;position:absolute;bottom:4px}.rc-ProductCard[data-size=xs] .productCard-badgeWrapper{margin:12px 12px 0 0}.rc-ProductCard[data-size=xs] .productCard-gradient{width:100%;height:100%;position:absolute;top:60px;-webkit-transform:skewY(0deg);-moz-transform:skewY(0deg);-o-transform:skewY(0deg);-ms-transform:skewY(0deg);transform:skewY(0deg)}.rc-ProductCard[data-size=xs] .productCard-cardImage{width:100%;height:100%;background-color:#82a8e1;background-size:cover;background-position:50%}.rc-ProductCard[data-size=xs] .productCard-tag{position:absolute;top:24px;left:unset;right:0;height:18;padding:0 12px;text-align:right;color:#0156b8;font-size:12;font-weight:700;text-transform:uppercase;background-color:#f0f0f0}.rc-ProductCard[data-size=xs] .productCard-tag[data-is-ltr=true]{left:0;right:unset}.rc-ProductCard[data-size=xs] .productCard-tag :before{content:"";display:block;position:absolute;width:0;height:0;left:-9;right:unset;border-color:transparent #f0f0f0 transparent transparent;border-style:solid;border-width:0 9px 9px 0}.rc-ProductCard[data-size=xs] .productCard-tag :before[data-is-ltr=true]{border-width:0 0 9px 9px;left:unset;right:-9;border-color:transparent transparent transparent #f0f0f0}.rc-ProductCard[data-size=xs] .productCard-tag :after{content:"";display:block;position:absolute;opacity:.6;-ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=60)";filter:alpha(opacity=60);width:0;height:0;top:9;left:-9;right:unset;border-color:transparent;border-style:solid;border-width:0 0 9px 9px}.rc-ProductCard[data-size=xs] .productCard-tag :after[data-is-ltr=true]{left:unset;right:-9;border-width:0 9px 9px 0}.rc-ProductCard[data-size=xs] .productCard-shimmer{-webkit-animation-name:cardShimmerKeyframes;-moz-animation-name:cardShimmerKeyframes;-o-animation-name:cardShimmerKeyframes;-ms-animation-name:cardShimmerKeyframes;animation-name:cardShimmerKeyframes;-webkit-animation-duration:1.3s;-moz-animation-duration:1.3s;-o-animation-duration:1.3s;-ms-animation-duration:1.3s;animation-duration:1.3s;-webkit-animation-iteration-count:infinite;-moz-animation-iteration-count:infinite;-o-animation-iteration-count:infinite;-ms-animation-iteration-count:infinite;animation-iteration-count:infinite;-webkit-animation-fill-mode:forwards;-moz-animation-fill-mode:forwards;-o-animation-fill-mode:forwards;-ms-animation-fill-mode:forwards;animation-fill-mode:forwards;-webkit-animation-timing-function:linear;-moz-animation-timing-function:linear;-o-animation-timing-function:linear;-ms-animation-timing-function:linear;animation-timing-function:linear;background:-webkit-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-moz-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-o-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:-ms-linear-gradient(left #eee 8%,#ddd 18%,#eee 33%);background:linear-gradient(to right #eee 8%,#ddd 18%,#eee 33%);background-size:1000px 104px;position:relative;overflow:hidden}.rc-ProductCard[data-size=xs][data-size=lg] .productCard-title,.rc-ProductCard[data-size=xs][data-size=md] .productCard-title{margin-bottom:6}.rc-ProductCard[data-size=xs][data-size=sm] .productCard-title{margin-bottom:6;font-size:18}.rc-ProductCard[data-size=xs][data-size=sm] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard[data-size=xs][data-size=xs] .productCard-title{margin-bottom:6;font-size:16;line-height:22px}.rc-ProductCard[data-size=xs][data-size=xs] .productCard-subtitle{font-size:12;line-height:18px}.rc-ProductCard.placeholder .productCard-cardImage{width:100%;height:100%;background-color:#ccd1d9}.rc-ProductCard.placeholder .productCard-title{max-width:250}.rc-ProductCard.placeholder .productCard-subtitle,.rc-ProductCard.placeholder .productCard-title{height:24px;background-color:#ebeced;-webkit-animation-delay:.325s;-moz-animation-delay:.325s;-o-animation-delay:.325s;-ms-animation-delay:.325s;animation-delay:.325s}.rc-ProductCard.placeholder .productCard-subtitle{max-width:150}.rc-ProductCard.placeholder .productCard-numberOfCourses{width:100;height:24px;background-color:#ebeced;-webkit-animation-delay:.325s;-moz-animation-delay:.325s;-o-animation-delay:.325s;-ms-animation-delay:.325s;animation-delay:.325s}.rc-ProductDiscountPromoBanner{background:transparent;position:relative;width:100%;height:100px;max-height:100px;-webkit-transition:max-height .3s ease-out;-moz-transition:max-height .3s ease-out;-o-transition:max-height .3s ease-out;-ms-transition:max-height .3s ease-out;transition:max-height .3s ease-out;overflow:hidden}.rc-ProductDiscountPromoBanner.hidden{max-height:0}.rc-ProductDiscountPromoBanner .banner-bg{position:absolute;top:0;height:100%;z-index:-1}.rc-ProductDiscountPromoBanner .banner-left-bg,.rc-ProductDiscountPromoBanner .banner-right-bg{background-repeat:no-repeat;background-size:cover}@media (max-width:479px){.rc-ProductDiscountPromoBanner .banner-left-bg,.rc-ProductDiscountPromoBanner .banner-right-bg{display:none}}.rc-ProductDiscountPromoBanner .banner-left-bg{left:0}.rc-ProductDiscountPromoBanner .banner-right-bg{right:0}.rc-ProductDiscountPromoBanner .banner-gradient{right:0;margin-left:auto;margin-right:auto}@media (max-width:479px){.rc-ProductDiscountPromoBanner .banner-gradient{left:0;width:100%}}.rc-ProductDiscountPromoBanner .banner-details{height:100%;margin:0 48px}.rc-ProductDiscountPromoBanner .banner-main-cta{font-family:OpenSans,Arial,sans-serif;font-size:1.5rem;font-weight:700;margin:0 0 8px;line-height:1;text-align:center}@media (max-width:767px){.rc-ProductDiscountPromoBanner .banner-main-cta{margin:0 0 6px;font-size:12px;line-height:14px}.rc-ProductDiscountPromoBanner .banner-description{font-size:12px;line-height:14px}}.rc-ProductDiscountPromoBanner .banner-legal-disclaimer{font-size:.8rem}@media (max-width:767px){.rc-ProductDiscountPromoBanner .banner-legal-disclaimer{font-size:.6rem;line-height:1.3}}.rc-ProductDiscountPromoBanner .banner-link{text-decoration:underline}.rc-ProductDiscountPromoBanner .banner-link:active,.rc-ProductDiscountPromoBanner .banner-link:focus,.rc-ProductDiscountPromoBanner .banner-link:hover{color:#fff}.rc-ProductDiscountPromoBanner .banner-close{position:absolute;top:0;right:24px;height:100%;width:32px}@media (max-width:767px){.rc-ProductDiscountPromoBanner .banner-close{right:8px}}.rc-ProductDiscountPromoBanner--referral{background:#509de6;color:#fff}.rc-ProductDiscountPromoBanner--referral .referral-banner-details{margin:0 20px}.rc-ProductDiscountPromoBanner--referral .referral-banner-content{position:relative;padding:0 66px}@media (max-width:767px){.rc-ProductDiscountPromoBanner--referral .referral-banner-content{padding:0 25px 0 0}}.rc-ProductDiscountPromoBanner--referral .referral-banner-icon{position:absolute;top:50%;-webkit-transform:translateY(-50%);-moz-transform:translateY(-50%);-o-transform:translateY(-50%);-ms-transform:translateY(-50%);transform:translateY(-50%);left:0;width:36px;height:auto}@media (max-width:767px){.rc-ProductDiscountPromoBanner--referral .referral-banner-icon{display:none}}.rc-ProductDiscountPromoBanner--referral .referral-banner-main-cta{font-size:1rem;line-height:1.2rem;font-weight:400;margin-bottom:5px}@media (max-width:767px){.rc-ProductDiscountPromoBanner--referral .referral-banner-main-cta{font-size:.875rem;text-align:left}}.rc-ProductDiscountPromoBanner--referral .referral-banner-main-cta strong{font-weight:700}.rc-ProductDiscountPromoBanner--referral .referral-banner-main-cta a{font-weight:700;text-decoration:underline;color:#fff}.rc-ProductDiscountPromoBanner--referral .referral-banner-legal-disclaimer{font-size:.75rem;text-decoration:underline;text-align:center}@media (max-width:767px){.rc-ProductDiscountPromoBanner--referral .referral-banner-legal-disclaimer{text-align:left}}.rc-ProductDiscountPromoBanner--referral .referral-banner-legal-disclaimer a{color:#fff}.rc-AutoComplete{margin:auto}.rc-AutoComplete.polishedStylesThatShouldBeCombinedAfterThisExperimentEnds .react-autosuggest\_\_section-container--first .react-autosuggest\_\_suggestions-list{padding-bottom:8px!important}.rc-AutoComplete .react-autosuggest\_\_suggestions-container--open .react-autosuggest\_\_suggestion--highlighted,.rc-AutoComplete .react-autosuggest\_\_suggestions-container--open li:hover{background-color:#f3f8ff}.rc-AutoComplete.isLohpRebrand input[type=text].react-autosuggest\_\_input{font-family:Source Sans Pro,Arial,sans-serif;color:#000;font-size:16px;line-height:20px;font-weight:400}.rc-AutoComplete.isLohpRebrand .magnifier-wrapper{background-color:#0056d2}@media (max-width:1060px){.rc-AutoComplete.isFocused{background-color:#0056d2;position:fixed;left:0;top:65px;width:100vw;z-index:4000;-webkit-transition:background-color .5s ease;-moz-transition:background-color .5s ease;-o-transition:background-color .5s ease;-ms-transition:background-color .5s ease;transition:background-color .5s ease}}.rc-AutoComplete.isFocused .cancel-button{top:50%;-webkit-transform:translateY(-50%);-moz-transform:translateY(-50%);-o-transform:translateY(-50%);-ms-transform:translateY(-50%);transform:translateY(-50%);right:12px;background-color:#fff}.rc-AutoComplete.isFocused.isExposedSearch,.rc-AutoComplete.isFocused.isOneStepSearchForTablet{z-index:8000}@media (max-width:1060px){.rc-AutoComplete.isFocused.isExposedSearch input[type=text].react-autosuggest\_\_input,.rc-AutoComplete.isFocused.isOneStepSearchForTablet input[type=text].react-autosuggest\_\_input{border-bottom-left-radius:0;border-top-left-radius:0}.rc-AutoComplete.isFocused.isExposedSearch .left-hand-search-btn,.rc-AutoComplete.isFocused.isOneStepSearchForTablet .left-hand-search-btn{margin-right:0}}@media (max-width:1060px) and (min-width:768px) and (max-width:992px){.rc-AutoComplete.isFocused.isExposedSearch .react-autosuggest\_\_suggestions-container--open,.rc-AutoComplete.isFocused.isOneStepSearchForTablet .react-autosuggest\_\_suggestions-container--open{border:0;top:60px;-webkit-box-shadow:none;box-shadow:none}}@media (min-width:768px) and (max-width:992px){.rc-AutoComplete.isFocused.isOneStepSearchForTablet{margin:0;z-index:4000;width:300px}}@media (max-width:767px){.rc-AutoComplete.isFocused.isExposedSearch input[type=text].react-autosuggest\_\_input--focused{padding:0 10px 0 46px}}@media (max-width:1060px){.rc-AutoComplete.isFocused:not(.isExposedSearch){top:0}}.rc-AutoComplete .mobile-magnifier{height:100%;margin-right:10px}.rc-AutoComplete .mobile-magnifier .magnifier-wrapper{border:1px solid #636363;padding:10px;background-color:#00419e}@media (min-width:1061px){.rc-AutoComplete .mobile-magnifier{display:none}}.rc-AutoComplete .section-title-box{padding:6px 21px}.rc-AutoComplete .view-all-search-results{padding-left:30%;padding-top:10px;padding-bottom:10px;border-top:1px solid #cdd1d8}.rc-AutoComplete .view-all-search-results .body-2-text{font-size:12px;margin-bottom:0}.rc-AutoComplete .section-title{width:100%;display:inline-block;margin-bottom:0;font-family:OpenSans,Arial,sans-serif;font-weight:700}.rc-AutoComplete .direct-match-section{border-bottom:1px solid #e1e1e1;padding-bottom:4px}.rc-AutoComplete .direct-match-section.polishedStylesThatShouldBeCombinedAfterThisExperimentEnds{padding-top:4px;border-bottom:none!important}.rc-AutoComplete .section-item{height:100%;padding-left:21px;padding-right:21px}.rc-AutoComplete .section-item .image-container{width:32px}.rc-AutoComplete .section-item .partner-name{width:100%;margin-left:10px;color:#636363}.rc-AutoComplete .section-item .item-photo{display:block;margin:0 auto}.rc-AutoComplete .section-item .vertical-box{display:inline-block;vertical-align:middle}.rc-AutoComplete .section-item .item-name{color:rgba(0,0,0,.87);display:-webkit-box;display:-moz-box;display:-webkit-flex;display:-ms-flexbox;display:box;display:flex;overflow-wrap:break-word;font-family:Helvetica,sans-serif;font-size:16px;padding-left:10px;width:100%}.rc-AutoComplete input[type=text].react-autosuggest\_\_input{width:100%;height:40px;padding:0 10px 0 36px;font-family:Helvetica,sans-serif;font-weight:300;font-size:16px;-webkit-box-shadow:none;box-shadow:none;margin-bottom:0;border:1px solid #636363;border-radius:4px 0 0 4px;background:#fff}.rc-AutoComplete input[type=text].react-autosuggest\_\_input::placeholder{color:#636363;opacity:1;-ms-filter:none;filter:none;font-weight:300}@media (min-width:1061px){.rc-AutoComplete input[type=text].react-autosuggest\_\_input{padding:0 10px}}.rc-AutoComplete input[type=text].react-autosuggest\_\_input--focused{outline:none;-webkit-box-shadow:none;box-shadow:none}.rc-AutoComplete input[type=text].react-autosuggest\_\_suggestions-container{display:none}.rc-AutoComplete .react-autosuggest\_\_container{width:100%}@media (min-width:1061px){.rc-AutoComplete .react-autosuggest\_\_suggestions-container--open{padding:0;overflow:auto;display:block;max-height:90vh;position:absolute;width:330px;max-width:85vw;margin-top:8px;border:1px solid #e1e1e1;background-color:#fff;font-family:Helvetica,sans-serif;font-weight:300;font-size:16px;border-bottom-left-radius:4px;border-bottom-right-radius:4px;z-index:10000;-webkit-box-shadow:1px 1px 2px #d3d3d3;box-shadow:1px 1px 2px #d3d3d3;width:400px}}@media (min-width:1200px){.rc-AutoComplete .react-autosuggest\_\_suggestions-container--open{width:450px}}@media (max-width:1060px){.rc-AutoComplete .react-autosuggest\_\_suggestions-container--open,.rc-AutoComplete .suggestion-wrapper.withSuggestion .react-autosuggest\_\_suggestions-container{position:absolute;left:0;top:64px;width:100%;padding:0;z-index:1;background-color:#fff;height:calc(100vh - 65px);overflow:auto}}.rc-AutoComplete .react-autosuggest\_\_suggestion{cursor:pointer;margin-bottom:5px;padding:5px 0}.rc-AutoComplete .react-autosuggest\_\_suggestion .ais-Highlight-highlighted{background-color:#fff}.rc-AutoComplete .react-autosuggest\_\_suggestion a{text-decoration:none}.rc-AutoComplete .react-autosuggest\_\_suggestion--highlighted{background-color:#f3f8ff}.rc-AutoComplete .react-autosuggest\_\_section-container--first{border-top:0}.rc-AutoComplete .react-autosuggest\_\_section-container--first .react-autosuggest\_\_section-title{border:none}.rc-AutoComplete .react-autosuggest\_\_section-container--first .react-autosuggest\_\_suggestion{padding:5px 0}.rc-AutoComplete .react-autosuggest\_\_section-container--first .react-autosuggest\_\_suggestions-list,.rc-AutoComplete .react-autosuggest\_\_section-container .react-autosuggest\_\_section-title+.react-autosuggest\_\_suggestions-list{margin:0;padding:15px 0;list-style-type:none}.rc-AutoComplete .search-button:focus .magnifier-wrapper{outline-color:-webkit-focus-ring-color;outline-color:#0067f4;outline-style:auto;outline-width:5px}.rc-AutoComplete .cancel-button{display:block;position:absolute;top:20px;right:24px}@media (min-width:1061px){.rc-AutoComplete .cancel-button{display:none}}.rc-AutoComplete .sr-only{border:0!important;clip:rect(1px,1px,1px,1px)!important;clip-path:inset(50%)!important;height:1px!important;margin:-1px!important;overflow:hidden!important;padding:0!important;position:absolute!important;width:1px!important;white-space:nowrap!important}.rc-SearchBarContainer{width:100%;max-width:600px}@media (max-width:1550px){.rc-SearchBarContainer{max-width:500px}}@media (max-width:1500px){.rc-SearchBarContainer{max-width:400px}}@media (max-width:1450px){.rc-SearchBarContainer{max-width:350px}}@media (max-width:1400px){.rc-SearchBarContainer{max-width:300px;width:auto}}@media (max-width:1350px){.rc-SearchBarContainer{max-width:200px;width:auto}}@media (max-width:1300px){.rc-SearchBarContainer{max-width:170px;width:auto}}@media (max-width:1050px){.rc-SearchBarContainer{max-width:150px;width:auto}}.rc-SearchBarContainer .rc-SearchBar{width:100%}.rc-SearchBarContainer .rc-SearchBar .search-form{max-width:490px}.rc-SearchBarContainer .rc-SearchBar .search-button{width:40px}.bt3-clearfix:after,.bt3-clearfix:before{content:" ";display:table}.bt3-clearfix:after{clear:both}.rc-PaymentsPageContainer{max-width:700px;float:none;margin:36px auto}.rc-PaymentsPageContainer .cart-summary,.rc-PaymentsPageContainer .rc-PaymentConfrmDetail{padding:24px}@media (max-width:767px){.rc-PaymentsPageContainer{margin:10px auto}.rc-PaymentsPageContainer .cart-summary,.rc-PaymentsPageContainer .rc-PaymentConfrmDetail{padding:24px 8px}}</style><link href="https://d3njjcbhbojbot.cloudfront.net/webapps/r2-builds/articles/allStyles.cbcc659b9a4b33eb5307.css" rel="stylesheet" media="print" onload="this.media='all'"><title data-react-helmet="true">9 Best Python Libraries for Machine Learning | Coursera</title><meta data-react-helmet="true" property="og:url" content="https://www.coursera.org/articles/python-machine-learning-library"/><meta data-react-helmet="true" property="og:locale" content="en\_US"/><meta data-react-helmet="true" property="og:type" content="website"/><meta data-react-helmet="true" name="description" content="If youâre getting into machine learning, chances are youâll want to choose a Python library (or a few). Hereâs a look at the best ones in 2023."/><meta data-react-helmet="true" name="image" content="https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive"/><meta data-react-helmet="true" property="og:title" content="9 Best Python Libraries for Machine Learning"/><meta data-react-helmet="true" property="og:description" content="If youâre getting into machine learning, chances are youâll want to choose a Python library (or a few). Hereâs a look at the best ones in 2023."/><meta data-react-helmet="true" property="og:image" content="https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive"/><meta data-react-helmet="true" property="twitter:title" content="9 Best Python Libraries for Machine Learning"/><meta data-react-helmet="true" property="twitter:description" content="If youâre getting into machine learning, chances are ..."/><meta data-react-helmet="true" property="twitter:image:src" content="https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive"/><meta data-react-helmet="true" property="twitter:image" content="https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive"/><meta data-react-helmet="true" property="twitter:card" content="summary"/><link data-react-helmet="true" rel="canonical" href="https://www.coursera.org/articles/python-machine-learning-library"/><link data-react-helmet="true" rel="preload" as="image" href="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive&amp;auto=format%2Ccompress&amp;dpr=1&amp;w=1000&amp;h=" imagesrcset="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive&amp;auto=format%2Ccompress&amp;dpr=2&amp;w=1000&amp;h= 2x, https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive&amp;auto=format%2Ccompress&amp;dpr=3&amp;w=1000&amp;h= 3x"/><link data-react-helmet="true" rel="alternate" hreflang="x-default" href="https://www.coursera.org/articles/python-machine-learning-library"/><link data-react-helmet="true" rel="alternate" hreflang="en-us" href="https://www.coursera.org/articles/python-machine-learning-library"/><style data-coursera-design-system>.cds-1 { width: 100%; display: block; box-sizing: border-box; margin-left: auto; margin-right: auto;} .cds-2 { padding-left: 0; padding-right: 0; }@media (min-width:600px) { .cds-3 { max-width: 600px; }}@media (min-width:1024px) { .cds-3 { max-width: 1024px; }}@media (min-width:1440px) { .cds-3 { max-width: 1440px; }}@media (min-width:1920px) { .cds-3 { max-width: 1920px; }}@media (min-width:0px) { .cds-4 { max-width: 444px; }}@media (min-width:600px) { .cds-5 { max-width: 600px; }}@media (min-width:1024px) { .cds-6 { max-width: 1024px; }}@media (min-width:1440px) { .cds-7 { max-width: 1440px; }}@media (min-width:1920px) { .cds-8 { max-width: 1920px; }} .cds-10 { width: 100%; display: flex; flex-wrap: wrap; box-sizing: border-box; } .cds-11 { margin: 0; box-sizing: border-box; } .cds-12 { min-width: 0; } .cds-13 { flex-direction: column; } .cds-14 { flex-direction: column-reverse; } .cds-15 { flex-direction: row-reverse; } .cds-16 { flex-wrap: nowrap; } .cds-17 { flex-wrap: wrap-reverse; } .cds-18 { align-items: center; } .cds-19 { align-items: flex-start; } .cds-20 { align-items: flex-end; } .cds-21 { align-items: baseline; } .cds-22 { align-content: center; } .cds-23 { align-content: flex-start; } .cds-24 { align-content: flex-end; } .cds-25 { align-content: space-between; } .cds-26 { align-content: space-around; } .cds-27 { justify-content: center; } .cds-28 { justify-content: flex-end; } .cds-29 { justify-content: space-between; } .cds-30 { justify-content: space-around; } .cds-31 { justify-content: space-evenly; } .cds-32 { width: calc(100% + 0px); margin: -0px; } .cds-32 > .cds-11 { padding: 0px; } .cds-33 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-33 > .cds-11 { padding: NaNundefined; } .cds-34 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-34 > .cds-11 { padding: NaNundefined; } .cds-35 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-35 > .cds-11 { padding: NaNundefined; } .cds-36 { width: calc(100% + NaNvar(--cds-spacing-50)); margin: -NaNvar(--cds-spacing-50); } .cds-36 > .cds-11 { padding: NaNvar(--cds-spacing-50); } .cds-37 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-37 > .cds-11 { padding: NaNundefined; } .cds-38 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-38 > .cds-11 { padding: NaNundefined; } .cds-39 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-39 > .cds-11 { padding: NaNundefined; } .cds-40 { width: calc(100% + NaNvar(--cds-spacing-100)); margin: -NaNvar(--cds-spacing-100); } .cds-40 > .cds-11 { padding: NaNvar(--cds-spacing-100); } .cds-41 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-41 > .cds-11 { padding: NaNundefined; } .cds-42 { width: calc(100% + NaNundefined); margin: -NaNundefined; } .cds-42 > .cds-11 { padding: NaNundefined; } .cds-43 { flex-grow: 0; max-width: none; flex-basis: auto; } .cds-44 { flex-grow: 1; max-width: 100%; flex-basis: 0; } .cds-45 { flex-grow: 0; max-width: 8.333333%; flex-basis: 8.333333%; } .cds-46 { flex-grow: 0; max-width: 16.666667%; flex-basis: 16.666667%; } .cds-47 { flex-grow: 0; max-width: 25%; flex-basis: 25%; } .cds-48 { flex-grow: 0; max-width: 33.333333%; flex-basis: 33.333333%; } .cds-49 { flex-grow: 0; max-width: 41.666667%; flex-basis: 41.666667%; } .cds-50 { flex-grow: 0; max-width: 50%; flex-basis: 50%; } .cds-51 { flex-grow: 0; max-width: 58.333333%; flex-basis: 58.333333%; } .cds-52 { flex-grow: 0; max-width: 66.666667%; flex-basis: 66.666667%; } .cds-53 { flex-grow: 0; max-width: 75%; flex-basis: 75%; } .cds-54 { flex-grow: 0; max-width: 83.333333%; flex-basis: 83.333333%; } .cds-55 { flex-grow: 0; max-width: 91.666667%; flex-basis: 91.666667%; } .cds-56 { flex-grow: 0; max-width: 100%; flex-basis: 100%; }@media (min-width:600px) { .cds-57 { flex-grow: 0; max-width: none; flex-basis: auto; } .cds-58 { flex-grow: 1; max-width: 100%; flex-basis: 0; } .cds-59 { flex-grow: 0; max-width: 8.333333%; flex-basis: 8.333333%; } .cds-60 { flex-grow: 0; max-width: 16.666667%; flex-basis: 16.666667%; } .cds-61 { flex-grow: 0; max-width: 25%; flex-basis: 25%; } .cds-62 { flex-grow: 0; max-width: 33.333333%; flex-basis: 33.333333%; } .cds-63 { flex-grow: 0; max-width: 41.666667%; flex-basis: 41.666667%; } .cds-64 { flex-grow: 0; max-width: 50%; flex-basis: 50%; } .cds-65 { flex-grow: 0; max-width: 58.333333%; flex-basis: 58.333333%; } .cds-66 { flex-grow: 0; max-width: 66.666667%; flex-basis: 66.666667%; } .cds-67 { flex-grow: 0; max-width: 75%; flex-basis: 75%; } .cds-68 { flex-grow: 0; max-width: 83.333333%; flex-basis: 83.333333%; } .cds-69 { flex-grow: 0; max-width: 91.666667%; flex-basis: 91.666667%; } .cds-70 { flex-grow: 0; max-width: 100%; flex-basis: 100%; }}@media (min-width:1024px) { .cds-71 { flex-grow: 0; max-width: none; flex-basis: auto; } .cds-72 { flex-grow: 1; max-width: 100%; flex-basis: 0; } .cds-73 { flex-grow: 0; max-width: 8.333333%; flex-basis: 8.333333%; } .cds-74 { flex-grow: 0; max-width: 16.666667%; flex-basis: 16.666667%; } .cds-75 { flex-grow: 0; max-width: 25%; flex-basis: 25%; } .cds-76 { flex-grow: 0; max-width: 33.333333%; flex-basis: 33.333333%; } .cds-77 { flex-grow: 0; max-width: 41.666667%; flex-basis: 41.666667%; } .cds-78 { flex-grow: 0; max-width: 50%; flex-basis: 50%; } .cds-79 { flex-grow: 0; max-width: 58.333333%; flex-basis: 58.333333%; } .cds-80 { flex-grow: 0; max-width: 66.666667%; flex-basis: 66.666667%; } .cds-81 { flex-grow: 0; max-width: 75%; flex-basis: 75%; } .cds-82 { flex-grow: 0; max-width: 83.333333%; flex-basis: 83.333333%; } .cds-83 { flex-grow: 0; max-width: 91.666667%; flex-basis: 91.666667%; } .cds-84 { flex-grow: 0; max-width: 100%; flex-basis: 100%; }}@media (min-width:1440px) { .cds-85 { flex-grow: 0; max-width: none; flex-basis: auto; } .cds-86 { flex-grow: 1; max-width: 100%; flex-basis: 0; } .cds-87 { flex-grow: 0; max-width: 8.333333%; flex-basis: 8.333333%; } .cds-88 { flex-grow: 0; max-width: 16.666667%; flex-basis: 16.666667%; } .cds-89 { flex-grow: 0; max-width: 25%; flex-basis: 25%; } .cds-90 { flex-grow: 0; max-width: 33.333333%; flex-basis: 33.333333%; } .cds-91 { flex-grow: 0; max-width: 41.666667%; flex-basis: 41.666667%; } .cds-92 { flex-grow: 0; max-width: 50%; flex-basis: 50%; } .cds-93 { flex-grow: 0; max-width: 58.333333%; flex-basis: 58.333333%; } .cds-94 { flex-grow: 0; max-width: 66.666667%; flex-basis: 66.666667%; } .cds-95 { flex-grow: 0; max-width: 75%; flex-basis: 75%; } .cds-96 { flex-grow: 0; max-width: 83.333333%; flex-basis: 83.333333%; } .cds-97 { flex-grow: 0; max-width: 91.666667%; flex-basis: 91.666667%; } .cds-98 { flex-grow: 0; max-width: 100%; flex-basis: 100%; }}@media (min-width:1920px) { .cds-99 { flex-grow: 0; max-width: none; flex-basis: auto; } .cds-100 { flex-grow: 1; max-width: 100%; flex-basis: 0; } .cds-101 { flex-grow: 0; max-width: 8.333333%; flex-basis: 8.333333%; } .cds-102 { flex-grow: 0; max-width: 16.666667%; flex-basis: 16.666667%; } .cds-103 { flex-grow: 0; max-width: 25%; flex-basis: 25%; } .cds-104 { flex-grow: 0; max-width: 33.333333%; flex-basis: 33.333333%; } .cds-105 { flex-grow: 0; max-width: 41.666667%; flex-basis: 41.666667%; } .cds-106 { flex-grow: 0; max-width: 50%; flex-basis: 50%; } .cds-107 { flex-grow: 0; max-width: 58.333333%; flex-basis: 58.333333%; } .cds-108 { flex-grow: 0; max-width: 66.666667%; flex-basis: 66.666667%; } .cds-109 { flex-grow: 0; max-width: 75%; flex-basis: 75%; } .cds-110 { flex-grow: 0; max-width: 83.333333%; flex-basis: 83.333333%; } .cds-111 { flex-grow: 0; max-width: 91.666667%; flex-basis: 91.666667%; } .cds-112 { flex-grow: 0; max-width: 100%; flex-basis: 100%; }} .cds-119 { margin: 0; } .cds-120 { font-size: var(--cds-font-size-body2); font-family: var(--cds-font-family-source-sans-pro); font-weight: var(--cds-font-weight-400); line-height: var(--cds-line-height-body2); letter-spacing: 0; } .cds-121 { font-size: var(--cds-font-size-body1); font-family: var(--cds-font-family-source-sans-pro); font-weight: var(--cds-font-weight-400); line-height: var(--cds-line-height-body1); letter-spacing: 0; } .cds-124 { font-size: var(--cds-font-size-title1-lg); font-family: var(--cds-font-family-source-sans-pro); font-weight: var(--cds-font-weight-400); line-height: var(--cds-line-height-title1-lg); letter-spacing: var(--cds-letter-spacing-125); }@media (max-width:599.95px) { .cds-124 { font-size: var(--cds-font-size-title1-xs); line-height: var(--cds-line-height-title1-xs); }} .cds-125 { font-size: var(--cds-font-size-title2); font-family: var(--cds-font-family-source-sans-pro); font-weight: var(--cds-font-weight-400); line-height: var(--cds-line-height-title2); letter-spacing: var(--cds-letter-spacing-125); } .cds-133 { width: 1px; height: 1px; overflow: hidden; position: absolute; } .cds-134 { text-align: left; } .cds-135 { text-align: center; } .cds-136 { text-align: right; } .cds-137 { text-align: justify; } .cds-138 { overflow: hidden; white-space: nowrap; text-overflow: ellipsis; } .cds-139 { margin-bottom: 0.35em; } .cds-140 { margin-bottom: 16px; } .cds-141 { color: inherit; } .cds-142 { color: #3f51b5; } .cds-143 { color: #f50057; } .cds-144 { color: rgba(0, 0, 0, 0.87); } .cds-145 { color: rgba(0, 0, 0, 0.54); } .cds-146 { color: #f44336; } .cds-147 { display: inline; } .cds-148 { display: block; } .cds-114 { text-decoration: none; } .cds-115 { text-decoration: none; } .cds-115:hover { text-decoration: underline; } .cds-116 { text-decoration: underline; } .cds-117 { border: 0; cursor: pointer; margin: 0; outline: 0; padding: 0; position: relative; user-select: none; border-radius: 0; vertical-align: middle; -moz-appearance: none; background-color: transparent; -webkit-appearance: none; -webkit-tap-highlight-color: transparent; } .cds-117::-moz-focus-inner { border-style: none; } .cds-117.cds-118 { outline: auto; } .cds-149 { color: inherit; border: 0; cursor: pointer; margin: 0; display: inline-flex; outline: 0; padding: 0; position: relative; align-items: center; user-select: none; border-radius: 0; vertical-align: middle; -moz-appearance: none; justify-content: center; text-decoration: none; background-color: transparent; -webkit-appearance: none; -webkit-tap-highlight-color: transparent; } .cds-149::-moz-focus-inner { border-style: none; } .cds-149.cds-150 { cursor: default; pointer-events: none; }@media print { .cds-149 { color-adjust: exact; }} .cds-152 { height: 0; overflow: hidden; transition: height 300ms cubic-bezier(0.4, 0, 0.2, 1) 0ms; } .cds-153 { height: auto; overflow: visible; } .cds-154 { visibility: hidden; } .cds-155 { display: flex; } .cds-156 { width: 100%; }</style><style data-emotion="css 0 11a6bqp 1lm4h9m gpq5lz 1kspkkz az8ufr j6ha89 1iebf5p 1t811zk 9o34zd ia3qe1 1hjgzz4 19qryfx 9mc38z 1ebuhnc 1ygmvp t7eghb 16mgpnh qgqral 7kgszr fzzre6 awzoag 1b641yt 1ld8h5b 1rt2bhc f75xrw 1430hw9 17mzy6f h1jogs 7avemv dmxkm1 mu0bf1 3mda7n e7lgfl 1825nsb 1cxrrkn p2g82x 15utrac f70avt 8traci 1oquxbd 1psltl0 wyvrez 1tf9jzj vz2uro 4ei6zk 1h62nr4 1h0ctmq 51cxur cw5dnj oa84zy medvl2 14k8f4i do4pef 498j6n animation-13ou25g sbn28o 1oiads2 vxk8c1 fbwd48 k5mpyx 1wb72u0 evvwsy 1prcjsv 1ka4ogz 1gbtwq 1apon45 1oqze1z 11my7b8 r76hfr 1qe369r 7oqaxn 1050z7q 4pt9po zappoz 4pr2wr 1e0vdwy 9yb5qz 19ae0yg om3bz6 1jke4yk 1wawqek 1jk1bc1 175sjpy 1pbuafh 2gti99 1br3gvl 17z8vwx 15tlhn 1a83thq lf3s8z be4oay 1jcy7xi 1whdyhf 1dxbamb 192msu tzhsxv 1fgg31t 16obph7 57llfn 18zg8pu">:root{--cds-text-decoration-link:underline;--cds-font-family-boutros-coursera:Boutros Coursera,Tahoma,sans-serif;--cds-font-family-source-sans-pro:Source Sans Pro,Arial,sans-serif;--cds-font-size-body2:0.875rem;--cds-font-size-title4:0.875rem;--cds-font-size-1100:5.5rem;--cds-font-size-1050:5.25rem;--cds-font-size-1000:5rem;--cds-font-size-950:4.75rem;--cds-font-size-900:4.5rem;--cds-font-size-850:4.25rem;--cds-font-size-800:4rem;--cds-font-size-750:3.75rem;--cds-font-size-700:3.5rem;--cds-font-size-650:3.25rem;--cds-font-size-600:3rem;--cds-font-size-550:2.75rem;--cds-font-size-500:2.5rem;--cds-font-size-450:2.25rem;--cds-font-size-400:2rem;--cds-font-size-350:1.75rem;--cds-font-size-300:1.5rem;--cds-font-size-250:1.25rem;--cds-font-size-200:1rem;--cds-font-size-175:0.875rem;--cds-font-size-150:0.75rem;--cds-font-size-125:0.625rem;--cds-font-size-100:0.5rem;--cds-letter-spacing-250:-0.2px;--cds-letter-spacing-125:-0.1px;--cds-letter-spacing-0:0px;--cds-line-height-1200:6rem;--cds-line-height-1150:5.75rem;--cds-line-height-1100:5.5rem;--cds-line-height-1050:5.25rem;--cds-line-height-1000:5rem;--cds-line-height-900:4.5rem;--cds-line-height-850:4.25rem;--cds-line-height-800:4rem;--cds-line-height-700:3.5rem;--cds-line-height-650:3.25rem;--cds-line-height-600:3rem;--cds-line-height-550:2.75rem;--cds-line-height-500:2.5rem;--cds-line-height-450:2.25rem;--cds-line-height-400:2rem;--cds-line-height-350:1.75rem;--cds-line-height-300:1.5rem;--cds-line-height-250:1.25rem;--cds-line-height-200:1rem;--cds-line-height-175:0.875rem;--cds-line-height-150:0.75rem;--cds-base:8;--cds-font-weight-700:700;--cds-font-weight-600:600;--cds-font-weight-400:400;--cds-color-utility-overlay:rgba(99, 99, 99, 0.5);--cds-color-pistachio-900:#353e26;--cds-color-pistachio-800:#4d5a37;--cds-color-pistachio-700:#6a7d4d;--cds-color-pistachio-600:#84aa45;--cds-color-pistachio-500:#a5ca67;--cds-color-pistachio-400:#c0e18a;--cds-color-pistachio-300:#e0f0c5;--cds-color-pistachio-200:#eaf5d8;--cds-color-pistachio-100:#f2f9e8;--cds-color-pistachio-50:#f8fcef;--cds-color-berry-900:#4e1758;--cds-color-berry-800:#6e1e7c;--cds-color-berry-700:#9829ac;--cds-color-berry-600:#b840cd;--cds-color-berry-500:#d78ae1;--cds-color-berry-400:#f7b4ff;--cds-color-berry-300:#fbdbff;--cds-color-berry-200:#fce9ff;--cds-color-berry-100:#fbf3fc;--cds-color-berry-50:#fcf7fd;--cds-color-orange-900:#663005;--cds-color-orange-800:#884d33;--cds-color-orange-700:#a55d3e;--cds-color-orange-600:#c6824d;--cds-color-orange-500:#f7a360;--cds-color-orange-400:#f9b985;--cds-color-orange-300:#fcdabf;--cds-color-orange-200:#feebdc;--cds-color-orange-100:#fff5e6;--cds-color-orange-50:#fff9f0;--cds-color-aqua-900:#174458;--cds-color-aqua-800:#265f77;--cds-color-aqua-700:#2a7ea3;--cds-color-aqua-600:#4da2c6;--cds-color-aqua-500:#60caf7;--cds-color-aqua-400:#85d6f9;--cds-color-aqua-300:#b0e5fb;--cds-color-aqua-200:#d5f3ff;--cds-color-aqua-100:#e5f7ff;--cds-color-aqua-50:#f5fcff;--cds-color-yellow-900:#584c1a;--cds-color-yellow-800:#7c6919;--cds-color-yellow-700:#c2a63a;--cds-color-yellow-600:#dcb831;--cds-color-yellow-500:#f2d049;--cds-color-yellow-400:#f6de80;--cds-color-yellow-300:#faecb6;--cds-color-yellow-200:#fcf4d3;--cds-color-yellow-100:#fdf8e5;--cds-color-yellow-50:#f9f7ef;--cds-color-green-900:#114a30;--cds-color-green-800:#176340;--cds-color-green-700:#1d7c50;--cds-color-green-600:#499471;--cds-color-green-500:#60b08b;--cds-color-green-400:#99c4b0;--cds-color-green-300:#b6dbca;--cds-color-green-200:#d0e8dd;--cds-color-green-100:#e8f2ee;--cds-color-green-50:#f7fbf9;--cds-color-red-900:#710001;--cds-color-red-800:#a90001;--cds-color-red-700:#d30001;--cds-color-red-600:#dc3334;--cds-color-red-500:#e56667;--cds-color-red-400:#ff9899;--cds-color-red-300:#ffbfc0;--cds-color-red-200:#ffd3d3;--cds-color-red-100:#fbe6e6;--cds-color-red-50:#fdf5f5;--cds-color-black-700:#191919;--cds-color-black-500:#1f1f1f;--cds-color-grey-900:#262828;--cds-color-grey-800:#48494a;--cds-color-grey-700:#636363;--cds-color-grey-600:#757778;--cds-color-grey-500:#929599;--cds-color-grey-400:#c3c5c6;--cds-color-grey-300:#e5e7e8;--cds-color-grey-200:#f0f2f3;--cds-color-grey-100:#f5f7f8;--cds-color-grey-50:#f9fcfd;--cds-color-white-0:#ffffff;--cds-color-purple-900:#2a215d;--cds-color-purple-800:#382d8b;--cds-color-purple-700:#4437a8;--cds-color-purple-600:#6a52e9;--cds-color-purple-500:#8875ed;--cds-color-purple-400:#b4a6ff;--cds-color-purple-300:#c9c0ff;--cds-color-purple-200:#e6e1ff;--cds-color-purple-100:#f1effd;--cds-color-purple-50:#f7f6fe;--cds-color-blue-900:#00255d;--cds-color-blue-800:#003584;--cds-color-blue-700:#00419e;--cds-color-blue-600:#0056d2;--cds-color-blue-500:#3f8dff;--cds-color-blue-400:#86b7ff;--cds-color-blue-300:#aecfff;--cds-color-blue-200:#d9e8ff;--cds-color-blue-100:#ebf3ff;--cds-color-blue-50:#f3f8ff;--cds-color-transparent-0:rgba(0, 0, 0, 0);--cds-border-radius-max:50px;--cds-border-radius-400:32px;--cds-border-radius-200:16px;--cds-border-radius-100:8px;--cds-border-radius-50:4px;--cds-border-radius-25:2px;--cds-spacing-1400:112px;--cds-spacing-1000:80px;--cds-spacing-800:64px;--cds-spacing-600:48px;--cds-spacing-400:32px;--cds-spacing-300:24px;--cds-spacing-200:16px;--cds-spacing-150:12px;--cds-spacing-100:8px;--cds-spacing-50:4px;--cds-font-family-body:var(--cds-font-family-source-sans-pro);--cds-font-family-title:var(--cds-font-family-source-sans-pro);--cds-font-family-display:var(--cds-font-family-source-sans-pro);--cds-font-size-body1:var(--cds-font-size-200);--cds-font-size-title3:var(--cds-font-size-200);--cds-font-size-title2:var(--cds-font-size-250);--cds-font-size-title1-xs:var(--cds-font-size-300);--cds-font-size-title1-lg:var(--cds-font-size-350);--cds-font-size-display2-xs:var(--cds-font-size-400);--cds-font-size-display2-sm:var(--cds-font-size-450);--cds-font-size-display2-lg:var(--cds-font-size-550);--cds-font-size-display1-xs:var(--cds-font-size-600);--cds-font-size-display1-sm:var(--cds-font-size-800);--cds-font-size-display1-lg:var(--cds-font-size-1050);--cds-letter-spacing-body2:var(--cds-letter-spacing-0);--cds-letter-spacing-body1:var(--cds-letter-spacing-0);--cds-letter-spacing-title4:var(--cds-letter-spacing-125);--cds-letter-spacing-title3:var(--cds-letter-spacing-125);--cds-letter-spacing-title2:var(--cds-letter-spacing-125);--cds-letter-spacing-title1:var(--cds-letter-spacing-125);--cds-letter-spacing-display2:var(--cds-letter-spacing-125);--cds-letter-spacing-display1:var(--cds-letter-spacing-250);--cds-line-height-body2:var(--cds-line-height-250);--cds-line-height-body1:var(--cds-line-height-300);--cds-line-height-title4:var(--cds-line-height-250);--cds-line-height-title3:var(--cds-line-height-300);--cds-line-height-title2:var(--cds-line-height-350);--cds-line-height-title1-xs:var(--cds-line-height-400);--cds-line-height-title1-lg:var(--cds-line-height-450);--cds-line-height-display2-xs:var(--cds-line-height-500);--cds-line-height-display2-sm:var(--cds-line-height-600);--cds-line-height-display2-lg:var(--cds-line-height-650);--cds-line-height-display1-xs:var(--cds-line-height-700);--cds-line-height-display1-sm:var(--cds-line-height-900);--cds-line-height-display1-lg:var(--cds-line-height-1150);--cds-color-utility-warning:var(--cds-color-yellow-500);--cds-color-callouts-background-primary-strong:var(--cds-color-blue-900);--cds-color-callouts-background-primary:var(--cds-color-blue-600);--cds-color-callouts-background-tertiary-weak:var(--cds-color-yellow-50);--cds-color-callouts-background-secondary-weak:var(--cds-color-purple-50);--cds-color-callouts-background-primary-weak:var(--cds-color-blue-100);--cds-color-callouts-tertiary-invert:var(--cds-color-aqua-300);--cds-color-callouts-secondary-invert:var(--cds-color-yellow-500);--cds-color-callouts-tertiary:var(--cds-color-blue-800);--cds-color-callouts-secondary:var(--cds-color-purple-800);--cds-color-feedback-background-warning-weak:var(--cds-color-yellow-50);--cds-color-feedback-background-informative-weak:var(--cds-color-blue-50);--cds-color-feedback-background-success-weak:var(--cds-color-green-50);--cds-color-feedback-background-error-weak:var(--cds-color-red-50);--cds-color-feedback-warning:var(--cds-color-yellow-800);--cds-color-feedback-informative:var(--cds-color-blue-600);--cds-color-feedback-success-invert-weak:var(--cds-color-green-100);--cds-color-feedback-success-hover:var(--cds-color-green-800);--cds-color-feedback-success:var(--cds-color-green-700);--cds-color-feedback-error-invert-weak:var(--cds-color-red-100);--cds-color-feedback-error-hover:var(--cds-color-red-800);--cds-color-feedback-error:var(--cds-color-red-700);--cds-color-neutral-background-primary:var(--cds-color-white-0);--cds-color-neutral-background-primary-weak:var(--cds-color-grey-100);--cds-color-neutral-stroke-primary-invert:var(--cds-color-white-0);--cds-color-neutral-stroke-primary-weak:var(--cds-color-grey-300);--cds-color-neutral-stroke-primary:var(--cds-color-grey-500);--cds-color-neutral-disabled-weak:var(--cds-color-grey-100);--cds-color-neutral-disabled-strong:var(--cds-color-grey-400);--cds-color-neutral-disabled:var(--cds-color-grey-300);--cds-color-neutral-primary-invert:var(--cds-color-white-0);--cds-color-neutral-primary-weak:var(--cds-color-grey-700);--cds-color-neutral-primary:var(--cds-color-black-500);--cds-color-interactive-background-primary-selected-weak:var(--cds-color-purple-50);--cds-color-interactive-background-primary-pressed-weak:var(--cds-color-purple-50);--cds-color-interactive-background-primary-hover-weak:var(--cds-color-blue-50);--cds-color-interactive-stroke-primary-focus-invert:var(--cds-color-blue-50);--cds-color-interactive-stroke-primary-focus:var(--cds-color-purple-600);--cds-color-interactive-primary-selected:var(--cds-color-purple-800);--cds-color-interactive-primary-pressed:var(--cds-color-purple-800);--cds-color-interactive-primary-hover:var(--cds-color-blue-700);--cds-color-interactive-primary:var(--cds-color-blue-600);--cds-typography-body2:var(--cds-font-weight-400) var(--cds-font-size-body2)/var(--cds-line-height-body2) var(--cds-font-family-body);--cds-typography-body1:var(--cds-font-weight-400) var(--cds-font-size-body1)/var(--cds-line-height-body1) var(--cds-font-family-body);--cds-typography-title4:var(--cds-font-weight-700) var(--cds-font-size-title4)/var(--cds-line-height-title4) var(--cds-font-family-title);--cds-typography-title3-strong:var(--cds-font-weight-700) var(--cds-font-size-title3)/var(--cds-line-height-title3) var(--cds-font-family-title);--cds-typography-title3:var(--cds-font-weight-600) var(--cds-font-size-title3)/var(--cds-line-height-title3) var(--cds-font-family-title);--cds-typography-title2-weak:var(--cds-font-weight-400) var(--cds-font-size-title2)/var(--cds-line-height-title2) var(--cds-font-family-title);--cds-typography-title2:var(--cds-font-weight-600) var(--cds-font-size-title2)/var(--cds-line-height-title2) var(--cds-font-family-title);--cds-typography-title1-xs-weak:var(--cds-font-weight-400) var(--cds-font-size-title1-xs)/var(--cds-line-height-title1-xs) var(--cds-font-family-title);--cds-typography-title1-xs:var(--cds-font-weight-600) var(--cds-font-size-title1-xs)/var(--cds-line-height-title1-xs) var(--cds-font-family-title);--cds-typography-title1-weak:var(--cds-font-weight-400) var(--cds-font-size-title1-lg)/var(--cds-line-height-title1-lg) var(--cds-font-family-title);--cds-typography-title1:var(--cds-font-weight-600) var(--cds-font-size-title1-lg)/var(--cds-line-height-title1-lg) var(--cds-font-family-title);--cds-typography-display2-xs-weak:var(--cds-font-weight-400) var(--cds-font-size-display2-xs)/var(--cds-line-height-display2-xs) var(--cds-font-family-display);--cds-typography-display2-xs:var(--cds-font-weight-600) var(--cds-font-size-display2-xs)/var(--cds-line-height-display2-xs) var(--cds-font-family-display);--cds-typography-display2-sm-weak:var(--cds-font-weight-400) var(--cds-font-size-display2-sm)/var(--cds-line-height-display2-sm) var(--cds-font-family-display);--cds-typography-display2-sm:var(--cds-font-weight-600) var(--cds-font-size-display2-sm)/var(--cds-line-height-display2-sm) var(--cds-font-family-display);--cds-typography-display2-weak:var(--cds-font-weight-400) var(--cds-font-size-display2-lg)/var(--cds-line-height-display2-lg) var(--cds-font-family-display);--cds-typography-display2:var(--cds-font-weight-600) var(--cds-font-size-display2-lg)/var(--cds-line-height-display2-lg) var(--cds-font-family-display);--cds-typography-display1-xs-weak:var(--cds-font-weight-400) var(--cds-font-size-display1-xs)/var(--cds-line-height-display1-xs) var(--cds-font-family-display);--cds-typography-display1-xs:var(--cds-font-weight-600) var(--cds-font-size-display1-xs)/var(--cds-line-height-display1-xs) var(--cds-font-family-display);--cds-typography-display1-sm-weak:var(--cds-font-weight-400) var(--cds-font-size-display1-sm)/var(--cds-line-height-display1-sm) var(--cds-font-family-display);--cds-typography-display1-sm:var(--cds-font-weight-600) var(--cds-font-size-display1-sm)/var(--cds-line-height-display1-sm) var(--cds-font-family-display);--cds-typography-display1-weak:var(--cds-font-weight-400) var(--cds-font-size-display1-lg)/var(--cds-line-height-display1-lg) var(--cds-font-family-display);--cds-typography-display1:var(--cds-font-weight-600) var(--cds-font-size-display1-lg)/var(--cds-line-height-display1-lg) var(--cds-font-family-display);}@media (max-width: 1023.95px){:root{--cds-typography-display1:var(--cds-typography-display1-sm);--cds-typography-display1-weak:var(--cds-typography-display1-sm-weak);--cds-typography-display2:var(--cds-typography-display2-sm);--cds-typography-display2-weak:var(--cds-typography-display2-sm-weak);}}@media (max-width: 599.95px){:root{--cds-typography-display1:var(--cds-typography-display1-xs);--cds-typography-display1-weak:var(--cds-typography-display1-xs-weak);--cds-typography-display2:var(--cds-typography-display2-xs);--cds-typography-display2-weak:var(--cds-typography-display2-xs-weak);--cds-typography-title1:var(--cds-typography-title1-xs);--cds-typography-title1-weak:var(--cds-typography-title1-xs-weak);}}:root[dir='rtl']{--cds-font-family-body:var(--cds-font-family-boutros-coursera);--cds-font-family-title:var(--cds-font-family-boutros-coursera);--cds-font-family-display:var(--cds-font-family-boutros-coursera);--cds-letter-spacing-body2:var(--cds-letter-spacing-0);--cds-letter-spacing-body1:var(--cds-letter-spacing-0);--cds-letter-spacing-title4:var(--cds-letter-spacing-0);--cds-letter-spacing-title3:var(--cds-letter-spacing-0);--cds-letter-spacing-title2:var(--cds-letter-spacing-0);--cds-letter-spacing-title1:var(--cds-letter-spacing-0);--cds-letter-spacing-display2:var(--cds-letter-spacing-0);--cds-letter-spacing-display1:var(--cds-letter-spacing-0);}@media (max-width: 1023.95px){:root[dir='rtl']{--cds-typography-display1:var(--cds-typography-display1-sm);--cds-typography-display1-weak:var(--cds-typography-display1-sm-weak);--cds-typography-display2:var(--cds-typography-display2-sm);--cds-typography-display2-weak:var(--cds-typography-display2-sm-weak);}}@media (max-width: 599.95px){:root[dir='rtl']{--cds-typography-display1:var(--cds-typography-display1-xs);--cds-typography-display1-weak:var(--cds-typography-display1-xs-weak);--cds-typography-display2:var(--cds-typography-display2-xs);--cds-typography-display2-weak:var(--cds-typography-display2-xs-weak);--cds-typography-title1:var(--cds-typography-title1-xs);--cds-typography-title1-weak:var(--cds-typography-title1-xs-weak);}}.css-1lm4h9m{position:relative;top:0;width:100%;background:var(--cds-color-black-700);z-index:999;height:calc(40px + 16px);}@media (max-width:1439.95px){.css-1lm4h9m{height:calc(40px + 16px);}}@media (max-width:1023.95px){.css-1lm4h9m{height:calc(32px + 16px);}}@media (max-width:599.95px){.css-1lm4h9m{height:calc(32px + 12px);}}.css-gpq5lz{padding-left:16px!important;padding-right:16px!important;max-width:none;}@media (min-width:0px){.css-gpq5lz{padding:0 var(--cds-spacing-200);}}@media (min-width:1024px){.css-gpq5lz{padding:0 var(--cds-spacing-600);}}@media (min-width:0px){.css-1kspkkz{margin:-4px;width:calc(100% + 8px);}.css-1kspkkz>.cds-grid-item{padding:4px;}}@media (min-width:600px){.css-1kspkkz{margin:-8px;width:calc(100% + 16px);}.css-1kspkkz>.cds-grid-item{padding:8px;}}@media (min-width:1024px){.css-1kspkkz{margin:-16px;width:calc(100% + 32px);}.css-1kspkkz>.cds-grid-item{padding:16px;}}.css-az8ufr{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-flex-direction:row;-ms-flex-direction:row;flex-direction:row;-webkit-box-pack:start;-ms-flex-pack:start;-webkit-justify-content:flex-start;justify-content:flex-start;}.css-j6ha89{overflow:hidden;height:40px;}.css-1iebf5p{margin-left:0;margin-right:-8px;padding-left:0;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;list-style:none;overflow-x:scroll;}.css-1t811zk{vertical-align:baseline;display:inline;color:var(--cds-color-interactive-primary);padding:0;-webkit-text-decoration:none;text-decoration:none;font:inherit;letter-spacing:inherit;margin:0 8px;padding:0 8px;line-height:40px;height:40px;font-size:16px;-webkit-text-decoration:none!important;text-decoration:none!important;font-family:'Source Sans Pro',Arial,sans-serif;color:var(--cds-color-white-0)!important;box-sizing:border-box;border-bottom:6px solid transparent;position:relative;border-bottom:6px solid var(--cds-color-white-0);font-weight:600;}.css-1t811zk:hover{color:var(--cds-color-interactive-primary-hover);-webkit-text-decoration:underline;text-decoration:underline;}.css-1t811zk:focus{outline:none;}.css-1t811zk:visited:not(.cds-link-focusVisible){color:var(--cds-color-interactive-primary);}.css-1t811zk.cds-link-focusVisible{outline:1px solid transparent;outline-offset:2px;border-radius:var(--cds-border-radius-50);-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-1t811zk:hover,.css-1t811zk:focus{background:var(--cds-color-white-0)!important;color:var(--cds-color-black-700)!important;}.css-1t811zk:hover .forStyle,.css-1t811zk:focus .forStyle{color:inherit;}.css-9o34zd{color:var(--cds-color-grey-300);font-weight:400;}.css-ia3qe1{vertical-align:baseline;display:inline;color:var(--cds-color-interactive-primary);padding:0;-webkit-text-decoration:none;text-decoration:none;font:inherit;letter-spacing:inherit;margin:0 8px;padding:0 8px;line-height:40px;height:40px;font-size:16px;-webkit-text-decoration:none!important;text-decoration:none!important;font-family:'Source Sans Pro',Arial,sans-serif;color:var(--cds-color-white-0)!important;box-sizing:border-box;border-bottom:6px solid transparent;position:relative;}.css-ia3qe1:hover{color:var(--cds-color-interactive-primary-hover);-webkit-text-decoration:underline;text-decoration:underline;}.css-ia3qe1:focus{outline:none;}.css-ia3qe1:visited:not(.cds-link-focusVisible){color:var(--cds-color-interactive-primary);}.css-ia3qe1.cds-link-focusVisible{outline:1px solid transparent;outline-offset:2px;border-radius:var(--cds-border-radius-50);-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-ia3qe1:hover,.css-ia3qe1:focus{background:var(--cds-color-white-0)!important;color:var(--cds-color-black-700)!important;}.css-ia3qe1:hover .forStyle,.css-ia3qe1:focus .forStyle{color:inherit;}.css-1hjgzz4{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-flex-direction:row;-ms-flex-direction:row;flex-direction:row;-webkit-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;-webkit-align-items:center;-webkit-box-align:center;-ms-flex-align:center;align-items:center;}.css-1hjgzz4 .rc-CourseraLogo{width:127px;height:32px;}.css-1hjgzz4 .rc-CourseraLogo.team-logo{width:237px;height:32px;}.css-1hjgzz4 .rc-CourseraLogo.coursera-plus-logo{width:177px;height:20px;-webkit-transform:translateY(5px);-moz-transform:translateY(5px);-ms-transform:translateY(5px);transform:translateY(5px);}.css-1hjgzz4 .header-logo{min-height:30px;max-height:32px;max-width:200px;min-width:30px;}@media (min-width: 1200px){.css-1hjgzz4 .header-logo{max-width:350px;}}.css-1hjgzz4 .header-pipe{margin:8px 16px;height:26px;border-left:1px solid var(--cds-color-grey-500);}.css-19qryfx{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;-webkit-align-items:center;-webkit-box-align:center;-ms-flex-align:center;align-items:center;}.css-9mc38z{margin:auto 0;background:none;border:none;height:36px;width:100%;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-align-items:center;-webkit-box-align:center;-ms-flex-align:center;align-items:center;border-radius:4px;background-color:var(--cds-color-blue-600);font-weight:bold;cursor:default;padding:0;position:relative;color:var(--cds-color-white-0);}.css-1ebuhnc{font-family:Source Sans Pro,Arial,sans-serif;font-size:inherit;height:36px;top:0;width:100%;line-height:36px;text-align:center;position:relative;padding-left:4px;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;-webkit-align-items:center;-webkit-box-align:center;-ms-flex-align:center;align-items:center;}.css-1ebuhnc span{font-size:inherit;}@media screen (max-width: 1400px) :{.css-1ebuhnc{padding-left:2px;}}.css-1ygmvp{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title3-strong);letter-spacing:var(--cds-letter-spacing-title3);color:500:var(--cds-color-black-500);700:var(--cds-color-black-700);}.css-1ygmvp strong{font-weight:var(--cds-font-weight-700);}.css-t7eghb{margin-left:6px;}.css-16mgpnh{-webkit-box-flex:0;-webkit-flex-grow:0;-ms-flex-positive:0;flex-grow:0;-webkit-flex-shrink:0;-ms-flex-negative:0;flex-shrink:0;}.css-qgqral{border-radius:var(--cds-border-radius-50);border-radius:var(--cds-border-radius-50);text-transform:none;max-width:320px;min-width:unset;-webkit-transition:none;transition:none;box-sizing:border-box;-webkit-text-decoration:none;text-decoration:none;color:var(--cds-color-interactive-primary);font:var(--cds-typography-title3-strong);letter-spacing:var(--cds-letter-spacing-title3);padding:var(--cds-spacing-150) var(--cds-spacing-200);min-width:144px;}.css-qgqral:focus{outline:none;}.css-qgqral.cds-buttonBase-focusVisible::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-qgqral:hover{-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);background-color:var( --cds-color-interactive-background-primary-hover-weak );}.css-qgqral.cds-button-focusVisible{-webkit-text-decoration:underline;text-decoration:underline;background-color:var( --cds-color-interactive-background-primary-hover-weak );color:var(--cds-color-interactive-primary-hover);}.css-qgqral:active{-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-pressed);background-color:var( --cds-color-interactive-background-primary-pressed-weak );}.css-qgqral:active.cds-button-disableElevation::after{content:unset;}.css-qgqral.cds-button-disabled{color:var(--cds-color-neutral-disabled-strong);}.css-qgqral .cds-button-label{text-transform:none;width:100%;display:inherit;-webkit-align-items:inherit;-webkit-box-align:inherit;-ms-flex-align:inherit;align-items:inherit;-webkit-box-pack:inherit;-ms-flex-pack:inherit;-webkit-justify-content:inherit;justify-content:inherit;}.css-qgqral.cds-button-loadingOpacity .cds-button-label{opacity:0.6;}.css-qgqral:focus{outline:none;}.css-qgqral.cds-button-focusVisible{outline:1px solid transparent;}.css-qgqral.cds-button-focusVisible.cds-button-disableElevation::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-qgqral .cds-button-endIcon{margin-right:0;display:inherit;margin-left:8px;}.css-qgqral .cds-button-startIcon{margin-left:0;display:inherit;margin-right:8px;}.css-qgqral:hover,.css-qgqral:focus{-webkit-text-decoration:none;text-decoration:none;}@media screen and (max-width: 1230px) and (min-width: 925px){.css-qgqral{min-width:103px;}}.css-7kgszr{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);}.css-7kgszr strong{font-weight:var(--cds-font-weight-700);}@media screen and (max-width: 1230px) and (min-width: 925px){.css-7kgszr{display:none;}}.css-fzzre6{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);display:none;}.css-fzzre6 strong{font-weight:var(--cds-font-weight-700);}@media screen and (max-width: 1230px) and (min-width: 925px){.css-fzzre6{display:block;}}.css-awzoag{color:var(--cds-color-black-500);}.css-1b641yt{background-color:var(--cds-color-white-0);border-radius:4px;box-shadow:0 4px 4px rgb(0 0 0 / 25%);display:none;margin-top:-5px;padding:11px 13px;position:absolute;width:350px;z-index:100;max-height:calc(80vh - 80px);overflow-y:auto;}.css-1ld8h5b{list-style-type:none;margin:0;padding:0;}.css-1rt2bhc{border-radius:var(--cds-border-radius-50);border-radius:var(--cds-border-radius-50);text-transform:none;max-width:320px;min-width:unset;-webkit-transition:none;transition:none;box-sizing:border-box;-webkit-text-decoration:none;text-decoration:none;color:var(--cds-color-interactive-primary);font:var(--cds-typography-title3-strong);letter-spacing:var(--cds-letter-spacing-title3);padding:var(--cds-spacing-150) var(--cds-spacing-200);display:block;max-width:unset;}.css-1rt2bhc:focus{outline:none;}.css-1rt2bhc.cds-buttonBase-focusVisible::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-1rt2bhc:hover{-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);background-color:var( --cds-color-interactive-background-primary-hover-weak );}.css-1rt2bhc.cds-button-focusVisible{-webkit-text-decoration:underline;text-decoration:underline;background-color:var( --cds-color-interactive-background-primary-hover-weak );color:var(--cds-color-interactive-primary-hover);}.css-1rt2bhc:active{-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-pressed);background-color:var( --cds-color-interactive-background-primary-pressed-weak );}.css-1rt2bhc:active.cds-button-disableElevation::after{content:unset;}.css-1rt2bhc.cds-button-disabled{color:var(--cds-color-neutral-disabled-strong);}.css-1rt2bhc .cds-button-label{text-transform:none;width:100%;display:inherit;-webkit-align-items:inherit;-webkit-box-align:inherit;-ms-flex-align:inherit;align-items:inherit;-webkit-box-pack:inherit;-ms-flex-pack:inherit;-webkit-justify-content:inherit;justify-content:inherit;}.css-1rt2bhc.cds-button-loadingOpacity .cds-button-label{opacity:0.6;}.css-1rt2bhc:focus{outline:none;}.css-1rt2bhc.cds-button-focusVisible{outline:1px solid transparent;}.css-1rt2bhc.cds-button-focusVisible.cds-button-disableElevation::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-1rt2bhc .cds-button-endIcon{margin-right:0;display:inherit;margin-left:8px;}.css-1rt2bhc .cds-button-startIcon{margin-left:0;display:inherit;margin-right:8px;}.css-1rt2bhc:hover,.css-1rt2bhc:focus{-webkit-text-decoration:none;text-decoration:none;}.css-f75xrw{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title4);letter-spacing:var(--cds-letter-spacing-title4);display:block;text-align:left;width:100%;}.css-f75xrw strong{font-weight:var(--cds-font-weight-700);}.css-1430hw9{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);display:block;text-align:left;width:100%;}.css-1430hw9 strong{font-weight:var(--cds-font-weight-700);}@media (max-width:599.95px){.css-17mzy6f{display:none;}}.css-h1jogs{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title2);letter-spacing:var(--cds-letter-spacing-title2);}.css-h1jogs strong{font-weight:var(--cds-font-weight-700);}.css-7avemv{margin:-8px;width:calc(100% + 16px);}.css-7avemv>.cds-grid-item{padding:8px;}.css-dmxkm1{color:var(--cds-color-neutral-primary-weak);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);}.css-dmxkm1 strong{font-weight:var(--cds-font-weight-700);}.css-mu0bf1{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title4);letter-spacing:var(--cds-letter-spacing-title4);}.css-mu0bf1 strong{font-weight:var(--cds-font-weight-700);}.css-3mda7n{vertical-align:text-top;margin-left:var(--cds-spacing-100);}.css-e7lgfl{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title3);letter-spacing:var(--cds-letter-spacing-title3);}.css-e7lgfl strong{font-weight:var(--cds-font-weight-700);}.css-1825nsb{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title2-weak);letter-spacing:var(--cds-letter-spacing-title2);}.css-1825nsb strong{font-weight:var(--cds-font-weight-700);}@media (min-width:0px){.css-1cxrrkn{padding:0 var(--cds-spacing-200);}}@media (min-width:1024px){.css-1cxrrkn{padding:0 var(--cds-spacing-600);}}@media (max-width:599.95px){.css-p2g82x{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;display-content:space-between;}}.css-15utrac{margin-top:25px;max-width:151px;max-height:120px;}.css-15utrac img{display:block;margin:0 auto;}.css-f70avt{margin:auto;}.css-8traci{background-color:white;overflow-x:hidden;overflow-y:auto;position:relative;width:100%;}.css-1oquxbd{max-width:782px;margin:0 auto;padding:0 16px;}@media (max-width:599.95px){.css-1oquxbd{width:100%;}}.css-1psltl0{position:relative;}.css-wyvrez{margin:-4px;width:calc(100% + 8px);-webkit-align-items:center;-webkit-box-align:center;-ms-flex-align:center;align-items:center;margin-top:1.5rem;margin-bottom:2.5rem;-webkit-box-flex-wrap:nowrap;-webkit-flex-wrap:nowrap;-ms-flex-wrap:nowrap;flex-wrap:nowrap;height:24px;position:relative;z-index:1;}.css-wyvrez>.cds-grid-item{padding:4px;}.css-1tf9jzj{vertical-align:baseline;display:inline;color:var(--cds-color-interactive-primary);padding:0;-webkit-text-decoration:none;text-decoration:none;font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);display:-webkit-inline-box;display:-webkit-inline-flex;display:-ms-inline-flexbox;display:inline-flex;}.css-1tf9jzj:hover{color:var(--cds-color-interactive-primary-hover);-webkit-text-decoration:underline;text-decoration:underline;}.css-1tf9jzj:focus{outline:none;}.css-1tf9jzj:visited:not(.cds-link-focusVisible){color:var(--cds-color-interactive-primary);}.css-1tf9jzj.cds-link-focusVisible{outline:1px solid transparent;outline-offset:2px;border-radius:var(--cds-border-radius-50);-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-1tf9jzj:hover span{color:#0056d2;}.css-vz2uro{color:var(--cds-color-grey-700);bottom:-2px;width:6px;position:relative;}.css-4ei6zk{overflow:hidden;white-space:nowrap;text-overflow:ellipsis;}.css-1h62nr4{color:var(--cds-color-neutral-primary);font:var(--cds-typography-display2);letter-spacing:var(--cds-letter-spacing-display2);margin-bottom:1rem;position:relative;}.css-1h62nr4 strong{font-weight:var(--cds-font-weight-700);}.css-1h0ctmq{margin-bottom:1rem;}@media (max-width:1023.95px){.css-1h0ctmq{max-width:100%;}}.css-51cxur{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);}.css-51cxur strong{font-weight:var(--cds-font-weight-700);}.css-cw5dnj{font-size:0.875rem;line-height:1.25rem;font-family:'Source Sans Pro',Arial,sans-serif;font-weight:700;letter-spacing:-0.1px;}.css-oa84zy{color:var(--cds-color-callouts-tertiary);font:var(--cds-typography-title2-weak);letter-spacing:var(--cds-letter-spacing-title2);font-size:1.125rem;line-height:1.875rem;color:#002d72;margin-bottom:1.5rem;}.css-oa84zy strong{font-weight:var(--cds-font-weight-700);}.css-medvl2{width:100%;margin-bottom:3rem;}@media (max-width:1023.95px){.css-medvl2{width:unset;margin-left:-16px;margin-right:-16px;}}.css-14k8f4i{height:0;overflow:hidden;padding-bottom:45.33333333333333%;width:100%;}.css-do4pef{margin-bottom:4rem;}.css-498j6n>.rc-RichText{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);letter-spacing:var(--cds-letter-spacing-125);color:var(--cds-color-black-500);}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable{margin:24px 0;}@media (max-width: 767px){.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable{overflow:scroll;height:300px;}}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table{margin:unset;border-radius:4px;letter-spacing:0;font-size:var(--cds-font-size-body2);line-height:var(--cds-line-height-body2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table th,.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table td{border:0;}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table tr{height:53px;}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table thead tr{background-color:#dceef6;font-weight:bold;}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table tr:nth-of-type(2n + 2){background-color:#f5f5f5;}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table td ul{max-width:-webkit-fit-content;max-width:-moz-fit-content;max-width:fit-content;padding-right:45px;}.css-498j6n>.rc-RichText .rc-Markdown.rc-ArticleTable table td ul li{text-align:start;}.css-498j6n>.rc-RichText ol,.css-498j6n>.rc-RichText ul{padding-left:45px;margin-left:0;margin-bottom:16px;}.css-498j6n>.rc-RichText .vjs-menu-content{padding-left:0;font-size:inherit;margin:0;}.css-498j6n>.rc-RichText li p{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);letter-spacing:var(--cds-letter-spacing-125);font-size:18px;margin-top:0;margin-bottom:0;}.css-498j6n>.rc-RichText>p{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);letter-spacing:var(--cds-letter-spacing-125);font-size:18px;margin-top:24px;margin-bottom:0;}.css-498j6n>.rc-RichText>h2{font-size:var(--cds-font-size-title1-lg);line-height:var(--cds-line-height-title1-lg);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-600);letter-spacing:var(--cds-letter-spacing-125);font-size:30px;}@media (max-width:599.95px){.css-498j6n>.rc-RichText>h2{font-size:var(--cds-font-size-title1-xs);line-height:var(--cds-line-height-title1-xs);}}.css-498j6n>.rc-RichText>h3{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-600);letter-spacing:var(--cds-letter-spacing-125);font-size:24px;}.css-498j6n>.rc-RichText>h4{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-600);letter-spacing:var(--cds-letter-spacing-125);font-size:20px;}.css-498j6n>.rc-RichText>h2,.css-498j6n>.rc-RichText >h3,.css-498j6n>.rc-RichText >h4{margin-top:3rem;margin-bottom:0;}.css-498j6n>.rc-RichText p>a{color:var(--cds-color-blue-600);-webkit-text-decoration:underline;text-decoration:underline;}.css-498j6n>.rc-RichText p>a:hover{-webkit-text-decoration:none;text-decoration:none;}.css-498j6n>.rc-RichText p>a:visited{color:var(--cds-color-purple-800);}.css-498j6n>.rc-RichText b,.css-498j6n>.rc-RichText strong{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-600);letter-spacing:var(--cds-letter-spacing-125);font-size:inherit;line-height:inherit;}.css-498j6n>.rc-RichText figure{width:100%;margin-bottom:0;}.css-498j6n>.rc-RichText figure img{margin-top:3rem;width:100%;}.css-498j6n>.rc-RichText figcaption{color:var(--cds-color-grey-700);font-weight:400;font-size:14px;line-height:20px;margin-top:24px;}.css-498j6n>.rc-RichText .rc-ArticleHighlight p{margin-top:10px;}.css-498j6n>.rc-RichText blockquote{-webkit-align-items:start;-webkit-box-align:start;-ms-flex-align:start;align-items:start;margin:48px 0 0 0;border-left:none;display:-ms-grid;display:grid;position:relative;-ms-grid-columns:auto 90% auto;grid-template-columns:auto 90% auto;padding:0 20px 0 40px;}.css-498j6n>.rc-RichText blockquote::before{content:url('https://d2j5ihb19pt1hq.cloudfront.net/articles/svg/quote-left.svg');left:40px;position:absolute;}.css-498j6n>.rc-RichText blockquote::after{padding-left:5px;content:url('https://d2j5ihb19pt1hq.cloudfront.net/articles/svg/quote-right.svg');position:absolute;right:20px;}.css-498j6n>.rc-RichText blockquote p{font-size:var(--cds-font-size-title1-lg);line-height:var(--cds-line-height-title1-lg);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);letter-spacing:var(--cds-letter-spacing-125);font-style:italic;padding:0 8px 8px 8px;color:var(--cds-color-blue-800);-ms-grid-column:2;grid-column:2;margin-bottom:0;margin-top:0;}@media (max-width:599.95px){.css-498j6n>.rc-RichText blockquote p{font-size:var(--cds-font-size-title1-xs);line-height:var(--cds-line-height-title1-xs);}}.css-498j6n>.rc-RichText blockquote p b,.css-498j6n>.rc-RichText blockquote p strong{font-size:var(--cds-font-size-title1-lg);line-height:var(--cds-line-height-title1-lg);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-600);letter-spacing:var(--cds-letter-spacing-125);}@media (max-width:599.95px){.css-498j6n>.rc-RichText blockquote p b,.css-498j6n>.rc-RichText blockquote p strong{font-size:var(--cds-font-size-title1-xs);line-height:var(--cds-line-height-title1-xs);}}@media screen and (max-width: 480px){.css-498j6n>.rc-RichText blockquote p{padding:20px 0 0 0;line-height:32px;}}@media screen and (max-width: 480px){.css-498j6n>.rc-RichText blockquote{padding:20px 0 0 0;}.css-498j6n>.rc-RichText blockquote::before{left:0;}.css-498j6n>.rc-RichText blockquote::after{right:0;}}@-webkit-keyframes animation-13ou25g{'0%'{backgroundPosition:-468px 0;}'100%'{backgroundPosition:468px 0;}}@keyframes animation-13ou25g{'0%'{backgroundPosition:-468px 0;}'100%'{backgroundPosition:468px 0;}}.css-sbn28o{min-height:265px;border:1px solid var(--cds-color-grey-300);box-sizing:border-box;box-shadow:0 0 10px rgb(0 0 0 / 20%);border-radius:6px;padding:var(--cds-spacing-400) var(--cds-spacing-300);margin:var(--cds-spacing-300) 0px;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;}@media (max-width:599.95px){.css-sbn28o{min-height:180px;margin:var(--cds-spacing-300) 0px;padding:var(--cds-spacing-300) var(--cds-spacing-200);}}.css-1oiads2{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;}.css-vxk8c1{border-right:1px solid #e5e7e8;padding-right:var(--cds-spacing-100);}.css-vxk8c1 .product-card-subtitle-skeleton{width:400px;height:40px;margin-top:var(--cds-spacing-100);}@media (max-width:599.95px){.css-vxk8c1{border-right:none;}.css-vxk8c1 .product-card-subtitle-skeleton{width:200px;height:30px;}}.css-fbwd48{display:inline-block;border:1px solid var(--cds-color-grey-300);box-sizing:border-box;border-radius:4px;padding:var(--cds-spacing-100);margin-right:var(--cds-spacing-100);}.css-k5mpyx.cds-Skeleton-root{display:block;background-color:var(--cds-color-neutral-disabled);height:1.2em;}.css-k5mpyx.cds-Skeleton-withChildren>\*{visibility:hidden;}.css-k5mpyx.cds-Skeleton-fitContent{max-width:-webkit-fit-content;max-width:-moz-fit-content;max-width:fit-content;}.css-k5mpyx.cds-Skeleton-heightAuto{height:auto;}.css-k5mpyx.cds-Skeleton-text{margin-top:0;margin-bottom:0;height:auto;transform-origin:0 60%;-webkit-transform:scale(1, 0.6);-moz-transform:scale(1, 0.6);-ms-transform:scale(1, 0.6);transform:scale(1, 0.6);border-radius:var(--cds-border-radius-50);}.css-k5mpyx.cds-Skeleton-text:empty::before{content:'\00a0';}.css-k5mpyx.cds-Skeleton-circle{border-radius:50%;}.css-1wb72u0{display:inline-block;width:200px;}@media (max-width:599.95px){.css-1wb72u0{width:150px;}}.css-evvwsy{margin-top:var(--cds-spacing-100);}.css-1prcjsv{margin:var(--cds-spacing-150) 0px 0px var(--cds-spacing-400);width:30%;}.css-1prcjsv .skills-title{margin-top:var(--cds-spacing-300);}@media (max-width:599.95px){.css-1prcjsv{display:none;}}.css-1ka4ogz{margin-bottom:var(--cds-spacing-300);}@media (max-width:599.95px){.css-1ka4ogz{max-width:100%;}}.css-1gbtwq{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);margin:var(--cds-spacing-50) 0;display:block;}.css-1gbtwq strong{font-weight:var(--cds-font-weight-700);}.css-1apon45.cds-Avatar-base{width:64px;height:64px;-webkit-user-select:none;-moz-user-select:none;-ms-user-select:none;user-select:none;box-sizing:content-box;}.css-1apon45 img{width:100%;height:100%;object-fit:cover;object-position:center center;color:transparent;}.css-1apon45 .cds-Avatar-initial{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-align-items:center;-webkit-box-align:center;-ms-flex-align:center;align-items:center;-webkit-box-pack:center;-ms-flex-pack:center;-webkit-justify-content:center;justify-content:center;width:64px;height:64px;background-color:var(--cds-color-callouts-tertiary);color:var(--cds-color-neutral-primary-invert);text-transform:uppercase;}.css-1apon45.cds-Avatar-showBorder{border:1px solid var(--cds-color-neutral-stroke-primary-weak);padding:2px;}.css-1apon45.cds-Avatar-user{border-radius:50%;overflow:hidden;}.css-1apon45.cds-Avatar-user img,.css-1apon45.cds-Avatar-user .cds-Avatar-initial{border-radius:50%;}.css-1apon45.cds-Avatar-organization img,.css-1apon45.cds-Avatar-organization .cds-Avatar-initial{border-radius:8px;}.css-1apon45.cds-Avatar-organization.cds-Avatar-showBorder{border-radius:10px;}.css-1oqze1z{color:var(--cds-color-neutral-primary-invert);font:var(--cds-typography-title1);letter-spacing:var(--cds-letter-spacing-title1);}.css-1oqze1z strong{font-weight:var(--cds-font-weight-700);}.css-11my7b8{vertical-align:baseline;display:inline;color:var(--cds-color-interactive-primary);padding:0;-webkit-text-decoration:underline;text-decoration:underline;font:var(--cds-typography-body1);letter-spacing:var(--cds-letter-spacing-body1);}.css-11my7b8:hover{color:var(--cds-color-interactive-primary-hover);-webkit-text-decoration:none;text-decoration:none;}.css-11my7b8:focus{outline:none;}.css-11my7b8:visited:not(.cds-link-focusVisible){color:var(--cds-color-interactive-primary);}.css-11my7b8.cds-link-focusVisible{outline:1px solid transparent;outline-offset:2px;border-radius:var(--cds-border-radius-50);-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-r76hfr{color:inherit;font:var(--cds-typography-title3);letter-spacing:var(--cds-letter-spacing-title3);}.css-r76hfr strong{font-weight:var(--cds-font-weight-700);}.css-1qe369r{color:var(--cds-color-neutral-primary-weak);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);margin-top:10px;}.css-1qe369r strong{font-weight:var(--cds-font-weight-700);}.css-7oqaxn{min-height:240px;background:url(https://coursera\_assets.s3.amazonaws.com/images/5f7e630debb097dbbd53229909406356.svg) 200px -100px no-repeat,linear-gradient(to right, #0044a4 0%, #0056d2 52.6%, #216bd8 100%);padding:var(--cds-spacing-400) var(--cds-spacing-600);margin:var(--cds-spacing-300) 0 0 0;}@media (max-width: 768px){.css-7oqaxn{width:100vw;position:relative;left:50%;right:50%;margin-left:-50vw;margin-right:-50vw;}}@media (max-width:599.95px){.css-7oqaxn{background:url(https://coursera\_assets.s3.amazonaws.com/images/5f7e630debb097dbbd53229909406356.svg) -40px -80px no-repeat,linear-gradient(to right, #0044a4 0%, #0056d2 52.6%, #216bd8 100%);padding:var(--cds-spacing-300) var(--cds-spacing-300) var(--cds-spacing-400) var(--cds-spacing-300);-webkit-flex-direction:column;-ms-flex-direction:column;flex-direction:column;}}.css-1050z7q{max-width:750px;}@media (max-width:599.95px){.css-1050z7q{padding:var(--cds-spacing-300) var(--cds-spacing-300) var(--cds-spacing-400) var(--cds-spacing-300);-webkit-flex-direction:column;-ms-flex-direction:column;flex-direction:column;}}.css-4pt9po{max-width:320px;-webkit-align-self:center;-ms-flex-item-align:center;-ms-grid-row-align:center;align-self:center;}.css-4pt9po h3{margin-bottom:var(--cds-spacing-300);}@media (max-width:599.95px){.css-4pt9po{max-width:100%;}}.css-zappoz{border-radius:var(--cds-border-radius-50);border-radius:var(--cds-border-radius-50);text-transform:none;max-width:320px;min-width:unset;-webkit-transition:none;transition:none;box-sizing:border-box;color:var(--cds-color-interactive-primary);background-color:var(--cds-color-neutral-background-primary);font:var(--cds-typography-title3-strong);letter-spacing:var(--cds-letter-spacing-title3);padding:var(--cds-spacing-150) var(--cds-spacing-400);}.css-zappoz:focus{outline:none;}.css-zappoz.cds-buttonBase-focusVisible::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-zappoz:hover{color:var(--cds-color-interactive-primary-hover);background-color:var( --cds-color-interactive-background-primary-hover-weak );}.css-zappoz.cds-button-focusVisible{background-color:var( --cds-color-interactive-background-primary-hover-weak );color:var(--cds-color-interactive-primary-hover);}.css-zappoz:active{color:var(--cds-color-interactive-primary-pressed);background-color:var( --cds-color-interactive-background-primary-pressed-weak );}.css-zappoz:active.cds-button-disableElevation::after{content:unset;}.css-zappoz.cds-button-disabled{color:var(--cds-color-neutral-disabled-strong);background:var(--cds-color-neutral-background-primary-weak);}.css-zappoz .cds-button-label{text-transform:none;width:100%;display:inherit;-webkit-align-items:inherit;-webkit-box-align:inherit;-ms-flex-align:inherit;align-items:inherit;-webkit-box-pack:inherit;-ms-flex-pack:inherit;-webkit-justify-content:inherit;justify-content:inherit;}.css-zappoz.cds-button-loadingOpacity .cds-button-label{opacity:0.6;}.css-zappoz:focus{outline:none;}.css-zappoz.cds-button-focusVisible{outline:1px solid transparent;}.css-zappoz.cds-button-focusVisible.cds-button-disableElevation::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-zappoz .cds-button-endIcon{margin-right:0;display:inherit;margin-left:8px;}.css-zappoz .cds-button-startIcon{margin-left:0;display:inherit;margin-right:8px;}.css-4pr2wr{max-width:280px;}.css-4pr2wr:not(.rc-RichText.rc-RichText){list-style-type:none;margin:var(--cds-spacing-200) 0;padding:0;}.css-4pr2wr:not(.rc-RichText.rc-RichText) li{display:-webkit-inline-box;display:-webkit-inline-flex;display:-ms-inline-flexbox;display:inline-flex;}.css-4pr2wr:not(.rc-RichText.rc-RichText) li:not(:last-child){margin-bottom:var(--cds-spacing-150);}.css-4pr2wr:not(.rc-RichText.rc-RichText) li svg{-webkit-align-self:center;-ms-flex-item-align:center;-ms-grid-row-align:center;align-self:center;margin-right:var(--cds-spacing-150);min-width:16px;}@media (max-width:599.95px){.css-4pr2wr{max-width:100%;}.css-4pr2wr:not(.rc-RichText.rc-RichText){margin:0;}.css-4pr2wr:not(.rc-RichText.rc-RichText) li:not(:last-child){margin-bottom:var(--cds-spacing-150);}}.css-1e0vdwy{color:var(--cds-color-white-0);}.css-9yb5qz{color:var(--cds-color-neutral-primary-invert);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);}.css-9yb5qz strong{font-weight:var(--cds-font-weight-700);}.css-19ae0yg{margin-top:var(--cds-spacing-300);}@media (min-width:600px){.css-19ae0yg{display:none;}}.css-om3bz6{border-radius:var(--cds-border-radius-50);border-radius:var(--cds-border-radius-50);text-transform:none;max-width:none;width:100%;min-width:unset;-webkit-transition:none;transition:none;box-sizing:border-box;color:var(--cds-color-interactive-primary);background-color:var(--cds-color-neutral-background-primary);font:var(--cds-typography-title3-strong);letter-spacing:var(--cds-letter-spacing-title3);padding:var(--cds-spacing-150) var(--cds-spacing-400);}.css-om3bz6:focus{outline:none;}.css-om3bz6.cds-buttonBase-focusVisible::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-om3bz6:hover{color:var(--cds-color-interactive-primary-hover);background-color:var( --cds-color-interactive-background-primary-hover-weak );}.css-om3bz6.cds-button-focusVisible{background-color:var( --cds-color-interactive-background-primary-hover-weak );color:var(--cds-color-interactive-primary-hover);}.css-om3bz6:active{color:var(--cds-color-interactive-primary-pressed);background-color:var( --cds-color-interactive-background-primary-pressed-weak );}.css-om3bz6:active.cds-button-disableElevation::after{content:unset;}.css-om3bz6.cds-button-disabled{color:var(--cds-color-neutral-disabled-strong);background:var(--cds-color-neutral-background-primary-weak);}.css-om3bz6 .cds-button-label{text-transform:none;width:100%;display:inherit;-webkit-align-items:inherit;-webkit-box-align:inherit;-ms-flex-align:inherit;align-items:inherit;-webkit-box-pack:inherit;-ms-flex-pack:inherit;-webkit-justify-content:inherit;justify-content:inherit;}.css-om3bz6.cds-button-loadingOpacity .cds-button-label{opacity:0.6;}.css-om3bz6:focus{outline:none;}.css-om3bz6.cds-button-focusVisible{outline:1px solid transparent;}.css-om3bz6.cds-button-focusVisible.cds-button-disableElevation::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-om3bz6 .cds-button-endIcon{margin-right:0;display:inherit;margin-left:8px;}.css-om3bz6 .cds-button-startIcon{margin-left:0;display:inherit;margin-right:8px;}.css-1jke4yk{position:relative;width:100%;}.css-1wawqek{background-color:var(--cds-color-purple-50);border-radius:4px;box-shadow:0px 2px 4px rgba(0, 0, 0, 0.15);margin:45px 0;padding:36px 64px 34px;position:relative;width:100%;z-index:2;}@media (max-width:1023.95px){.css-1wawqek{padding:34px 24px;}}.css-1jk1bc1{z-index:2;}.css-1jk1bc1 h3{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-600);letter-spacing:var(--cds-letter-spacing-125);color:var(--cds-color-purple-800);margin-top:16px;margin-bottom:6px;}@media (max-width:1023.95px){.css-1jk1bc1 h3{margin-bottom:16px;}}.css-1jk1bc1 h3:first-of-type{margin-top:0;}.css-1jk1bc1 p{font-size:var(--cds-font-size-title2);line-height:var(--cds-line-height-title2);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);letter-spacing:var(--cds-letter-spacing-125);margin-top:10px;}.css-1jk1bc1 a{-webkit-text-decoration:underline;text-decoration:underline;}.css-175sjpy{bottom:0;margin:0 -22px -27px 0;position:absolute;right:0;z-index:1;}.css-1pbuafh{margin:var(--cds-spacing-600) 0px;}.css-2gti99{width:750px;height:421px!important;margin-bottom:var(--cds-spacing-300);}.css-2gti99.cds-Skeleton-root{display:block;background-color:var(--cds-color-neutral-disabled);height:1.2em;}.css-2gti99.cds-Skeleton-withChildren>\*{visibility:hidden;}.css-2gti99.cds-Skeleton-fitContent{max-width:-webkit-fit-content;max-width:-moz-fit-content;max-width:fit-content;}.css-2gti99.cds-Skeleton-heightAuto{height:auto;}.css-2gti99.cds-Skeleton-text{margin-top:0;margin-bottom:0;height:auto;transform-origin:0 60%;-webkit-transform:scale(1, 0.6);-moz-transform:scale(1, 0.6);-ms-transform:scale(1, 0.6);transform:scale(1, 0.6);border-radius:var(--cds-border-radius-50);}.css-2gti99.cds-Skeleton-text:empty::before{content:'\00a0';}.css-2gti99.cds-Skeleton-circle{border-radius:50%;}@media (max-width:599.95px){.css-2gti99{width:358px;height:201px!important;}}.css-1br3gvl{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body2);letter-spacing:var(--cds-letter-spacing-body2);margin-bottom:var(--cds-spacing-300);width:600px;}.css-1br3gvl strong{font-weight:var(--cds-font-weight-700);}@media (max-width:599.95px){.css-1br3gvl{width:200px;}}.css-17z8vwx{display:inline-block;width:80px;height:80px!important;margin-right:var(--cds-spacing-100);}.css-17z8vwx.cds-Skeleton-root{display:block;background-color:var(--cds-color-neutral-disabled);height:1.2em;}.css-17z8vwx.cds-Skeleton-withChildren>\*{visibility:hidden;}.css-17z8vwx.cds-Skeleton-fitContent{max-width:-webkit-fit-content;max-width:-moz-fit-content;max-width:fit-content;}.css-17z8vwx.cds-Skeleton-heightAuto{height:auto;}.css-17z8vwx.cds-Skeleton-text{margin-top:0;margin-bottom:0;height:auto;transform-origin:0 60%;-webkit-transform:scale(1, 0.6);-moz-transform:scale(1, 0.6);-ms-transform:scale(1, 0.6);transform:scale(1, 0.6);border-radius:var(--cds-border-radius-50);}.css-17z8vwx.cds-Skeleton-text:empty::before{content:'\00a0';}.css-17z8vwx.cds-Skeleton-circle{border-radius:50%;}@media (max-width:599.95px){.css-17z8vwx{width:70px;height:70px!important;}}.css-15tlhn{width:400px;}.css-15tlhn.cds-Skeleton-root{display:block;background-color:var(--cds-color-neutral-disabled);height:1.2em;}.css-15tlhn.cds-Skeleton-withChildren>\*{visibility:hidden;}.css-15tlhn.cds-Skeleton-fitContent{max-width:-webkit-fit-content;max-width:-moz-fit-content;max-width:fit-content;}.css-15tlhn.cds-Skeleton-heightAuto{height:auto;}.css-15tlhn.cds-Skeleton-text{margin-top:0;margin-bottom:0;height:auto;transform-origin:0 60%;-webkit-transform:scale(1, 0.6);-moz-transform:scale(1, 0.6);-ms-transform:scale(1, 0.6);transform:scale(1, 0.6);border-radius:var(--cds-border-radius-50);}.css-15tlhn.cds-Skeleton-text:empty::before{content:'\00a0';}.css-15tlhn.cds-Skeleton-circle{border-radius:50%;}@media (max-width:599.95px){.css-15tlhn{width:250px;}}.css-1a83thq{width:162px;height:48px!important;}.css-1a83thq.cds-Skeleton-root{display:block;background-color:var(--cds-color-neutral-disabled);height:1.2em;}.css-1a83thq.cds-Skeleton-withChildren>\*{visibility:hidden;}.css-1a83thq.cds-Skeleton-fitContent{max-width:-webkit-fit-content;max-width:-moz-fit-content;max-width:fit-content;}.css-1a83thq.cds-Skeleton-heightAuto{height:auto;}.css-1a83thq.cds-Skeleton-text{margin-top:0;margin-bottom:0;height:auto;transform-origin:0 60%;-webkit-transform:scale(1, 0.6);-moz-transform:scale(1, 0.6);-ms-transform:scale(1, 0.6);transform:scale(1, 0.6);border-radius:var(--cds-border-radius-50);}.css-1a83thq.cds-Skeleton-text:empty::before{content:'\00a0';}.css-1a83thq.cds-Skeleton-circle{border-radius:50%;}@media (max-width:599.95px){.css-1a83thq{width:80%;margin:var(--cds-spacing-100) auto;}}.css-lf3s8z{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title1);letter-spacing:var(--cds-letter-spacing-title1);font-size:24px;margin-bottom:var(--cds-spacing-150);}.css-lf3s8z strong{font-weight:var(--cds-font-weight-700);}.css-be4oay div[role='list']:not(.cds-ShowMoreList-expanded){background-color:var(--cds-color-black-500);background-image:linear-gradient(to bottom, var(--cds-color-black-500), var(--cds-color-white-0));-webkit-background-clip:text;-moz-background-clip:text;-webkit-text-fill-color:transparent;-moz-text-fill-color:transparent;}.css-be4oay div[role='listitem']{letter-spacing:0;font-size:var(--cds-font-size-body1);line-height:var(--cds-line-height-body1);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);font-size:18px;line-height:32px;margin-bottom:0px;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;}.css-be4oay div[role='listitem'] p{letter-spacing:0;font-size:var(--cds-font-size-body1);line-height:var(--cds-line-height-body1);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-400);font-size:18px;line-height:32px;margin-bottom:0px;display:inline-block;}.css-be4oay div[role='listitem'] p a{color:#0056d2;-webkit-text-decoration:underline;text-decoration:underline;}.css-be4oay div>.cds-ShowMoreList-ctaButton{font-size:var(--cds-font-size-title3);line-height:var(--cds-line-height-title3);font-family:var(--cds-font-family-source-sans-pro);font-weight:var(--cds-font-weight-700);letter-spacing:var(--cds-letter-spacing-125);color:#0056d2;margin-top:0px;}.css-1jcy7xi .cds-ShowMoreList-listContainer{list-style:none;overflow:hidden;}.css-1jcy7xi .cds-ShowMoreList-ctaButton{margin:var(--cds-spacing-300) auto var(--cds-spacing-150) auto;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;}.css-1jcy7xi .cds-ShowMoreList-ctaIcon{-webkit-flex-shrink:0;-ms-flex-negative:0;flex-shrink:0;color:inherit;-webkit-transform:rotate(90deg);-moz-transform:rotate(90deg);-ms-transform:rotate(90deg);transform:rotate(90deg);-webkit-transition:-webkit-transform 300ms ease-in-out;transition:transform 300ms ease-in-out;}.css-1jcy7xi .cds-ShowMoreList-ctaIcon.cds-ShowMoreList-expanded{-webkit-transform:rotate(-90deg);-moz-transform:rotate(-90deg);-ms-transform:rotate(-90deg);transform:rotate(-90deg);}.css-1jcy7xi .cds-ShowMoreList-firstExpandedItem{outline:1px solid transparent;}.css-1whdyhf{position:absolute!important;border:0!important;width:1px!important;height:1px!important;padding:0!important;margin:-1px!important;overflow:hidden!important;clip:rect(0, 0, 0, 0)!important;white-space:nowrap!important;word-wrap:normal!important;}.css-1dxbamb{border-radius:var(--cds-border-radius-50);border-radius:var(--cds-border-radius-50);text-transform:none;max-width:320px;min-width:unset;-webkit-transition:none;transition:none;box-sizing:border-box;-webkit-text-decoration:none;text-decoration:none;color:var(--cds-color-interactive-primary);font:var(--cds-typography-title4);letter-spacing:var(--cds-letter-spacing-title4);padding:var(--cds-spacing-100);}.css-1dxbamb:focus{outline:none;}.css-1dxbamb.cds-buttonBase-focusVisible::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-1dxbamb:hover{-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-hover);background-color:var( --cds-color-interactive-background-primary-hover-weak );}.css-1dxbamb.cds-button-focusVisible{-webkit-text-decoration:underline;text-decoration:underline;background-color:var( --cds-color-interactive-background-primary-hover-weak );color:var(--cds-color-interactive-primary-hover);}.css-1dxbamb:active{-webkit-text-decoration:underline;text-decoration:underline;color:var(--cds-color-interactive-primary-pressed);background-color:var( --cds-color-interactive-background-primary-pressed-weak );}.css-1dxbamb:active.cds-button-disableElevation::after{content:unset;}.css-1dxbamb.cds-button-disabled{color:var(--cds-color-neutral-disabled-strong);}.css-1dxbamb .cds-button-label{text-transform:none;width:100%;display:inherit;-webkit-align-items:inherit;-webkit-box-align:inherit;-ms-flex-align:inherit;align-items:inherit;-webkit-box-pack:inherit;-ms-flex-pack:inherit;-webkit-justify-content:inherit;justify-content:inherit;}.css-1dxbamb.cds-button-loadingOpacity .cds-button-label{opacity:0.6;}.css-1dxbamb:focus{outline:none;}.css-1dxbamb.cds-button-focusVisible{outline:1px solid transparent;}.css-1dxbamb.cds-button-focusVisible.cds-button-disableElevation::after{content:'';position:absolute;top:-2px;left:-2px;right:-2px;bottom:-2px;border-radius:var(--cds-border-radius-50);box-shadow:0 0 0 1px var(--cds-color-interactive-stroke-primary-focus),0 0 0 2px var(--cds-color-interactive-stroke-primary-focus-invert);}.css-1dxbamb .cds-button-endIcon{margin-right:0;display:inherit;margin-left:8px;}.css-1dxbamb .cds-button-startIcon{margin-left:0;display:inherit;margin-right:8px;}.css-192msu{margin:50px;padding:var(--cds-spacing-200) 0;width:100vw;position:relative;left:50%;right:50%;margin-left:-50vw;margin-right:-50vw;}.css-tzhsxv{border:1px solid var(--cds-color-neutral-stroke-primary-weak);border-radius:4px;max-width:1022px;margin:0 auto;padding:var(--cds-spacing-300) var(--cds-spacing-400);}.css-tzhsxv ul{list-style-type:none;padding:0;}@media (max-width:599.95px){.css-tzhsxv ul li :nth-of-type(n + 4){display:none;}}@media (max-width: 1060px){.css-tzhsxv{max-width:95%;margin:0 auto;}}@media (max-width:599.95px){.css-tzhsxv{max-width:90%;margin:0 auto;}}.css-1fgg31t{color:var(--cds-color-neutral-primary);font:var(--cds-typography-title2);letter-spacing:var(--cds-letter-spacing-title2);margin-bottom:var(--cds-spacing-200);}.css-1fgg31t strong{font-weight:var(--cds-font-weight-700);}.css-16obph7{margin:-12px;width:calc(100% + 24px);}.css-16obph7>.cds-grid-item{padding:12px;}.css-57llfn{min-width:304px;margin-bottom:0;}.css-18zg8pu{color:var(--cds-color-neutral-primary);font:var(--cds-typography-body1);letter-spacing:var(--cds-letter-spacing-body1);margin-bottom:var(--cds-spacing-50);}.css-18zg8pu strong{font-weight:var(--cds-font-weight-700);}</style><style data-aphrodite="\_1l1hu98 \_ufjrdd \_1qfi0x77 \_1dyqk64 \_1nhfz2 \_wwcfwz \_yqjywj \_181t6pv \_liimpa">.\_1l1hu98{min-width:360px;background-color:#FFF;box-shadow:0 2px 4px 0 rgba(0,0,0,0.1);position:fixed;width:100%;left:0px;right:0px;top:0px;-webkit-transition:top 0.2s ease-in-out;-moz-transition:top 0.2s ease-in-out;transition:top 0.2s ease-in-out;z-index:4000;}.\_ufjrdd{display:inline-block;vertical-align:middle;color:#363B42;-webkit-transition:all 450ms cubic-bezier(0.23, 1, 0.32, 1) 0ms;-moz-transition:all 450ms cubic-bezier(0.23, 1, 0.32, 1) 0ms;transition:all 450ms cubic-bezier(0.23, 1, 0.32, 1) 0ms;-webkit-user-select:none;-moz-user-select:none;-ms-user-select:none;user-select:none;}.\_1qfi0x77{-webkit-box-align:center;-ms-flex-align:center;-webkit-align-items:center;align-items:center;display:-webkit-box;display:-moz-box;display:-ms-flexbox;display:-webkit-flex;display:flex;}.\_1dyqk64{position:relative;width:252px;padding-bottom:60.317460317460316%;height:0px;}@media (max-width: 824px){.\_1dyqk64{max-width:95vw;}}@media (max-width: 608px){.\_1dyqk64{max-width:90vw;}}.\_1nhfz2{position:absolute;top:0px;left:0px;width:100%;height:100%;}.\_wwcfwz:focus{outline:auto 3px #2A73CC;}.\_yqjywj{position:relative;width:152px;padding-bottom:29.605263157894733%;height:0px;}@media (max-width: 824px){.\_yqjywj{max-width:95vw;}}@media (max-width: 608px){.\_yqjywj{max-width:90vw;}}.\_181t6pv{position:relative;width:151px;padding-bottom:79.47019867549669%;height:0px;}@media (max-width: 824px){.\_181t6pv{max-width:95vw;}}@media (max-width: 608px){.\_181t6pv{max-width:90vw;}}.\_liimpa{position:relative;width:28px;padding-bottom:100%;height:0px;}@media (max-width: 824px){.\_liimpa{max-width:95vw;}}@media (max-width: 608px){.\_liimpa{max-width:90vw;}}</style><script data-ssr="true">window.ssr = true</script><script>!function(a){function webpackJsonpCallback(e){for(var c,g,h=e[0],n=e[1],i=e[2],s=0,l=[];s<h.length;s++)g=h[s],Object.prototype.hasOwnProperty.call(r,g)&&r[g]&&l.push(r[g][0]),r[g]=0;for(c in n)Object.prototype.hasOwnProperty.call(n,c)&&(a[c]=n[c]);for(f&&f(e);l.length;)l.shift()();return t.push.apply(t,i||[]),checkDeferredModules()}function checkDeferredModules(){for(var a,e=0;e<t.length;e++){for(var c=t[e],g=!0,h=1;h<c.length;h++){var f=c[h];0!==r[f]&&(g=!1)}g&&(t.splice(e--,1),a=\_\_webpack\_require\_\_(\_\_webpack\_require\_\_.s=c[0]))}return a}var e={},r={manifest:0},t=[];function \_\_webpack\_require\_\_(r){if(e[r])return e[r].exports;var module=e[r]={i:r,l:!1,exports:{}};return a[r].call(module.exports,module,module.exports,\_\_webpack\_require\_\_),module.l=!0,module.exports}\_\_webpack\_require\_\_.e=function(a){var e=[],t=r[a];if(0!==t)if(t)e.push(t[2]);else{var c=new Promise((function(e,c){t=r[a]=[e,c]}));e.push(t[2]=c);var g,h=document.createElement("script");h.charset="utf-8",h.timeout=120,\_\_webpack\_require\_\_.nc&&h.setAttribute("nonce",\_\_webpack\_require\_\_.nc),h.src=function(a){return \_\_webpack\_require\_\_.p+""+function(a){return{"2":true,"11":true,"16":true,"17":true,"25":true,"26":true,"27":true,"31":true,"32":true,"35":true,"37":true,"39":true,"41":true,"44":true,"45":true,"app":true,"asyncCommonJS":true,"manifest":true}[a]?"en."+a:a}(a)+"."+{0:"5dfafffe048428f5efe0",1:"8a8f6045e7f405576f2c",2:"cb0d3dad89376a3fbc3a",3:"8549c2595f165adfa33d",4:"9480e2a0c9185eb99cfb",5:"2c2c2b9c387fbacbdf41",6:"a5e293fbf6d65a24b23a",7:"9e2b440f35557a926a50",8:"c6b7f8a6250483d36df9",9:"41d751167cfdfde9866e",10:"35d97deba5a169f956cf",11:"73f7a63c7fd30041ea65",12:"e3d890f2587b0f84637d",13:"2a9527685040dcdad318",14:"b1706f7ae7507ec699e4",15:"9a02523ffc31d7f9f5b1",16:"e92b985b3d40562c8dba",17:"b2b4c6ca730c485013a2",18:"03ddac92591e93b3dc67",19:"56019f5448fe2f8706e6",20:"643c3a3ab7729aa7a032",21:"44bb38349bdb243836a4",22:"e2eab363f9128153d189",23:"5c0488d984de853eba37",24:"85474d84589605f357c3",25:"e5cb48b1979623ecc70f",26:"43b1aee266037319f409",27:"2723d05259562fab7fd9",28:"834cf9bda3676c579d5a",29:"e47bfb36b64512d85ccd",30:"ac49f563eee18e2a45de",31:"40881f0e021008f6f4c1",32:"e857d9cc586361eec84a",33:"c37247bac67216fe5ad5",34:"609fcfdc2be1726cbea9",35:"ee528be01d3190af24ed",36:"4879952e4d8be9057c0a",37:"cc8a484a7f99431fca93",38:"01fcf0d942ed59fb1658",39:"7358862d4d7d3b66513e",40:"d68d70f195f413c98761",41:"0d4a5104027b1cf22f5b",42:"09782dc5171985e6ef67",43:"bcc1dcf9b658866f3dec",44:"1ba4fca7d77272581ee6",45:"4d8495c3883473d6557f",46:"b7fc12d1365ded1855d9",47:"34718e5214d807489644",48:"41a73ed3179e28ba9f63",49:"41875f078370ab1ed366",50:"2f8b99b05374d4a156d3",51:"6914320872df757d8968",52:"523438a57bea81c922d9",53:"3499a7f2e2391b1f5678",54:"4af207a5e19798ff34cb",55:"2ff7c1f69ef20c4b4ba3",56:"7b31df70e018ce644a39",57:"a8770b24be457de065bc",58:"f12ed2db4da7f638df6c",59:"ce943b5095577fbfbc2c",asyncCommonJS:"7615f54fa80f69bc2393","react-syntax-highlighter\_languages\_refractor\_arduino":"0a9993503d9d031a8e6b","react-syntax-highlighter\_languages\_refractor\_bison":"57ddf44bdfe42db042de","react-syntax-highlighter\_languages\_refractor\_cpp":"a9447ee84d3739a6d49e","react-syntax-highlighter\_languages\_refractor\_django":"301e1d34d3b636e8102a","react-syntax-highlighter\_languages\_refractor\_erb":"a2c974b1eb51d88a4d94","react-syntax-highlighter\_languages\_refractor\_handlebars":"62773cd792b142816d0f","react-syntax-highlighter\_languages\_refractor\_objectivec":"073fa9a863a0d1e53254","react-syntax-highlighter\_languages\_refractor\_opencl":"f928ae234ceada35e02b","react-syntax-highlighter\_languages\_refractor\_php":"1152cddcd5080a57da40","react-syntax-highlighter\_languages\_refractor\_phpExtras":"0467bbe806379327dd77","react-syntax-highlighter\_languages\_refractor\_pure":"c2cb8df8c0f8f63bae92","react-syntax-highlighter\_languages\_refractor\_smarty":"2f768e5991bb0f7f5d1c","react-syntax-highlighter\_languages\_refractor\_soy":"b9eced8688fa47161ab8","react-syntax-highlighter\_languages\_refractor\_tt2":"a7c7636c3a3a33914b16","react-syntax-highlighter/refractor-core-import":"4f433ee584ac440c40a5","react-syntax-highlighter\_languages\_refractor\_abap":"f46bc2da0212f7a664f9","react-syntax-highlighter\_languages\_refractor\_actionscript":"90ee14d4ae73d48350f3","react-syntax-highlighter\_languages\_refractor\_ada":"f985dc71d392972f096e","react-syntax-highlighter\_languages\_refractor\_apacheconf":"6312c7ec3674c1e36e9f","react-syntax-highlighter\_languages\_refractor\_apl":"b110ba25b559553cda15","react-syntax-highlighter\_languages\_refractor\_applescript":"07cfec9efdaa2b946f15","react-syntax-highlighter\_languages\_refractor\_arff":"24a60228f37f01912e48","react-syntax-highlighter\_languages\_refractor\_asciidoc":"99084385dc2b6c935113","react-syntax-highlighter\_languages\_refractor\_asm6502":"af472c701a7a75c7a4be","react-syntax-highlighter\_languages\_refractor\_aspnet":"bdf135aeb3ba9c5696c6","react-syntax-highlighter\_languages\_refractor\_autohotkey":"ee0e9e948aaf96261fd4","react-syntax-highlighter\_languages\_refractor\_autoit":"559a424adbe988c2cac3","react-syntax-highlighter\_languages\_refractor\_bash":"6622365004e414b2fe9c","react-syntax-highlighter\_languages\_refractor\_basic":"2ba86f0170977eef41cd","react-syntax-highlighter\_languages\_refractor\_batch":"d1eeb1d9a9b3f3a97bff","react-syntax-highlighter\_languages\_refractor\_brainfuck":"0040cd11c78072aadec2","react-syntax-highlighter\_languages\_refractor\_bro":"ecb6fa5f22e7dd5665e3","react-syntax-highlighter\_languages\_refractor\_clike":"077e9cfacb77ae9316e8","react-syntax-highlighter\_languages\_refractor\_clojure":"18786effb792801e0518","react-syntax-highlighter\_languages\_refractor\_coffeescript":"546d41dd01a722e7061a","react-syntax-highlighter\_languages\_refractor\_crystal":"045eff945ce19ee61631","react-syntax-highlighter\_languages\_refractor\_csharp":"d6a41a7a7d50a27369ee","react-syntax-highlighter\_languages\_refractor\_csp":"0fe8d63d44159165087f","react-syntax-highlighter\_languages\_refractor\_css":"ddac71e72c528581cf43","react-syntax-highlighter\_la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f=new Error;g=function(e){h.onerror=h.onload=null,clearTimeout(n);var t=r[a];if(0!==t){if(t){var c=e&&("load"===e.type?"missing":e.type),g=e&&e.target&&e.target.src;f.message="Loading chunk "+a+" failed.\n("+c+": "+g+")",f.name="ChunkLoadError",f.type=c,f.request=g,t[1](f)}r[a]=void 0}};var n=setTimeout((function(){g({type:"timeout",target:h})}),12e4);h.onerror=h.onload=g,document.head.appendChild(h)}return Promise.all(e)},\_\_webpack\_require\_\_.m=a,\_\_webpack\_require\_\_.c=e,\_\_webpack\_require\_\_.d=function(exports,a,e){\_\_webpack\_require\_\_.o(exports,a)||Object.defineProperty(exports,a,{enumerable:!0,get:e})},\_\_webpack\_require\_\_.r=function(exports){"undefined"!=typeof Symbol&&Symbol.toStringTag&&Object.defineProperty(exports,Symbol.toStringTag,{value:"Module"}),Object.defineProperty(exports,"\_\_esModule",{value:!0})},\_\_webpack\_require\_\_.t=function(a,e){if(1&e&&(a=\_\_webpack\_require\_\_(a)),8&e)return a;if(4&e&&"object"==typeof a&&a&&a.\_\_esModule)return a;var r=Object.create(null);if(\_\_webpack\_require\_\_.r(r),Object.defineProperty(r,"default",{enumerable:!0,value:a}),2&e&&"string"!=typeof a)for(var t in a)\_\_webpack\_require\_\_.d(r,t,function(e){return a[e]}.bind(null,t));return r},\_\_webpack\_require\_\_.n=function(module){var a=module&&module.\_\_esModule?function(){return module.default}:function(){return module};return \_\_webpack\_require\_\_.d(a,"a",a),a},\_\_webpack\_require\_\_.o=function(a,e){return Object.prototype.hasOwnProperty.call(a,e)},\_\_webpack\_require\_\_.p="https://d3njjcbhbojbot.cloudfront.net/webapps/r2-builds/articles/",\_\_webpack\_require\_\_.oe=function(a){throw console.error(a),a};var c=window.webpackJsonp=window.webpackJsonp||[],g=c.push.bind(c);c.push=webpackJsonpCallback,c=c.slice();for(var h=0;h<c.length;h++)webpackJsonpCallback(c[h]);var f=g;checkDeferredModules()}([]);</script><script type="text/javascript" src="https://d3njjcbhbojbot.cloudfront.net/webapps/r2-builds/articles/allStyles.cbcc659b9a4b33eb5307.js" defer crossorigin="anonymous"></script><script type="text/javascript" src="https://d3njjcbhbojbot.cloudfront.net/webapps/r2-builds/articles/en.app.67f4c30328449106a5e5.js" defer crossorigin="anonymous"></script></head><body><div id="fb-root"></div><div id="rendered-content"><div class="rc-MetatagsWrapper"><div class="rc-ArticlesApplication" style="min-height:100vh;background-color:white"><span class="rc-PageHeaderWrapper" data-testid="page-header-wrapper"><div><header class="rc-DesktopHeaderControls rc-DesktopHeaderControls--MetaNav" data-catchpoint="page-header-controls"><div class="smart-scroll-container"><div class="\_1l1hu98 show-smart-scroll-container" style="z-index:3000;box-shadow:none;max-width:100vw"><div><div class="rc-PageHeader rc-PageHeader--MetaNav" data-e2e="page-header"><div class="css-1lm4h9m"><div class="cds-1 css-gpq5lz cds-2 cds-7"><div class="cds-9 css-1kspkkz 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data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/business?utm\_content=corp-to-home-for-enterprise&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;navigation\_meta\_nav\_Business&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="navigation\_meta\_nav\_Business" data-track-href="https://www.coursera.org/business?utm\_content=corp-to-home-for-enterprise&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" href="https://www.coursera.org/business?utm\_content=corp-to-home-for-enterprise&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" to="https://www.coursera.org/business?utm\_content=corp-to-home-for-enterprise&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" class="cds-119 cds-113 cds-115 css-ia3qe1 cds-142"><span><span class="forStyle css-9o34zd">For</span> Businesses</span></a><a data-click-key="articles..click.navigation\_meta\_nav\_Campus" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/campus?utm\_content=corp-to-landing-for-campus&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;navigation\_meta\_nav\_Campus&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="navigation\_meta\_nav\_Campus" data-track-href="https://www.coursera.org/campus?utm\_content=corp-to-landing-for-campus&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" href="https://www.coursera.org/campus?utm\_content=corp-to-landing-for-campus&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" to="https://www.coursera.org/campus?utm\_content=corp-to-landing-for-campus&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" class="cds-119 cds-113 cds-115 css-ia3qe1 cds-142"><span><span class="forStyle css-9o34zd">For</span> Universities</span></a><a data-click-key="articles..click.navigation\_meta\_nav\_Government" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/government?utm\_content=corp-to-landing-for-government&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;navigation\_meta\_nav\_Government&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="navigation\_meta\_nav\_Government" data-track-href="https://www.coursera.org/government?utm\_content=corp-to-landing-for-government&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" href="https://www.coursera.org/government?utm\_content=corp-to-landing-for-government&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" to="https://www.coursera.org/government?utm\_content=corp-to-landing-for-government&amp;utm\_campaign=website&amp;utm\_medium=coursera&amp;utm\_source=header&amp;utm\_term=b-out" class="cds-119 cds-113 cds-115 css-ia3qe1 cds-142"><span><span class="forStyle css-9o34zd">For</span> Governments</span></a></div></div></div></div></div></div></div><div class="bt3-navbar c-ph-nav full-width"><div class="c-container bt3-container-fluid"><div class="align-items-vertical-center horizontal-box sr-only"></div><div class="header-logo-wrapper" style="float:left" data-testid="header-logo"><div class="rc-HeaderLogo c-ph-logo bt3-navbar-header css-1hjgzz4"><div class="m-a-0 body"><a data-click-key="articles..click.logo" data-click-value="{&quot;href&quot;:&quot;/&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;logo&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="logo" data-track-href="/" href="/" to="/" class="c-logo horizontal-box align-items-vertical-center nostyle" aria-label="Coursera"><div class="css-19qryfx"><img src="data:image/svg+xml;base64," class="rc-CourseraLogo" alt="Coursera" aria-hidden="true"/></div></a></div></div></div><div class="c-ph-search-catalog nav-item horizontal-box browse-search"><div class="browse-content-wrapper horizontal-box"><div class="MegamenuWrapperDiv" id="MegamenuWrapperDiv"><div class="rc-MegaMenuWrapper rc-MegaMenuWrapperLite rc-MegaMenuWrapper--MetaNav" data-e2e="megamenu-dropdown"><div><button data-track="true" data-track-app="articles" data-track-action="click" data-track-component="explore\_button" data-e2e="megamenu-explore-button" class="rc-ExploreButton css-9mc38z" aria-expanded="false" aria-haspopup="true" aria-label="Explore our catalog" type="button"><span class="css-1ebuhnc"><span class="cds-119 css-1ygmvp cds-121">Explore</span><svg class="rc-ExploreButton\_\_arrow css-t7eghb" viewBox="0 0 32 32" width="9" height="9"><path fill="#fff" d="M30.054 14.429l-13.25 13.232q-0.339 0.339-0.804 0.339t-0.804-0.339l-13.25-13.232q-0.339-0.339-0.339-0.813t0.339-0.813l2.964-2.946q0.339-0.339 0.804-0.339t0.804 0.339l9.482 9.482 9.482-9.482q0.339-0.339 0.804-0.339t0.804 0.339l2.964 2.946q0.339 0.339 0.339 0.813t-0.339 0.813z"></path></svg></span></button></div></div></div><div class="rc-SearchBar horizontal-box isLohpRebrand"><form class="search-form" role="search"><div class="rc-SearchBar\_\_container horizontal-box"><div class="mobile-magnifier"><div class="magnifier-wrapper"><svg width="16px" height="16px" viewBox="0 0 16 16" version="1.1" xmlns="http://www.w3.org/2000/svg"><g stroke="none" stroke-width="1" fill="none" fill-rule="evenodd" transform="translate(-293.000000, -23.000000)"><g fill="#4385F5"><g transform="translate(293.000000, 22.000000)"><path d="M11.355485,11.4503883 L16.0066609,16.1015642 L15.1015642,17.0066609 L10.4503883,12.355485 C9.34711116,13.2583262 7.93681293,13.8 6.4,13.8 C2.8653776,13.8 0,10.9346224 0,7.4 C0,3.8653776 2.8653776,1 6.4,1 C9.9346224,1 12.8,3.8653776 12.8,7.4 C12.8,8.93681293 12.2583262,10.3471112 11.355485,11.4503883 Z M6.4,12.52 C9.22769792,12.52 11.52,10.2276979 11.52,7.4 C11.52,4.57230208 9.22769792,2.28 6.4,2.28 C3.57230208,2.28 1.28,4.57230208 1.28,7.4 C1.28,10.2276979 3.57230208,12.52 6.4,12.52 Z"></path></g></g></g></svg></div></div><input type="text" id="algolia-placeholder-search-input" name="query" placeholder="What do you want to learn?" value="" autoComplete="off" aria-label="Search catalog"/><button type="submit" class="nostyle search-button" aria-label="Submit Search"><div class="magnifier-wrapper"><svg width="16px" height="16px" viewBox="0 0 16 16" version="1.1" xmlns="http://www.w3.org/2000/svg"><g stroke="none" stroke-width="1" fill="none" fill-rule="evenodd" transform="translate(-293.000000, -23.000000)"><g fill="#E1E1E1"><g transform="translate(293.000000, 22.000000)"><path d="M11.355485,11.4503883 L16.0066609,16.1015642 L15.1015642,17.0066609 L10.4503883,12.355485 C9.34711116,13.2583262 7.93681293,13.8 6.4,13.8 C2.8653776,13.8 0,10.9346224 0,7.4 C0,3.8653776 2.8653776,1 6.4,1 C9.9346224,1 12.8,3.8653776 12.8,7.4 C12.8,8.93681293 12.2583262,10.3471112 11.355485,11.4503883 Z M6.4,12.52 C9.22769792,12.52 11.52,10.2276979 11.52,7.4 C11.52,4.57230208 9.22769792,2.28 6.4,2.28 C3.57230208,2.28 1.28,4.57230208 1.28,7.4 C1.28,10.2276979 3.57230208,12.52 6.4,12.52 Z"></path></g></g></g></svg></div></button></div></form></div></div></div><div class="header-right-nav-wrapper" style="min-width:250px;float:right" data-testid="header-right-nav"><div id="c-ph-right-nav" class="c-ph-right-nav bt3-navbar-right collapse"><span class="c-navbar-item bt3-nav bt3-navbar-nav" role="none" style="padding:10px 0"><div id="premiumProductHeaderDropdown" class="rc-DegreeDropdown css-16mgpnh"><div class="online-degree-dropdown"><button class="cds-149 cds-button-disableElevation cds-button-ghost css-qgqral" tabindex="0" type="button" id="onlineDegreesDropdownBtn" data-testid="onlineDegreesDropdownBtn" aria-label="Online Degrees" aria-haspopup="true" aria-controls="onlineDegreesDropdownMenu" aria-expanded="false" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="toggle\_online\_degrees\_dropdown"><span class="cds-button-label"><span class="cds-119 long-label css-7kgszr cds-121">Online Degrees</span><span class="cds-119 short-label css-fzzre6 cds-121">Degrees</span><span class="cds-button-endIcon"><svg aria-hidden="true" fill="none" focusable="false" height="20" viewBox="0 0 20 20" width="20" id="cds-react-aria-1" class="css-awzoag"><path fill-rule="evenodd" clip-rule="evenodd" d="M10 14.293L1.354 5.646l-.708.708L10 15.707l9.354-9.353-.707-.708L10 14.293z" fill="currentColor"></path></svg></span></span></button></div><div id="degreeLinksContainer" class="degree-links css-1b641yt"><ul id="onlineDegreesDropdownMenu" role="menu" aria-labelledby="onlineDegreesDropdownBtn" aria-hidden="true" class="css-1ld8h5b"><li role="none"><a data-click-key="articles..click.premium\_dropdown\_degrees" data-click-value="{&quot;href&quot;:&quot;/degrees&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;premium\_dropdown\_degrees&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="premium\_dropdown\_degrees" data-track-href="/degrees" href="/degrees" to="/degrees" class="cds-149 premium-dropdown-link cds-button-disableElevation cds-button-ghost css-1rt2bhc" tabindex="-1" aria-disabled="false" id="premium\_dropdown\_degrees" data-testid="premium\_dropdown\_degrees" role="menuitem"><span class="cds-button-label"><span class="cds-119 degree-link-title css-f75xrw cds-121">Online Degree</span><span class="cds-119 degree-link-subtitle css-1430hw9 cds-121">Explore Bachelorâs &amp; Masterâs degrees</span></span></a></li><li role="none"><a data-click-key="articles..click.premium\_dropdown\_mastertracks" data-click-value="{&quot;href&quot;:&quot;/mastertrack&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;premium\_dropdown\_mastertracks&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="premium\_dropdown\_mastertracks" data-track-href="/mastertrack" href="/mastertrack" to="/mastertrack" class="cds-149 premium-dropdown-link cds-button-disableElevation cds-button-ghost css-1rt2bhc" tabindex="-1" aria-disabled="false" id="premium\_dropdown\_mastertracks" data-testid="premium\_dropdown\_mastertracks" role="menuitem"><span class="cds-button-label"><span class="cds-119 degree-link-title css-f75xrw cds-121">MasterTrackâ¢</span><span class="cds-119 degree-link-subtitle css-1430hw9 cds-121">Earn credit towards a Masterâs degree</span></span></a></li><li role="none"><a data-click-key="articles..click.premium\_dropdown\_certificates" data-click-value="{&quot;href&quot;:&quot;/certificates/learn&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;premium\_dropdown\_certificates&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="premium\_dropdown\_certificates" data-track-href="/certificates/learn" href="/certificates/learn" to="/certificates/learn" class="cds-149 premium-dropdown-link cds-button-disableElevation cds-button-ghost css-1rt2bhc" tabindex="-1" aria-disabled="false" id="premium\_dropdown\_certificates" data-testid="premium\_dropdown\_certificates" role="menuitem"><span class="cds-button-label"><span class="cds-119 degree-link-title css-f75xrw cds-121">University Certificates</span><span class="cds-119 degree-link-subtitle css-1430hw9 cds-121">Advance your career with graduate-level learning</span></span></a></li></ul></div></div></span><span class="c-navbar-item bt3-nav bt3-navbar-nav" role="none"><span class="rc-HeaderRightNavButton c-ph-right-nav-button c-ph-career-academy c-ph-right-nav-no-border isLohpRebrand"><a data-click-key="articles..click.header\_right\_nav\_button\_career\_academy" data-click-value="{&quot;href&quot;:&quot;/career-academy/?trk\_ref=globalnav&quot;,&quot;name&quot;:&quot;career-academy&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;header\_right\_nav\_button\_career\_academy&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="header\_right\_nav\_button\_career\_academy" data-track-href="/career-academy/?trk\_ref=globalnav" href="/career-academy/?trk\_ref=globalnav" to="/career-academy/?trk\_ref=globalnav" aria-label="Find your New Career" id="career-academy-link">Find your New Career</a></span></span><span class="c-navbar-item bt3-nav bt3-navbar-nav" role="none"></span><span class="c-navbar-item bt3-nav bt3-navbar-nav" role="none"></span><ul class="c-navbar-list bt3-nav bt3-navbar-nav"><li role="none" class="rc-HeaderRightNavButton c-ph-right-nav-button c-ph-right-nav-mobile-only isLohpRebrand"><a data-click-key="articles..click.header\_right\_nav\_button\_browse" data-click-value="{&quot;href&quot;:&quot;/browse&quot;,&quot;name&quot;:&quot;browse&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;header\_right\_nav\_button\_browse&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="header\_right\_nav\_button\_browse" data-track-href="/browse" href="/browse" to="/browse" aria-label="Browse" id="browse-link">Browse</a></li><li role="none" class="rc-HeaderRightNavButton c-ph-right-nav-button c-ph-right-nav-mobile-only isLohpRebrand"><a data-click-key="articles..click.header\_right\_nav\_button\_top\_courses" data-click-value="{&quot;href&quot;:&quot;/courses&quot;,&quot;name&quot;:&quot;top\_courses&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;header\_right\_nav\_button\_top\_courses&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="header\_right\_nav\_button\_top\_courses" data-track-href="/courses" href="/courses" to="/courses" aria-label="Top Courses" id="top\_courses-link">Top Courses</a></li><li class="c-ph-right-nav-button c-ph-log-in isLohpRebrand"><a data-click-key="articles..click.header\_right\_nav\_button" data-click-value="{&quot;href&quot;:{&quot;hash&quot;:&quot;&quot;,&quot;pathname&quot;:&quot;/articles/python-machine-learning-library&quot;,&quot;query&quot;:{&quot;authMode&quot;:&quot;login&quot;}},&quot;name&quot;:&quot;login&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;header\_right\_nav\_button&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="header\_right\_nav\_button" data-track-href="[object Object]" href="/articles/python-machine-learning-library?authMode=login" class="" rel="nofollow" data-e2e="header-login-button">Log In</a></li><li class="c-ph-right-nav-button c-ph-sign-up isLohpRebrand c-ph-right-nav-no-border"><a data-click-key="articles..click.header\_right\_nav\_button" data-click-value="{&quot;href&quot;:{&quot;hash&quot;:&quot;&quot;,&quot;pathname&quot;:&quot;/articles/python-machine-learning-library&quot;,&quot;query&quot;:{&quot;authMode&quot;:&quot;signup&quot;}},&quot;name&quot;:&quot;signup&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;header\_right\_nav\_button&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="header\_right\_nav\_button" data-track-href="[object Object]" href="/articles/python-machine-learning-library?authMode=signup" class="standardSignupBtnLink signup-jff-fp-btn link-button primary" rel="nofollow" data-e2e="header-signup-button">Join for Free</a></li></ul></div></div></div></div></div><div></div></div></div></div><div class="height-placeholders" role="presentation"><div class="height-placeholder with-desktop-header-controls with-desktop-header-controls--MetaNav"></div></div></header></div><div><div data-track="true" data-track-app="articles" data-track-action="click" data-track-component="mobile\_header\_lite" class="rc-MobileHeader rc-MobileHeaderLite" role="presentation"><div class="\_1l1hu98 show-smart-scroll-container" style="z-index:3000;min-width:200px;max-width:100vw;box-shadow:none"><div class="c-mobile-header-controls horizontal-box isLohpRebrand align-items-spacebetween"><span><nav aria-label="Main Menu"><button data-track="true" data-track-app="articles" data-track-action="click" data-track-component="mobile\_header\_nav\_button" data-e2e="mobile-nav-icon" class="c-mobile-toggle-button" aria-label="Open Navigation Menu" type="button"><svg fill="#1F1F1F" class="\_ufjrdd" style="fill:#363B42;height:26px;width:26px" viewBox="0 0 48 48" role="img" aria-labelledby="Listdefault ListdefaultDesc" xmlns="http://www.w3.org/2000/svg"><title id="Listdefault">List</title><polygon points="0 2 38 2 38 0 0 0" role="presentation"></polygon><polygon points="0 16 38 16 38 14 0 14" role="presentation"></polygon><polygon points="0 30 38 30 38 28 0 28" role="presentation"></polygon></svg></button><span class="nostyle"><ul class="mobile-header-menu"></ul></span></nav></span><a data-click-key="articles..click.mobile\_header\_logo" data-click-value="{&quot;href&quot;:&quot;/&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;mobile\_header\_logo&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="mobile\_header\_logo" data-track-href="/" href="/" to="/" class="c-mobile-logo horizontal-box align-items-vertical-center isLohpRebrand "><div style="display:flex"><img src="data:image/svg+xml;base64," class="rc-CourseraLogo" alt="Coursera" aria-hidden="false"/></div></a><div class="\_1qfi0x77"><span class="iconContainer"><button data-track="true" data-track-app="articles" data-track-action="click" data-track-component="mobile\_search\_icon" class="mobile-search-icon" style="border:none;background-color:transparent" aria-label="Search Coursera" type="button"><div class="magnifier-wrapper"><svg width="16px" height="16px" viewBox="0 0 16 16" version="1.1" xmlns="http://www.w3.org/2000/svg"><g stroke="none" stroke-width="1" fill="none" fill-rule="evenodd" transform="translate(-293.000000, -23.000000)"><g fill="#1F1F1F"><g transform="translate(293.000000, 22.000000)"><path d="M11.355485,11.4503883 L16.0066609,16.1015642 L15.1015642,17.0066609 L10.4503883,12.355485 C9.34711116,13.2583262 7.93681293,13.8 6.4,13.8 C2.8653776,13.8 0,10.9346224 0,7.4 C0,3.8653776 2.8653776,1 6.4,1 C9.9346224,1 12.8,3.8653776 12.8,7.4 C12.8,8.93681293 12.2583262,10.3471112 11.355485,11.4503883 Z M6.4,12.52 C9.22769792,12.52 11.52,10.2276979 11.52,7.4 C11.52,4.57230208 9.22769792,2.28 6.4,2.28 C3.57230208,2.28 1.28,4.57230208 1.28,7.4 C1.28,10.2276979 3.57230208,12.52 6.4,12.52 Z"></path></g></g></g></svg></div></button></span></div></div></div><div class="rc-MobileSearchPage" style="z-index:3001"><div class="mobile-search-body-wrapper"></div></div></div></div></span><div><div class="rc-ArticlePage cds" data-e2e="article-page"><div class="css-8traci"><div style="min-height:100vh" class="css-1oquxbd"><div class="rc-ArticleHeader"><div class="css-1psltl0"><div class="cds-9 rc-Breadcrumbs css-wyvrez cds-10" role="navigation" aria-label="breadcrumbs"><div class="cds-9 css-0 cds-11 cds-grid-item"><a data-click-key="articles.article\_page.click.breadcrumb\_link" data-click-value="{&quot;href&quot;:&quot;/articles&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;breadcrumb\_link&quot;,&quot;page&quot;:&quot;article\_page&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-page="article\_page" data-track-action="click" data-track-component="breadcrumb\_link" data-track-href="/articles" href="/articles" to="/articles" class="cds-119 cds-113 cds-115 css-1tf9jzj cds-142"><span class="cds-119 cds-Typography-base css-dmxkm1 cds-121">Articles</span><span class="css-3mda7n"><svg aria-hidden="true" fill="none" focusable="false" height="16" viewBox="0 0 16 16" width="16" class="css-vz2uro" id="cds-react-aria-2"><path fill-rule="evenodd" clip-rule="evenodd" d="M11.293 8L4.646 1.354l.708-.708L12.707 8l-7.353 7.354-.708-.707L11.293 8z" fill="currentColor"></path></svg></span></a></div><div class="cds-9 css-0 cds-11 cds-grid-item"><a data-click-key="articles.article\_page.click.breadcrumb\_link" data-click-value="{&quot;href&quot;:&quot;/articles/category/data&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;breadcrumb\_link&quot;,&quot;page&quot;:&quot;article\_page&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-page="article\_page" data-track-action="click" data-track-component="breadcrumb\_link" data-track-href="/articles/category/data" href="/articles/category/data" to="/articles/category/data" class="cds-119 cds-113 cds-115 css-1tf9jzj cds-142"><span class="cds-119 cds-Typography-base css-dmxkm1 cds-121">Data</span><span class="css-3mda7n"><svg aria-hidden="true" fill="none" focusable="false" height="16" viewBox="0 0 16 16" width="16" class="css-vz2uro" id="cds-react-aria-3"><path fill-rule="evenodd" clip-rule="evenodd" d="M11.293 8L4.646 1.354l.708-.708L12.707 8l-7.353 7.354-.708-.707L11.293 8z" fill="currentColor"></path></svg></span></a></div><div class="cds-9 css-4ei6zk cds-11 cds-grid-item"><span class="cds-119 cds-Typography-base css-dmxkm1 cds-121">9 Best Python Libraries for Machine Learning</span></div></div><h1 class="cds-119 css-1h62nr4 cds-121" data-e2e="article-page-title">9 Best Python Libraries for Machine Learning</h1><div class="css-1h0ctmq"><div class="cds-9 css-0 cds-10 cds-18 cds-29"><div class="cds-9 css-0 cds-11 cds-grid-item"><span class="cds-119 cds-Typography-base css-51cxur cds-121"><span>Written by Coursera Staff â¢ </span><span>Updated on <time dateTime="11/29/2023 12:27 PM EST">Nov 29, 2023</time></span></span></div><div class="cds-9 css-cw5dnj cds-11 cds-grid-item"></div></div></div><p class="cds-119 css-oa84zy cds-121">If youâre getting into machine learning, chances are youâll want to choose a Python library (or a few). Hereâs a look at the best ones in 2023.</p></div><figure data-e2e="article-page-featured-image" class="css-medvl2"><div class="css-14k8f4i"><img src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive&amp;auto=format%2Ccompress&amp;dpr=1&amp;w=1000&amp;h=" srcSet="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive&amp;auto=format%2Ccompress&amp;dpr=2&amp;w=1000&amp;h= 2x, https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/6tpdyQDkf2LasanP13f839/825316197001639d170a4b56858f8d86/GettyImages-1348968303.jpg?w=1500&amp;h=680&amp;q=60&amp;fit=fill&amp;f=faces&amp;fm=jpg&amp;fl=progressive&amp;auto=format%2Ccompress&amp;dpr=3&amp;w=1000&amp;h= 3x" style="max-width:1000px" width="100%" alt="[Featured Image]: A male, wearing a reddish shirt, glasses, and a beard. He is working in front of his computer in his office. "/></div></figure></div><div class="css-do4pef"><div class="rc-ArticleBody-Cds css-498j6n"><div class="rc-RichText"><p>The programming language Python was released in 1991, it is one of the most widely used languages today [<a href="https://bootcamp.berkeley.edu/blog/most-in-demand-programming-languages" target="\_blank" rel="noopener noreferrer">1</a>]. Itâs efficient and easy to learn, and one of its greatest features is its open-source libraries available for users. The libraries allow users to choose from frameworks that they can build off of to produce new machine learning (ML) models.</p><p>Whether you are already familiar with machine learning in your career or want to get started, this field holds plenty of growth opportunities. The US Bureau of Labor Statistics (BLS) includes machine learning in its <!-- -->computer and information technology occupations category. Jobs in this field are expected to grow 15 percent 2021-2031ânearly two times faster than the national averageâor an estimated 682,800Ânew positions [<a href="https://www.bls.gov/ooh/computer-and-information-technology/home.htm" target="\_blank" rel="noopener noreferrer">2</a>]. </p><p><b>Learn more: </b><a href="https://www.coursera.org/articles/what-is-python-used-for-a-beginners-guide-to-using-python" target="\_self" rel="">What Is Python Used For? A Beginnerâs Guide</a></p><p></p><h2 id="0-what-is-a-python-library">What is a Python library?Â</h2><p>Python libraries are collections of modules that contain useful codes and functions, eliminating the need to write them from scratch. There are tens of thousands of Python libraries that help machine learning developers, as well as professionals working in data science, data visualization, and more.Â</p><p>Python is the preferred language for machine learning because its syntax and commands are closely related to English, making it efficient and easy to learn. Compared with <a href="https://www.coursera.org/articles/python-vs-c" target="\_self" rel="">C++</a>, <a href="https://www.coursera.org/articles/python-or-r-for-data-analysis" target="\_self" rel="">R</a>, <a href="https://www.coursera.org/articles/ruby-vs-python" target="\_self" rel="">Ruby</a>, and <a href="https://www.coursera.org/articles/python-vs-java" target="\_self" rel="">Java</a>, Python remains one of the simplest languages, enabling accessibility, versatility, and portability. It can operate on nearly any operating system or platform.</p><p></p><p><b>For an introduction to Python libraries Numpy, SciPy, Matplotlib, Seaborn, check out this video from the University of Michiganâs </b><a href="https://www.coursera.org/specializations/statistics-with-python" target="\_self" rel="">Statistics with Python</a><b> specialization:</b></p><p></p><div data-testid="vlp\_video\_player\_placeholder" class="css-1pbuafh"><span class="cds-Skeleton-root cds-Skeleton-rect css-2gti99" aria-hidden="true"></span><p class="cds-119 css-1br3gvl cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></p><div class="cds-9 css-0 cds-10"><span class="cds-Skeleton-root cds-9 cds-11 cds-grid-item cds-Skeleton-rect css-17z8vwx" aria-hidden="true"></span><div class="cds-9 css-0 cds-10 cds-11 cds-grid-item cds-13 cds-52"><span class="cds-Skeleton-root cds-Skeleton-text css-15tlhn" aria-hidden="true" style="height:30px"></span><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:100px;height:30px"></span><span class="cds-Skeleton-root cds-Skeleton-text css-15tlhn" aria-hidden="true" style="height:30px"></span><span class="cds-Skeleton-root cds-Skeleton-text css-15tlhn" aria-hidden="true" style="height:30px"></span></div><span class="cds-Skeleton-root cds-9 cds-11 cds-grid-item cds-56 cds-58 cds-Skeleton-rect css-1a83thq" aria-hidden="true"></span></div></div><h2 id="1-9-best-python-libraries-for-machine-learning">9 best Python libraries for machine learning</h2><p>If youâre working with machine learning and deep learning projects, there are thousands of Python libraries to choose from, and they can vary in size, quality, and diversity. Here is a curated list of the best Python libraries to help you get started on your machine learning journey. This list is based on popularity, derived from their reputation among Python library users.ÂÂ</p><h3>1. NumPy</h3><p>NumPy is a popular Python library for multi-dimensional array and matrix processing because it can be used to perform a great variety of mathematical operations. Its capability to handle linear algebra, Fourier transform, and more, makes NumPy ideal for machine learning and artificial intelligence (AI) projects, allowing users to manipulate the matrix to easily improve machine learning performance. NumPy is faster and easier to use than most other Python libraries.</p><h3>2. Scikit-learn</h3><p>Scikit-learn is a very popular machine learning library that is built on NumPy and SciPy. It supports most of the classic supervised and unsupervised learning algorithms, and it can also be used for data mining, modeling, and analysis. Scikit-learnâs simple design offers a user-friendly library for those new to machine learning.</p><h3>3. Pandas</h3><p>Pandas is another Python library that is built on top of NumPy, responsible for preparing high-level data sets for machine learning and training. It relies on two types of data structures, one-dimensional (series) and two-dimensional (DataFrame). This allows Pandas to be applicable in a variety of industries including finance, engineering, and statistics. Unlike the slow-moving animals themselves, the Pandas library is quick, compliant, and flexible.</p><h3>4. TensorFlow</h3><p>TensorFlowâs open-source Python library specializes in whatâs called differentiable programming, meaning it can automatically compute a functionâs derivatives within high-level language. Both machine learning and deep learning models are easily developed and evaluated with TensorFlowâs flexible architecture and framework. TensorFlow can be used to visualize machine learning models on both desktop and mobile.</p><p>This project-based <a href="https://www.coursera.org/specializations/tensorflow-advanced-techniques" target="\_self" rel="">TensorFlow specialization</a> from DeepLearning.AI is perfect for anyone ready to deep-dive into applied machine learning. Customize ML models with four hands-on courses:</p><p></p><div data-testid="articles\_entity\_card\_placeholder" class="css-sbn28o"><div class="css-1oiads2"><div class="css-vxk8c1"><div class="css-fbwd48"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true" style="width:60px;height:60px"></span></div><div class="css-1wb72u0"><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></p><h3 class="cds-119 cds-Typography-base css-h1jogs cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></h3></div><div class="product-card-subtitle-skeleton"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></div><div class="css-evvwsy"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true" style="width:300px;height:30px"></span></div><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="height:50px"></span></div><div class="css-1prcjsv"><p class="cds-119 cds-Typography-base css-mu0bf1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:200px;height:20px"></span></p><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 skills-title css-mu0bf1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:200px;height:40px"></span></p><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:200px;height:40px"></span></p></div></div></div><p></p><h3>5. Seaborn</h3><p>Seaborn is another open-source Python library, one that is based on Matplotlib (which focuses on plotting and data visualization) but features Pandasâ data structures. Seaborn is often used in ML projects because it can generate plots of learning data. Of all the Python libraries, it produces the most aesthetically pleasing graphs and plots, making it an effective choice if youâll also use it for marketing and data analysis.</p><h3>6. Theano</h3><p>Theano is a Python library that focuses on numerical computation and is specifically made for machine learning. It is able to optimize and evaluate mathematical models and matrix calculations that use multi-dimensional arrays to create ML models. Theano is almost exclusively used by machine learning and deep learning developers or programmers.</p><h3>7. Keras</h3><p>Keras is a Python library that is designed specifically for developing the neural networks for ML models. It can run on top of Theano and TensorFlow to train neural networks. Keras is flexible, portable, and user-friendly, and easily integrated with multiple functions.Â</p><div class="rc-ArticleHighlight cds"><div class="css-1jke4yk"><div class="css-1wawqek"><div class="css-1jk1bc1"><div><h3>Practice your Python skills with tutorials </h3><p>Discover step-by-step guides for troubleshooting Python basics like <a href="https://www.coursera.org/tutorials/python-syntax" target="\_self" rel="">syntax</a>, <a href="https://www.coursera.org/tutorials/python-if-else-statement" target="\_self" rel="">if-else statements</a>, and <a href="https://www.coursera.org/tutorials/python-exception" target="\_self" rel="">exceptions</a>, and working with <a href="https://www.coursera.org/tutorials/for-loop-python" target="\_self" rel="">loops</a> in <a href="https://www.coursera.org/tutorials" target="\_self" rel="">Coursera&#x27;s free programming tutorials</a>.</p></div></div></div><div class="css-175sjpy"><div class="\_1dyqk64"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://coursera\_assets.s3.amazonaws.com/articles/purple-hash-pattern.svg?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=252" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></div></div></div><h3>8. PyTorch</h3><p>PyTorch is an open-source machine learning Python library based on the C programming language framework, Torch. It is mainly used in ML applications that involve natural language processing or computer vision. PyTorch is known for being exceptionally fast at executing large, dense data sets and graphs.Â</p><h3>9. Matplotlib</h3><p>Matplotlib is a Python library focused on data visualization and primarily used for creating beautiful graphs, plots, histograms, and bar charts. It is compatible for plotting data from SciPy, NumPy, and Pandas. If you have experience using other types of graphing tools, Matplotlib might be the most intuitive choice for you.</p><h2 id="2-learn-python-with-coursera">Learn Python with Coursera</h2><p>It is true that anybody can learn Python. Start your Python journey today and use Courseraâs free trial to start <a href="https://www.coursera.org/learn/python" target="\_self" rel="">Python for Everybody</a> from the University of Michigan. Youâll learn to develop programs to clean, analyze, and visualize data.</p><p></p><div data-testid="articles\_entity\_card\_placeholder" class="css-sbn28o"><div class="css-1oiads2"><div class="css-vxk8c1"><div class="css-fbwd48"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true" style="width:60px;height:60px"></span></div><div class="css-1wb72u0"><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></p><h3 class="cds-119 cds-Typography-base css-h1jogs cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></h3></div><div class="product-card-subtitle-skeleton"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></div><div class="css-evvwsy"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true" style="width:300px;height:30px"></span></div><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="height:50px"></span></div><div class="css-1prcjsv"><p class="cds-119 cds-Typography-base css-mu0bf1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:200px;height:20px"></span></p><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 skills-title css-mu0bf1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:200px;height:40px"></span></p><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121"><span class="cds-Skeleton-root cds-Skeleton-text css-k5mpyx" aria-hidden="true" style="width:200px;height:40px"></span></p></div></div></div><p></p><h4></h4><p></p><p></p><p></p></div></div></div><h2 class="cds-119 css-lf3s8z cds-121">Article sources</h2><div class="css-be4oay"><div id="cds-react-aria-4" class="css-1jcy7xi"><div data-testid="visually-hidden" aria-live="polite" id="cds-react-aria-4-expanded-descriptor" tabindex="-1" class="css-1whdyhf"></div><div aria-label="Collapsed" class="cds-ShowMoreList-listContainer" id="cds-react-aria-4-listContainer" role="list"><div aria-posinset="1" aria-setsize="2" role="listitem">1<!-- -->.Â<p>UC Berkeley. â<a href="https://bootcamp.berkeley.edu/blog/most-in-demand-programming-languages/" target="\_blank" rel="noopener noreferrer">11 Most In-Demand Programming Languages in 2022</a>, https://bootcamp.berkeley.edu/blog/most-in-demand-programming-languages/.â Accessed April 14, 2023.</p></div><div class="cds-152 cds-ShowMoreList-collapseContainer cds-154" style="min-height:0px"><div class="cds-155"><div class="cds-156"><div aria-hidden="true" aria-posinset="2" aria-setsize="2" class="cds-ShowMoreList-firstExpandedItem" role="listitem" tabindex="-1">2<!-- -->.Â<p>US Bureau of Labor Statistics. &quot;<a href="https://www.bls.gov/ooh/computer-and-information-technology/home.htm" target="\_blank" rel="noopener noreferrer">Occupational Outlook Handbook: Computer and Information Technology Occupations</a>, https://www.bls.gov/ooh/computer-and-information-technology/home.htm.&quot; <!-- -->Accessed April 14, 2023.</p></div></div></div></div></div><button class="cds-149 cds-ShowMoreList-ctaButton cds-button-disableElevation cds-button-ghost css-1dxbamb" tabindex="0" type="button" aria-controls="cds-react-aria-4-listContainer" aria-expanded="false" aria-label="Show all article sources"><span class="cds-button-label"><span class="cds-button-startIcon"><svg aria-hidden="true" fill="none" focusable="false" height="16" viewBox="0 0 16 16" width="16" class="cds-ShowMoreList-ctaIcon css-0" id="cds-react-aria-5"><path fill-rule="evenodd" clip-rule="evenodd" d="M11.293 8L4.646 1.354l.708-.708L12.707 8l-7.353 7.354-.708-.707L11.293 8z" fill="currentColor"></path></svg></span>View all sources</span></button></div><p></p></div><div class="css-192msu"><div class="css-tzhsxv"><h2 class="cds-119 css-1fgg31t cds-121">Keep reading</h2><ul class="cds-9 css-16obph7 cds-10"><li class="cds-9 css-57llfn cds-11 cds-grid-item cds-56 cds-64 cds-76"><p class="cds-119 css-18zg8pu cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 cds-Typography-base css-51cxur cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p></li><li class="cds-9 css-57llfn cds-11 cds-grid-item cds-56 cds-64 cds-76"><p class="cds-119 css-18zg8pu cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 cds-Typography-base css-51cxur cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p></li><li class="cds-9 css-57llfn cds-11 cds-grid-item cds-56 cds-64 cds-76"><p class="cds-119 css-18zg8pu cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 cds-Typography-base css-51cxur cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p></li><li class="cds-9 css-57llfn cds-11 cds-grid-item cds-56 cds-64 cds-76"><p class="cds-119 css-18zg8pu cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 cds-Typography-base css-51cxur cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p></li><li class="cds-9 css-57llfn cds-11 cds-grid-item cds-56 cds-64 cds-76"><p class="cds-119 css-18zg8pu cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 cds-Typography-base css-51cxur cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p></li><li class="cds-9 css-57llfn cds-11 cds-grid-item cds-56 cds-64 cds-76"><p class="cds-119 css-18zg8pu cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p><p class="cds-119 cds-Typography-base css-51cxur cds-121"><span class="cds-Skeleton-root cds-Skeleton-rect css-k5mpyx" aria-hidden="true"></span></p></li></ul></div></div><div class="css-1ka4ogz"><div class="cds-9 css-0 cds-10 cds-18 cds-29"><div class="cds-9 css-0 cds-11 cds-grid-item"><span class="cds-119 cds-Typography-base css-51cxur cds-121"><span>Updated on <time dateTime="11/29/2023 12:27 PM EST">Nov 29, 2023</time></span></span></div><div class="cds-9 css-cw5dnj cds-11 cds-grid-item"></div></div><div data-testid="authors-profiles"><span class="cds-119 css-1gbtwq cds-121">Written by:</span><div class="cds-9 css-7avemv cds-10 cds-16"><div class="cds-9 css-0 cds-11 cds-grid-item"><div class="cds-Avatar-base cds-Avatar-user cds-Avatar-showBorder css-1apon45" data-testid="author-avatar"><div aria-hidden="true" class="cds-Avatar-initial"><span class="cds-119 cds-Typography-base css-1oqze1z cds-121">C</span></div></div></div><div class="cds-9 css-0 cds-11 cds-grid-item"><h3 class="cds-119 cds-Typography-base css-e7lgfl cds-121"><a class="cds-119 cds-113 cds-115 css-11my7b8 cds-142" href="https://www.coursera.org/articles/author/coursera-staff" rel="author"><span class="cds-119 cds-Typography-base css-r76hfr cds-121">Coursera Staff</span></a></h3><p class="cds-119 cds-Typography-base css-51cxur cds-121">Editorial Team</p><p class="cds-119 cds-Typography-base css-dmxkm1 cds-121">Courseraâs editorial team is comprised of highly experienced professional editors, writers, and fact...</p></div></div></div><p class="cds-119 css-1qe369r cds-121">This content has been made available for informational purposes only. Learners are advised to conduct additional research to ensure that courses and other credentials pursued meet their personal, professional, and financial goals.</p></div></div><div class="cds-9 css-7oqaxn cds-10 cds-27"><div class="cds-9 css-1050z7q cds-10 cds-29"><div class="cds-9 css-4pt9po cds-11 cds-grid-item cds-50"><h3 class="cds-119 cds-Typography-base css-1oqze1z cds-121"><span>Take <span class="rc-ReactPriceDisplay"><span>$100</span></span> off your annual subscription</span></h3><div class="cds-9 css-17mzy6f"><div><a data-click-key="articles.article\_page.click.article\_value\_props\_card" 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css-0 cds-11 cds-grid-item cds-70"><svg aria-hidden="true" fill="none" focusable="false" height="16" viewBox="0 0 16 16" width="16" id="cds-react-aria-9" class="css-1e0vdwy"><path fill-rule="evenodd" clip-rule="evenodd" d="M15.74 3.672L6.225 14.168.323 8.736l1.354-1.472 4.419 4.068 8.163-9.004 1.482 1.344z" fill="currentColor"></path></svg><span class="cds-119 cds-Typography-base css-9yb5qz cds-121"><span>Build the skills you need to succeed, anytime you need themâwhether you&#x27;re starting your first job, switching to a new career, or advancing in your current role.</span></span></li></ul><div class="cds-9 css-19ae0yg"><div><a data-click-key="articles.article\_page.click.article\_value\_props\_card" 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Our articles are deeply researched and thoroughly reviewed to ensure we are providing trustworthy information and advice for any topic. We understand that taking the next step in your education or career can raise questions. We are here to provide actionable, reliable, and relevant answers so you can achieve your goals.","@id":"https://www.coursera.org/articles/author/coursera-staff#schema-author","image":"https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://images.ctfassets.net/wp1lcwdav1p1/59Tsnd9hNK8LZsjsKCVmZ5/4f16f278d2dfada6d59f618af2070324/coursera-symbol-full-rgb.svg","name":"Coursera Staff","url":"https://www.coursera.org/articles/author/coursera-staff","@type":"Person"}],"publisher":{"@type":"Organization","name":"Coursera","url":"https://www.coursera.org/","logo":"https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://coursera.s3.amazonaws.com/media/coursera-logo-square.png"}},{"@type":"BreadcrumbList","itemListElement":[{"@type":"ListItem","position":1,"item":{"name":"Coursera 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(Penn)</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/learn/ai-for-everyone&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/learn/ai-for-everyone" href="https://www.coursera.org/learn/ai-for-everyone" to="https://www.coursera.org/learn/ai-for-everyone" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~161ccffd2137a36fbca7ba13251cf2ca">AI For Everyone Course (DLAI)</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" 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data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/specializations/generative-ai-for-everyone&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/specializations/generative-ai-for-everyone" href="https://www.coursera.org/specializations/generative-ai-for-everyone" to="https://www.coursera.org/specializations/generative-ai-for-everyone" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~9e3a723deaa9dd420b127fe19f93044e">Generative AI Fundamentals Specialization (IBM)</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" 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data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/applied-artifical-intelligence-ibm-watson-ai&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/applied-artifical-intelligence-ibm-watson-ai" href="https://www.coursera.org/professional-certificates/applied-artifical-intelligence-ibm-watson-ai" to="https://www.coursera.org/professional-certificates/applied-artifical-intelligence-ibm-watson-ai" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~bd28faf977bcb571a4c9c1443342a943">IBM Applied AI Professional Certificate</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/specializations/machine-learning-introduction&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/specializations/machine-learning-introduction" href="https://www.coursera.org/specializations/machine-learning-introduction" to="https://www.coursera.org/specializations/machine-learning-introduction" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~fdcfb2fbd7e73a8f298a2e8c76ef569f">Machine Learning Specialization (Stanford)</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/specializations/natural-language-processing&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/specializations/natural-language-processing" href="https://www.coursera.org/specializations/natural-language-processing" to="https://www.coursera.org/specializations/natural-language-processing" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" 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Course (Vanderbilt)</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/learn/machine-learning&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/learn/machine-learning" href="https://www.coursera.org/learn/machine-learning" to="https://www.coursera.org/learn/machine-learning" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~5c9304e11f09c9f4b47e0b8692343ec8">Supervised Machine Learning Course (DLAI)</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=artificial%20intelligence&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=artificial%20intelligence" href="https://www.coursera.org/courses?query=artificial%20intelligence" to="https://www.coursera.org/courses?query=artificial%20intelligence" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~fa0bf12e5dc656e71c6324e490149fa6">See All AI Courses</a></li></ul></div><div class="cds-9 rc-SubFooterSection lohp-rebrand css-0 cds-11 cds-grid-item cds-61"><p class="cds-119 rc-SubFooterSection\_\_header lohp-rebrand css-e7lgfl cds-121">Popular Programs</p><ul class="rc-SubFooterSection\_\_content-column-links" role="list"><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/google-cybersecurity&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/google-cybersecurity" href="https://www.coursera.org/professional-certificates/google-cybersecurity" to="https://www.coursera.org/professional-certificates/google-cybersecurity" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~2286d72338df5453d0c18c780dec50b9">Google Cybersecurity Professional Certificate</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/google-data-analytics&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/google-data-analytics" href="https://www.coursera.org/professional-certificates/google-data-analytics" to="https://www.coursera.org/professional-certificates/google-data-analytics" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~092a9fd8c047283edc351b6cbd181385">Google Data Analytics Professional Certificate</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/google-digital-marketing-ecommerce&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/google-digital-marketing-ecommerce" href="https://www.coursera.org/professional-certificates/google-digital-marketing-ecommerce" to="https://www.coursera.org/professional-certificates/google-digital-marketing-ecommerce" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~cfcb51f2f374847091bfabc143a0f105">Google Digital Marketing &amp; E-commerce Professional Certificate</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/google-it-automation&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" 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data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/google-it-support&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/google-it-support" href="https://www.coursera.org/professional-certificates/google-it-support" to="https://www.coursera.org/professional-certificates/google-it-support" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~2aae8aa70a8eb5db87cf82469b146ead">Google IT Support Professional Certificate</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/google-project-management&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/google-project-management" href="https://www.coursera.org/professional-certificates/google-project-management" to="https://www.coursera.org/professional-certificates/google-project-management" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~4bddba7141bbb4f82ac4ebe0b329fcc8">Google Project Management Professional Certificate</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/learn/seo-fundamentals&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/learn/seo-fundamentals" href="https://www.coursera.org/learn/seo-fundamentals" to="https://www.coursera.org/learn/seo-fundamentals" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~12e7f0952d6920c3baa6b6b103c27178">Google SEO Fundamentals</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a 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class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/specializations/python&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/specializations/python" href="https://www.coursera.org/specializations/python" to="https://www.coursera.org/specializations/python" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~a8c3e625bb31443664aa7c80602802af">Python for Everybody Specialization</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" 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rc-SubFooterSection\_\_header lohp-rebrand css-e7lgfl cds-121">Popular Skills</p><ul class="rc-SubFooterSection\_\_content-column-links" role="list"><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=cybersecurity&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=cybersecurity" href="https://www.coursera.org/courses?query=cybersecurity" to="https://www.coursera.org/courses?query=cybersecurity" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~d4405d07e0919d603df44836df1711f4">Cybersecurity Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/browse/data-science/data-analysis&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/browse/data-science/data-analysis" href="https://www.coursera.org/browse/data-science/data-analysis" to="https://www.coursera.org/browse/data-science/data-analysis" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~59f878d7ddba9ea10e5c10e1f30972c3">Data Analysis Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/browse/data-science&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/browse/data-science" href="https://www.coursera.org/browse/data-science" to="https://www.coursera.org/browse/data-science" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~fb13f38ec6a57bda80ecd63b1ed897e2">Data Science Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=digital+marketing&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=digital+marketing" href="https://www.coursera.org/courses?query=digital+marketing" to="https://www.coursera.org/courses?query=digital+marketing" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~cae69ffe9977ae8db797625300a5b4a4">Digital Marketing Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=microsoft+excel&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=microsoft+excel" href="https://www.coursera.org/courses?query=microsoft+excel" to="https://www.coursera.org/courses?query=microsoft+excel" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~4256ceaa8693907220dddaf0176e7b07">Excel Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=google&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=google" href="https://www.coursera.org/courses?query=google" to="https://www.coursera.org/courses?query=google" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~a33417062b3d58b0d9c1dbcea4eaa191">Google Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=power+bi&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=power+bi" href="https://www.coursera.org/courses?query=power+bi" to="https://www.coursera.org/courses?query=power+bi" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~8d06df7fe2e0b75b80d86a7ac9fcfc29">Power BI Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/professional-certificates/meta-front-end-developer&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/professional-certificates/meta-front-end-developer" href="https://www.coursera.org/professional-certificates/meta-front-end-developer" to="https://www.coursera.org/professional-certificates/meta-front-end-developer" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~a65b9888f90ee9e9d2b50994294bf989">Product Management Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=project+management&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=project+management" href="https://www.coursera.org/courses?query=project+management" to="https://www.coursera.org/courses?query=project+management" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~169f0ce86492dc88a3093084c5daee04">Project Management Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=python&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=python" href="https://www.coursera.org/courses?query=python" to="https://www.coursera.org/courses?query=python" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~3df29c65ec618b0b499f490fbdbdf5e1">Python Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses?query=sql&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses?query=sql" href="https://www.coursera.org/courses?query=sql" to="https://www.coursera.org/courses?query=sql" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~d1ae314874750946b21d3b5596e75eae">SQL Courses</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/courses&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/courses" href="https://www.coursera.org/courses" to="https://www.coursera.org/courses" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~0b9060825ea32340aa39585a50516bb6">See All Courses</a></li></ul></div><div class="cds-9 rc-SubFooterSection lohp-rebrand css-0 cds-11 cds-grid-item cds-61"><p class="cds-119 rc-SubFooterSection\_\_header lohp-rebrand css-e7lgfl cds-121">Popular Career Resources</p><ul class="rc-SubFooterSection\_\_content-column-links" role="list"><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/how-to-become-a-data-analyst&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/how-to-become-a-data-analyst" href="https://www.coursera.org/articles/how-to-become-a-data-analyst" to="https://www.coursera.org/articles/how-to-become-a-data-analyst" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~1adb8cc11660421a5f632ce5dc6aa4ff">Become a Data Analyst</a></li><li 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Career Guide</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/essential-it-certifications-entry-level-and-beginner&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/essential-it-certifications-entry-level-and-beginner" href="https://www.coursera.org/articles/essential-it-certifications-entry-level-and-beginner" to="https://www.coursera.org/articles/essential-it-certifications-entry-level-and-beginner" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~0cd2026271d4548e57185f759e9227d9">Essential IT Certifications</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/high-income-skills&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/high-income-skills" href="https://www.coursera.org/articles/high-income-skills" to="https://www.coursera.org/articles/high-income-skills" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~626c9007e8efb116a9294f4e609e6ba6">High-Income Skills Worth Learning</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/the-pmp-certification-a-guide-to-getting-started&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/the-pmp-certification-a-guide-to-getting-started" href="https://www.coursera.org/articles/the-pmp-certification-a-guide-to-getting-started" to="https://www.coursera.org/articles/the-pmp-certification-a-guide-to-getting-started" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~bfc22a6e5def30d561267286d1a08c75">How to Get a PMP Certification</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/popular-cybersecurity-certifications&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/popular-cybersecurity-certifications" href="https://www.coursera.org/articles/popular-cybersecurity-certifications" to="https://www.coursera.org/articles/popular-cybersecurity-certifications" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~7e00c743b1465955ffbade2b7f389efa">Popular Cybersecurity Certifications</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/data-analytics-certification&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/data-analytics-certification" href="https://www.coursera.org/articles/data-analytics-certification" to="https://www.coursera.org/articles/data-analytics-certification" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~4390961cd8c9a24a58ea06e35d547fc1">Popular Data Analytics Certifications</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/a-guide-to-pmi-certifications&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/a-guide-to-pmi-certifications" href="https://www.coursera.org/articles/a-guide-to-pmi-certifications" to="https://www.coursera.org/articles/a-guide-to-pmi-certifications" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~0c1e94093986cdd49c25660e2069c23d">Popular PMI Certifications</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles/sql-certifications-for-your-data-career&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles/sql-certifications-for-your-data-career" href="https://www.coursera.org/articles/sql-certifications-for-your-data-career" to="https://www.coursera.org/articles/sql-certifications-for-your-data-career" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~42a00cee499f7039ad9f4c90f366e55b">Popular SQL Certifications</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles" href="https://www.coursera.org/articles" to="https://www.coursera.org/articles" class="rc-SubFooterSection\_\_content-column-link-text" \_\_typename="Seo\_ComponentLink" id="ComponentLink~c11994cedf75dfff41dd909aae3058c9">See All Career Resources</a></li></ul></div><div class="cds-9 rc-SubFooterSection lohp-rebrand css-0 cds-11 cds-grid-item cds-61"><p class="cds-119 rc-SubFooterSection\_\_header lohp-rebrand css-e7lgfl cds-121">Coursera</p><ul class="rc-SubFooterSection\_\_content-column-links" role="list"><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://about.coursera.org/&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://about.coursera.org/" href="https://about.coursera.org/" to="https://about.coursera.org/" class="rc-SubFooterSection\_\_content-column-link-text">About</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://about.coursera.org/how-coursera-works/&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://about.coursera.org/how-coursera-works/" href="https://about.coursera.org/how-coursera-works/" to="https://about.coursera.org/how-coursera-works/" class="rc-SubFooterSection\_\_content-column-link-text">What We Offer</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://about.coursera.org/leadership&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://about.coursera.org/leadership" href="https://about.coursera.org/leadership" to="https://about.coursera.org/leadership" class="rc-SubFooterSection\_\_content-column-link-text">Leadership</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://careers.coursera.com/&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://careers.coursera.com/" href="https://careers.coursera.com/" to="https://careers.coursera.com/" class="rc-SubFooterSection\_\_content-column-link-text">Careers</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/browse&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/browse" href="/browse" to="/browse" class="rc-SubFooterSection\_\_content-column-link-text">Catalog</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/courseraplus&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/courseraplus" href="/courseraplus" to="/courseraplus" class="rc-SubFooterSection\_\_content-column-link-text">Coursera Plus</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/professional-certificate&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/professional-certificate" href="/professional-certificate" to="/professional-certificate" class="rc-SubFooterSection\_\_content-column-link-text">Professional Certificates</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/mastertrack&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/mastertrack" href="/mastertrack" to="/mastertrack" class="rc-SubFooterSection\_\_content-column-link-text">MasterTrackÂ® Certificates</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/degrees&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/degrees" href="/degrees" to="/degrees" class="rc-SubFooterSection\_\_content-column-link-text">Degrees</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/business?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-enterprise&amp;utm\_medium=coursera&amp;utm\_source=enterprise&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/business?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-enterprise&amp;utm\_medium=coursera&amp;utm\_source=enterprise" href="/business?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-enterprise&amp;utm\_medium=coursera&amp;utm\_source=enterprise" to="/business?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-enterprise&amp;utm\_medium=coursera&amp;utm\_source=enterprise" class="rc-SubFooterSection\_\_content-column-link-text">For Enterprise</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/government?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-government&amp;utm\_medium=coursera&amp;utm\_source=enterprise&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/government?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-government&amp;utm\_medium=coursera&amp;utm\_source=enterprise" href="/government?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-government&amp;utm\_medium=coursera&amp;utm\_source=enterprise" to="/government?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-government&amp;utm\_medium=coursera&amp;utm\_source=enterprise" class="rc-SubFooterSection\_\_content-column-link-text">For Government</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/campus?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-campus&amp;utm\_medium=coursera&amp;utm\_source=enterprise&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/campus?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-campus&amp;utm\_medium=coursera&amp;utm\_source=enterprise" href="/campus?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-campus&amp;utm\_medium=coursera&amp;utm\_source=enterprise" to="/campus?utm\_campaign=website&amp;utm\_content=corp-to-home-footer-for-campus&amp;utm\_medium=coursera&amp;utm\_source=enterprise" class="rc-SubFooterSection\_\_content-column-link-text">For Campus</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://partnerships.coursera.org/?utm\_medium=coursera&amp;utm\_source=partnerships&amp;utm\_campaign=website&amp;utm\_content=corp-to-home-footer-become-a-partner&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://partnerships.coursera.org/?utm\_medium=coursera&amp;utm\_source=partnerships&amp;utm\_campaign=website&amp;utm\_content=corp-to-home-footer-become-a-partner" href="https://partnerships.coursera.org/?utm\_medium=coursera&amp;utm\_source=partnerships&amp;utm\_campaign=website&amp;utm\_content=corp-to-home-footer-become-a-partner" to="https://partnerships.coursera.org/?utm\_medium=coursera&amp;utm\_source=partnerships&amp;utm\_campaign=website&amp;utm\_content=corp-to-home-footer-become-a-partner" class="rc-SubFooterSection\_\_content-column-link-text">Become a Partner</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.support/s/article/360041137871-A-community-response-to-COVID-19&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.support/s/article/360041137871-A-community-response-to-COVID-19" href="https://www.coursera.support/s/article/360041137871-A-community-response-to-COVID-19" to="https://www.coursera.support/s/article/360041137871-A-community-response-to-COVID-19" class="rc-SubFooterSection\_\_content-column-link-text">Coronavirus Response</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/social-impact&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/social-impact" href="/social-impact" to="/social-impact" class="rc-SubFooterSection\_\_content-column-link-text">Social Impact</a></li></ul></div><div class="cds-9 rc-SubFooterSection lohp-rebrand css-0 cds-11 cds-grid-item cds-61"><p class="cds-119 rc-SubFooterSection\_\_header lohp-rebrand css-e7lgfl cds-121">Community</p><ul class="rc-SubFooterSection\_\_content-column-links" role="list"><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.community&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.community" href="https://www.coursera.community" to="https://www.coursera.community" class="rc-SubFooterSection\_\_content-column-link-text">Learners</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/about/partners&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/about/partners" href="https://www.coursera.org/about/partners" to="https://www.coursera.org/about/partners" class="rc-SubFooterSection\_\_content-column-link-text">Partners</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.support/s/article/360000152926-Become-a-Coursera-beta-tester&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.support/s/article/360000152926-Become-a-Coursera-beta-tester" href="https://www.coursera.support/s/article/360000152926-Become-a-Coursera-beta-tester" to="https://www.coursera.support/s/article/360000152926-Become-a-Coursera-beta-tester" class="rc-SubFooterSection\_\_content-column-link-text">Beta Testers</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://translate-coursera.org&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://translate-coursera.org" href="https://translate-coursera.org" to="https://translate-coursera.org" class="rc-SubFooterSection\_\_content-column-link-text">Translators</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://blog.coursera.org&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://blog.coursera.org" href="https://blog.coursera.org" to="https://blog.coursera.org" class="rc-SubFooterSection\_\_content-column-link-text" target="\_blank" rel="noopener noreferrer">Blog</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://medium.com/coursera-engineering&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://medium.com/coursera-engineering" href="https://medium.com/coursera-engineering" to="https://medium.com/coursera-engineering" class="rc-SubFooterSection\_\_content-column-link-text" target="\_blank" rel="noopener noreferrer">Tech Blog</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/teaching-center&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/teaching-center" href="/teaching-center" to="/teaching-center" class="rc-SubFooterSection\_\_content-column-link-text" target="\_blank" rel="noopener noreferrer">Teaching Center</a></li></ul></div><div class="cds-9 rc-SubFooterSection lohp-rebrand css-0 cds-11 cds-grid-item cds-61"><p class="cds-119 rc-SubFooterSection\_\_header lohp-rebrand css-e7lgfl cds-121">More</p><ul class="rc-SubFooterSection\_\_content-column-links" role="list"><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/about/press&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/about/press" href="/about/press" to="/about/press" class="rc-SubFooterSection\_\_content-column-link-text">Press</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://investor.coursera.com&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://investor.coursera.com" href="https://investor.coursera.com" to="https://investor.coursera.com" class="rc-SubFooterSection\_\_content-column-link-text">Investors</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/about/terms&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/about/terms" href="/about/terms" to="/about/terms" class="rc-SubFooterSection\_\_content-column-link-text">Terms</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/about/privacy&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/about/privacy" href="/about/privacy" to="/about/privacy" class="rc-SubFooterSection\_\_content-column-link-text">Privacy</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://learner.coursera.help/hc&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://learner.coursera.help/hc" href="https://learner.coursera.help/hc" to="https://learner.coursera.help/hc" class="rc-SubFooterSection\_\_content-column-link-text">Help</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://learner.coursera.help/hc/articles/360050668591-Accessibility-Statement&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://learner.coursera.help/hc/articles/360050668591-Accessibility-Statement" href="https://learner.coursera.help/hc/articles/360050668591-Accessibility-Statement" to="https://learner.coursera.help/hc/articles/360050668591-Accessibility-Statement" class="rc-SubFooterSection\_\_content-column-link-text">Accessibility</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/about/contact&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/about/contact" href="/about/contact" to="/about/contact" class="rc-SubFooterSection\_\_content-column-link-text">Contact</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://www.coursera.org/articles&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://www.coursera.org/articles" href="https://www.coursera.org/articles" to="https://www.coursera.org/articles" class="rc-SubFooterSection\_\_content-column-link-text">Articles</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/directory&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/directory" href="/directory" to="/directory" class="rc-SubFooterSection\_\_content-column-link-text">Directory</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://about.coursera.org/affiliates&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://about.coursera.org/affiliates" href="https://about.coursera.org/affiliates" to="https://about.coursera.org/affiliates" class="rc-SubFooterSection\_\_content-column-link-text">Affiliates</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;https://coursera\_assets.s3.amazonaws.com/footer/Modern+Slavery+Statement+26+April+2023.pdf&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="https://coursera\_assets.s3.amazonaws.com/footer/Modern+Slavery+Statement+26+April+2023.pdf" href="https://coursera\_assets.s3.amazonaws.com/footer/Modern+Slavery+Statement+26+April+2023.pdf" to="https://coursera\_assets.s3.amazonaws.com/footer/Modern+Slavery+Statement+26+April+2023.pdf" class="rc-SubFooterSection\_\_content-column-link-text" target="\_blank" rel="noopener noreferrer">Modern Slavery Statement</a></li><li class="rc-SubFooterSection\_\_content-column-link-item lohp-rebrand" role="listitem"><a data-click-key="articles..click.seo\_directory\_link" data-click-value="{&quot;href&quot;:&quot;/about/cookies-manage&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;seo\_directory\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="seo\_directory\_link" data-track-href="/about/cookies-manage" href="/about/cookies-manage" to="/about/cookies-manage" class="rc-SubFooterSection\_\_content-column-link-text">Do Not Sell/Share</a></li></ul></div><div class="cds-9 css-0 cds-11 cds-grid-item cds-61"><div class="rc-SeoGlobalFooter\_\_mobile-badges-column-text">Learn Anywhere</div><div class="cds-9 mobile-app-badges mobile-app-badges--justify-between css-p2g82x cds-11 cds-grid-item"><a data-click-key="articles..click.mobile\_app\_badges\_ios" data-click-value="{&quot;href&quot;:&quot;https://itunes.apple.com/app/apple-store/id736535961?pt=2334150&amp;ct=Coursera%20Web%20Promo%20Banner&amp;mt=8&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;mobile\_app\_badges\_ios&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="mobile\_app\_badges\_ios" data-track-href="https://itunes.apple.com/app/apple-store/id736535961?pt=2334150&amp;ct=Coursera%20Web%20Promo%20Banner&amp;mt=8" href="https://itunes.apple.com/app/apple-store/id736535961?pt=2334150&amp;ct=Coursera%20Web%20Promo%20Banner&amp;mt=8" to="https://itunes.apple.com/app/apple-store/id736535961?pt=2334150&amp;ct=Coursera%20Web%20Promo%20Banner&amp;mt=8" class="\_wwcfwz mobile-badge \_wwcfwz subfooter-mobile-badge" data-platform="ios"><div class="\_yqjywj"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://d3njjcbhbojbot.cloudfront.net/web/images/icons/download\_on\_the\_app\_store\_badge\_en.svg?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=152&amp;h=45&amp;w=152" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a><a data-click-key="articles..click.mobile\_app\_badges\_android" data-click-value="{&quot;href&quot;:&quot;http://play.google.com/store/apps/details?id=org.coursera.android&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;mobile\_app\_badges\_android&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="mobile\_app\_badges\_android" data-track-href="http://play.google.com/store/apps/details?id=org.coursera.android" href="http://play.google.com/store/apps/details?id=org.coursera.android" to="http://play.google.com/store/apps/details?id=org.coursera.android" class="mobile-badge \_wwcfwz subfooter-mobile-badge" data-platform="android"><div class="\_yqjywj"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://d3njjcbhbojbot.cloudfront.net/web/images/icons/en\_generic\_rgb\_wo\_45.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=152&amp;h=45&amp;w=152" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></div><div class="b-corp-logo css-15utrac"><div class="\_181t6pv"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://d3njjcbhbojbot.cloudfront.net/web/images/icons/2018-B-Corp-Logo-Black-S.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=151&amp;w=82&amp;h=120" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></div></div><div class="cds-9 css-f70avt cds-11 cds-grid-item cds-70"><div class="rc-SeoGlobalFooter\_\_social-media-and-copyright lohp-rebrand"><div class="rc-CopyrightV2 lohp-rebrand"><span class="rc-CopyrightV2\_\_text">Â© 2023 Coursera Inc. All rights reserved.</span></div><div class="rc-SocialMediaLinksV2 lohp-rebrand"><ul class="rc-SocialMediaLinksV2\_\_social-media-list"><li class="rc-SocialMediaLinksV2\_\_social-media-list-item"><a data-click-key="articles..click.facebook\_link" data-click-value="{&quot;href&quot;:&quot;https://www.facebook.com/Coursera&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;facebook\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="facebook\_link" data-track-href="https://www.facebook.com/Coursera" href="https://www.facebook.com/Coursera" to="https://www.facebook.com/Coursera" target="\_blank" rel="noopener noreferrer"><div class="\_liimpa"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://s3.amazonaws.com/coursera\_assets/footer/facebook.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=28&amp;h=28&amp;w=28" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></li><li class="rc-SocialMediaLinksV2\_\_social-media-list-item"><a data-click-key="articles..click.linkedin\_link" data-click-value="{&quot;href&quot;:&quot;https://www.linkedin.com/company/coursera&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;linkedin\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="linkedin\_link" data-track-href="https://www.linkedin.com/company/coursera" href="https://www.linkedin.com/company/coursera" to="https://www.linkedin.com/company/coursera" target="\_blank" rel="noopener noreferrer"><div class="\_liimpa"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://s3.amazonaws.com/coursera\_assets/footer/linkedin.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=28&amp;h=28&amp;w=28" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></li><li class="rc-SocialMediaLinksV2\_\_social-media-list-item"><a data-click-key="articles..click.twitter\_link" data-click-value="{&quot;href&quot;:&quot;https://twitter.com/coursera&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;twitter\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="twitter\_link" data-track-href="https://twitter.com/coursera" href="https://twitter.com/coursera" to="https://twitter.com/coursera" target="\_blank" rel="noopener noreferrer"><div class="\_liimpa"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://s3.amazonaws.com/coursera\_assets/footer/twitter.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=28&amp;h=28&amp;w=28" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></li><li class="rc-SocialMediaLinksV2\_\_social-media-list-item"><a data-click-key="articles..click.youtube\_link" data-click-value="{&quot;href&quot;:&quot;https://www.youtube.com/user/coursera&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;youtube\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="youtube\_link" data-track-href="https://www.youtube.com/user/coursera" href="https://www.youtube.com/user/coursera" to="https://www.youtube.com/user/coursera" target="\_blank" rel="noopener noreferrer"><div class="\_liimpa"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://s3.amazonaws.com/coursera\_assets/footer/youtube.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=28&amp;h=28&amp;w=28" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></li><li class="rc-SocialMediaLinksV2\_\_social-media-list-item"><a data-click-key="articles..click.instagram\_link" data-click-value="{&quot;href&quot;:&quot;https://www.instagram.com/coursera/&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;instagram\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="instagram\_link" data-track-href="https://www.instagram.com/coursera/" href="https://www.instagram.com/coursera/" to="https://www.instagram.com/coursera/" target="\_blank" rel="noopener noreferrer"><div class="\_liimpa"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://s3.amazonaws.com/coursera\_assets/footer/instagram.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=28&amp;h=28&amp;w=28" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></li><li class="rc-SocialMediaLinksV2\_\_social-media-list-item"><a data-click-key="articles..click.tiktok\_link" data-click-value="{&quot;href&quot;:&quot;https://www.tiktok.com/@coursera&quot;,&quot;namespace&quot;:{&quot;action&quot;:&quot;click&quot;,&quot;app&quot;:&quot;articles&quot;,&quot;component&quot;:&quot;tiktok\_link&quot;},&quot;schema\_type&quot;:&quot;FRONTEND&quot;}" data-track="true" data-track-app="articles" data-track-action="click" data-track-component="tiktok\_link" data-track-href="https://www.tiktok.com/@coursera" href="https://www.tiktok.com/@coursera" to="https://www.tiktok.com/@coursera" target="\_blank" rel="noopener noreferrer"><div class="\_liimpa"><img alt="Placeholder" src="https://d3njjcbhbojbot.cloudfront.net/api/utilities/v1/imageproxy/https://coursera\_assets.s3.amazonaws.com/images/9b7e964107839c77644d7e7d15035b73.png?auto=format%2Ccompress&amp;dpr=2&amp;blur=200&amp;px=8&amp;max-w=28&amp;h=28&amp;w=28" class="\_1nhfz2"/><div class="lazyload-wrapper"><div class="lazyload-placeholder"></div></div></div></a></li></ul></div></div></div></div></div></div></footer></div></div></div></div><script> window.App={"context":{"dispatcher":{"stores":{"ApplicationStore":{"csrfToken":"\u003CMISSING\u003E","mobilePromoEligible":false,"requestCountryCode":"US","userAgent":{"source":"python-requests\u002F2.31.0","browser":{"name":"unknown"},"system":"unknown","platform":"unknown","isMobileBrowser":false,"isAndroid":false,"isCourseraMobileApp":false,"isMobile":false,"isIOS":false,"isMobilePhoneBrowser":false,"isPrerender":false,"isRobot":false,"isOculusQuest":false},"userData":{"id":null,"authenticated":false},"appName":"articles"},"NaptimeStore":{"data":{},"responseCache":{},"elementsToUrlMapping":{},"emptyQueries":[],"errors":{}}}},"plugins":{}},"plugins":{}}; window.appName="articles"; window.\_\_APOLLO\_STATE\_\_ = 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Hereâs a look at the best ones in 2023.\",\"targetKeyword\":\"python machine learning library\",\"localizedCountryCode\":\"us\",\"featuredImageLink\":null,\"hideFeaturedImage\":null,\"category\":\"Data\",\"subcategory\":\"Data Science\",\"tags\":null,\"metaTitle\":null,\"metaDescription\":null,\"featuredImage\":{\"title\":null,\"description\":\"[Featured Image]: A male, wearing a reddish shirt, glasses, and a beard. He is working in front of his computer in his office. \",\"width\":5764,\"height\":2613,\"url\":\"https:\u002F\u002Fimages.ctfassets.net\u002Fwp1lcwdav1p1\u002F6tpdyQDkf2LasanP13f839\u002F825316197001639d170a4b56858f8d86\u002FGettyImages-1348968303.jpg?w=1500&h=680&q=60&fit=fill&f=faces&fm=jpg&fl=progressive\"},\"relatedArticlesCollection\":{\"items\":[{\"sys\":{\"publishedAt\":\"2023-11-20T20:20:30.436Z\"},\"title\":\"What Is Python Used For? 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Itâs efficient and easy to learn, and one of its greatest features is its open-source libraries available for users. The libraries allow users to choose from frameworks that they can build off of to produce new machine learning (ML) models.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Whether you are already familiar with machine learning in your career or want to get started, this field holds plenty of growth opportunities. The US Bureau of Labor Statistics (BLS) includes machine learning in its \",\"nodeType\":\"text\"},{\"data\":{},\"marks\":[],\"value\":\"computer and information technology occupations category. Jobs in this field are expected to grow 15 percent 2021-2031ânearly two times faster than the national averageâor an estimated 682,800Ânew positions [\",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.bls.gov\u002Fooh\u002Fcomputer-and-information-technology\u002Fhome.htm\"},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"2\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\"]. \",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"bold\"}],\"value\":\"Learn more: \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Farticles\u002Fwhat-is-python-used-for-a-beginners-guide-to-using-python\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"What Is Python Used For? 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There are tens of thousands of Python libraries that help machine learning developers, as well as professionals working in data science, data visualization, and more.Â\\n\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Python is the preferred language for machine learning because its syntax and commands are closely related to English, making it efficient and easy to learn. Compared with \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Farticles\u002Fpython-vs-c\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"C++\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\", \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Farticles\u002Fpython-or-r-for-data-analysis\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"R\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\", \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Farticles\u002Fruby-vs-python\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"Ruby\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\", and \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Farticles\u002Fpython-vs-java\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"Java\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\", Python remains one of the simplest languages, enabling accessibility, versatility, and portability. It can operate on nearly any operating system or platform.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"bold\"}],\"value\":\"For an introduction to Python libraries Numpy, SciPy, Matplotlib, Seaborn, check out this video from the University of Michiganâs \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Fspecializations\u002Fstatistics-with-python\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"},{\"type\":\"bold\"}],\"value\":\"Statistics with Python\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[{\"type\":\"bold\"}],\"value\":\" specialization:\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{\"target\":{\"sys\":{\"id\":\"5UY7DlMwnCfCUuYZWeDfXQ\",\"type\":\"Link\",\"linkType\":\"Entry\"}}},\"content\":[],\"nodeType\":\"embedded-entry-block\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"9 best Python libraries for machine learning\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-2\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"If youâre working with machine learning and deep learning projects, there are thousands of Python libraries to choose from, and they can vary in size, quality, and diversity. Here is a curated list of the best Python libraries to help you get started on your machine learning journey. This list is based on popularity, derived from their reputation among Python library users.ÂÂ\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"1. NumPy\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"NumPy is a popular Python library for multi-dimensional array and matrix processing because it can be used to perform a great variety of mathematical operations. Its capability to handle linear algebra, Fourier transform, and more, makes NumPy ideal for machine learning and artificial intelligence (AI) projects, allowing users to manipulate the matrix to easily improve machine learning performance. NumPy is faster and easier to use than most other Python libraries.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"2. Scikit-learn\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Scikit-learn is a very popular machine learning library that is built on NumPy and SciPy. It supports most of the classic supervised and unsupervised learning algorithms, and it can also be used for data mining, modeling, and analysis. Scikit-learnâs simple design offers a user-friendly library for those new to machine learning.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"3. Pandas\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Pandas is another Python library that is built on top of NumPy, responsible for preparing high-level data sets for machine learning and training. It relies on two types of data structures, one-dimensional (series) and two-dimensional (DataFrame). This allows Pandas to be applicable in a variety of industries including finance, engineering, and statistics. Unlike the slow-moving animals themselves, the Pandas library is quick, compliant, and flexible.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"4. TensorFlow\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"TensorFlowâs open-source Python library specializes in whatâs called differentiable programming, meaning it can automatically compute a functionâs derivatives within high-level language. Both machine learning and deep learning models are easily developed and evaluated with TensorFlowâs flexible architecture and framework. TensorFlow can be used to visualize machine learning models on both desktop and mobile.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"This project-based \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Fspecializations\u002Ftensorflow-advanced-techniques\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"TensorFlow specialization\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\" from DeepLearning.AI is perfect for anyone ready to deep-dive into applied machine learning. Customize ML models with four hands-on courses:\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{\"target\":{\"sys\":{\"id\":\"3tt36rE0yQZ78XV6uQ16rB\",\"type\":\"Link\",\"linkType\":\"Entry\"}}},\"content\":[],\"nodeType\":\"embedded-entry-block\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\\n\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"5. Seaborn\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Seaborn is another open-source Python library, one that is based on Matplotlib (which focuses on plotting and data visualization) but features Pandasâ data structures. Seaborn is often used in ML projects because it can generate plots of learning data. Of all the Python libraries, it produces the most aesthetically pleasing graphs and plots, making it an effective choice if youâll also use it for marketing and data analysis.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"6. Theano\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Theano is a Python library that focuses on numerical computation and is specifically made for machine learning. It is able to optimize and evaluate mathematical models and matrix calculations that use multi-dimensional arrays to create ML models. Theano is almost exclusively used by machine learning and deep learning developers or programmers.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"7. Keras\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Keras is a Python library that is designed specifically for developing the neural networks for ML models. It can run on top of Theano and TensorFlow to train neural networks. Keras is flexible, portable, and user-friendly, and easily integrated with multiple functions.Â\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{\"target\":{\"sys\":{\"id\":\"6vIC9Et4XGDqOJP85lUV8M\",\"type\":\"Link\",\"linkType\":\"Entry\"}}},\"content\":[],\"nodeType\":\"embedded-entry-block\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"8. PyTorch\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"PyTorch is an open-source machine learning Python library based on the C programming language framework, Torch. It is mainly used in ML applications that involve natural language processing or computer vision. PyTorch is known for being exceptionally fast at executing large, dense data sets and graphs.Â\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"9. Matplotlib\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-3\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Matplotlib is a Python library focused on data visualization and primarily used for creating beautiful graphs, plots, histograms, and bar charts. It is compatible for plotting data from SciPy, NumPy, and Pandas. If you have experience using other types of graphing tools, Matplotlib might be the most intuitive choice for you.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"Learn Python with Coursera\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-2\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"It is true that anybody can learn Python. Start your Python journey today and use Courseraâs free trial to start \",\"nodeType\":\"text\"},{\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Flearn\u002Fpython\"},\"content\":[{\"data\":{},\"marks\":[{\"type\":\"underline\"}],\"value\":\"Python for Everybody\",\"nodeType\":\"text\"}],\"nodeType\":\"hyperlink\"},{\"data\":{},\"marks\":[],\"value\":\" from the University of Michigan. Youâll learn to develop programs to clean, analyze, and visualize data.\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{\"target\":{\"sys\":{\"id\":\"6dbySGV2mm1izUDUnngZ44\",\"type\":\"Link\",\"linkType\":\"Entry\"}}},\"content\":[],\"nodeType\":\"embedded-entry-block\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\\n\\n\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"heading-4\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\\n\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"},{\"data\":{},\"content\":[{\"data\":{},\"marks\":[],\"value\":\"\",\"nodeType\":\"text\"}],\"nodeType\":\"paragraph\"}],\"nodeType\":\"document\"},\"links\":{\"assets\":{\"block\":[]},\"entries\":{\"block\":[{\"\_\_typename\":\"ArticlesVlpEmbed\",\"sys\":{\"id\":\"5UY7DlMwnCfCUuYZWeDfXQ\"},\"url\":\"https:\u002F\u002Fwww.coursera.org\u002Flecture\u002Funderstanding-visualization-data\u002Fimportant-python-libraries-47FEN?utm\_source=link&utm\_medium=page\_share&utm\_content=vlp&utm\_campaign=top\_button\",\"videoTimestamp\":null,\"videoDescription\":\"The video discusses important python libraries. \",\"embedType\":null},{\"\_\_typename\":\"ArticlesVlpEmbed\",\"sys\":{\"id\":\"3tt36rE0yQZ78XV6uQ16rB\"},\"url\":\"https:\u002F\u002Fwww.coursera.org\u002Fspecializations\u002Ftensorflow-advanced-techniques\",\"videoTimestamp\":null,\"videoDescription\":null,\"embedType\":\"entity-card\"},{\"\_\_typename\":\"ArticlesHighlight\",\"sys\":{\"id\":\"6vIC9Et4XGDqOJP85lUV8M\"},\"body\":{\"json\":{\"nodeType\":\"document\",\"data\":{},\"content\":[{\"nodeType\":\"heading-3\",\"data\":{},\"content\":[{\"nodeType\":\"text\",\"value\":\"Practice your Python skills with tutorials \",\"marks\":[],\"data\":{}}]},{\"nodeType\":\"paragraph\",\"data\":{},\"content\":[{\"nodeType\":\"text\",\"value\":\"Discover step-by-step guides for troubleshooting Python basics like \",\"marks\":[],\"data\":{}},{\"nodeType\":\"hyperlink\",\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Ftutorials\u002Fpython-syntax\"},\"content\":[{\"nodeType\":\"text\",\"value\":\"syntax\",\"marks\":[],\"data\":{}}]},{\"nodeType\":\"text\",\"value\":\", \",\"marks\":[],\"data\":{}},{\"nodeType\":\"hyperlink\",\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Ftutorials\u002Fpython-if-else-statement\"},\"content\":[{\"nodeType\":\"text\",\"value\":\"if-else statements\",\"marks\":[],\"data\":{}}]},{\"nodeType\":\"text\",\"value\":\", and \",\"marks\":[],\"data\":{}},{\"nodeType\":\"hyperlink\",\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Ftutorials\u002Fpython-exception\"},\"content\":[{\"nodeType\":\"text\",\"value\":\"exceptions\",\"marks\":[],\"data\":{}}]},{\"nodeType\":\"text\",\"value\":\", and working with \",\"marks\":[],\"data\":{}},{\"nodeType\":\"hyperlink\",\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Ftutorials\u002Ffor-loop-python\"},\"content\":[{\"nodeType\":\"text\",\"value\":\"loops\",\"marks\":[],\"data\":{}}]},{\"nodeType\":\"text\",\"value\":\" in \",\"marks\":[],\"data\":{}},{\"nodeType\":\"hyperlink\",\"data\":{\"uri\":\"https:\u002F\u002Fwww.coursera.org\u002Ftutorials\"},\"content\":[{\"nodeType\":\"text\",\"value\":\"Coursera's free programming tutorials\",\"marks\":[],\"data\":{}}]},{\"nodeType\":\"text\",\"value\":\".\",\"marks\":[],\"data\":{}}]}]}}},{\"\_\_typename\":\"ArticlesVlpEmbed\",\"sys\":{\"id\":\"6dbySGV2mm1izUDUnngZ44\"},\"url\":\"https:\u002F\u002Fwww.coursera.org\u002Flearn\u002Fpython\",\"videoTimestamp\":null,\"videoDescription\":null,\"embedType\":\"entity-card\"}]}}},\"authorsCollection\":{\"items\":[{\"sys\":{\"id\":\"79OkIBaYRct8oHQv7Remp2\"},\"name\":\"Coursera Staff\",\"jobTitle\":\"Editorial Team\",\"slug\":\"coursera-staff\",\"description\":\"Courseraâs editorial team is comprised of highly experienced professional editors, writers, and fact-checkers. Our articles are deeply researched and thoroughly reviewed to ensure we are providing trustworthy information and advice for any topic. We understand that taking the next step in your education or career can raise questions. We are here to provide actionable, reliable, and relevant answers so you can achieve your goals.\",\"externalWebsites\":null,\"image\":{\"sys\":{\"id\":\"59Tsnd9hNK8LZsjsKCVmZ5\"},\"url\":\"https:\u002F\u002Fimages.ctfassets.net\u002Fwp1lcwdav1p1\u002F59Tsnd9hNK8LZsjsKCVmZ5\u002F4f16f278d2dfada6d59f618af2070324\u002Fcoursera-symbol-full-rgb.svg\"}}]},\"primaryCategory\":{\"name\":\"Data\",\"pageDataCollection\":{\"items\":[{\"slug\":\"data\",\"countryCode\":\"global\"}]}}}"},"LocalizedDataQueries:{}":{"\_\_typename":"LocalizedDataQueries","getLocalizedData({\"contentfulRequest\":{\"query\":\"query getArticle($preview: Boolean!, $countryCode: String!, $languageCode: String!, $variant: String!, $locale: String!) {\\n articleCollection(\\n preview: $preview\\n where: {AND: [{countryCode: $countryCode}, {variant: $variant}, {languageCode: $languageCode}, {slug: \\\"python-machine-learning-library\\\", countryCode: \\\"global\\\"}]}\\n limit: 1\\n locale: $locale\\n ) {\\n items {\\n 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window.renderedClassNames = ["\_1l1hu98","\_ufjrdd","\_1qfi0x77","\_1dyqk64","\_1nhfz2","\_wwcfwz","\_yqjywj","\_181t6pv","\_liimpa"]; window.detectedTimezone = "America/New\_York"; </script><script src="https://browser.sentry-cdn.com/7.43.0/bundle.tracing.es5.min.js" integrity="sha384-rR6rDYmxEKiTsMkBCYAObw+VPAbK1fhNMHFyGpSQlEW/WIx0Ex7s1vEdsLxG8qam" crossorigin="anonymous" referrerpolicy="no-referrer"></script><script>(function () { if (typeof Sentry === 'undefined') return; var sentryConfig; try { sentryConfig = JSON.parse("{\"publicDsn\":\"https://b98a248650b4422aa62b11040f69e742@o75955.ingest.sentry.io/4505092808441856\",\"enabled\":true,\"sampleRate\":0.1}"); } catch (err) { sentryConfig = null; } if (sentryConfig && sentryConfig.publicDsn) { Sentry.init({ allowUrls: [new RegExp('^webpack://'), new RegExp('^https://d3njjcbhbojbot.cloudfront.net/web')], dsn: sentryConfig.publicDsn, enabled: sentryConfig.enabled, environment: 'production', integrations: [new Sentry.BrowserTracing()], release: '9c0d93efce2794d25eac88f59d2317fa18aa8751', sampleRate: sentryConfig.sampleRate, tracesSampleRate: sentryConfig.sampleRate / 10 }); Sentry.setTag('appname', 'articles'); Sentry.setTag('version', '9c0d93efce2794d25eac88f59d2317fa18aa8751'); if ("canary\_1".indexOf('APPVERSION\_ACA') < 0) { Sentry.setTag('aca', "canary\_1"); } }})();</script><script>var loadScript = function(url, success, async) { var newScript = document.createElement('script'); var scripts = document.getElementsByTagName('script'); newScript.type = 'text/javascript'; newScript.async = async || false; newScript.crossOrigin = 'anonymous'; if (success) { if (newScript.addEventListener) { newScript.addEventListener('load', function() { success(); }, false); } else if(newScript.readyState) { newScript.onreadystatechange = function() { if (this.readyState == 'complete') { newScript.onreadystatechange = null; success(); } }; } } if (scripts && scripts.length) { var lastScript = scripts[scripts.length - 1]; lastScript.parentNode.insertBefore(newScript, lastScript.nextSibling); } else if (window.document && window.document.body) { window.document.body.appendChild(newScript); } // IE9 will execute the proper order if src is set AFTER injection newScript.src = url;}window.coursera = {};window.appName = "articles";window.locale = "en";</script><script>coursera.config = (function() { var config = 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if (config) { // requesters country of origin, injected by edge // in the following format https://en.wikipedia.org/wiki/ISO\_3166-1\_alpha-2 config.requestCountryCode = 'US'; return config; } else { return {}; }})();/\* global coursera \*/// Provide a string that will be replaced by edge.// Make sure to use double quotes because edge only escapes double quotes.// Then check that edge actually did the replacement.// Otherwise return an empty object.// You must use double quotes for the injected stringcoursera.epicOverrides = (function() { var injectedString = 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if (injectedString.search('EPIC\_SITE\_HOME\_PLACEHOLDER') >= 0) { return {}; } var epicResponse = injectedString && injectedString !== undefined ? JSON.parse(injectedString) : {}; return epicResponse.elements || {};})();/\* globals coursera \*//\* eslint-disable quotes \*/coursera.user = (function() { var userJson = "{}"; try { return JSON.parse(userJson); } catch (e) { return {}; }})();/\* globals coursera\*/// Defines a named AMD module containing the course IDcoursera.courseId = (function() { return '{{ ONDEMAND\_COURSE\_ID\_PLACEHOLDER }}';})();</script></body></html>

File Path: N/A

Links: h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, b, u, s, i, n, e, s, s, ?, u, t, m, \_, c, o, n, t, e, n, t, =, c, o, r, p, -, t, o, -, h, o, m, e, -, f, o, r, -, e, n, t, e, r, p, r, i, s, e, &, u, t, m, \_, c, a, m, p, a, i, g, n, =, w, e, b, s, i, t, e, &, u, t, m, \_, m, e, d, i, u, m, =, c, o, u, r, s, e, r, a, &, u, t, m, \_, s, o, u, r, c, e, =, h, e, a, d, e, r, &, u, t, m, \_, t, e, r, m, =, b, -, o, u, t, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, a, m, p, u, s, ?, u, t, m, \_, c, o, n, t, e, n, t, =, c, o, r, p, -, t, o, -, l, a, n, d, i, n, g, -, f, o, r, -, c, a, m, p, u, s, &, u, t, m, \_, c, a, m, p, a, i, g, n, =, w, e, b, s, i, t, e, &, u, t, m, \_, m, e, d, i, u, m, =, c, o, u, r, s, e, r, a, &, u, t, m, \_, s, o, u, r, c, e, =, h, e, a, d, e, r, &, u, t, m, \_, t, e, r, m, =, b, -, o, u, t, ,, , h, t, t, p, s, :, /, 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u, r, s, e, r, a, ., o, r, g, /, s, p, e, c, i, a, l, i, z, a, t, i, o, n, s, /, n, a, t, u, r, a, l, -, l, a, n, g, u, a, g, e, -, p, r, o, c, e, s, s, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, l, e, a, r, n, /, p, r, o, m, p, t, -, e, n, g, i, n, e, e, r, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, l, e, a, r, n, /, m, a, c, h, i, n, e, -, l, e, a, r, n, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, a, r, t, i, f, i, c, i, a, l, %, 2, 0, i, n, t, e, l, l, i, g, e, n, c, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, g, o, o, g, l, e, -, c, y, b, e, r, s, e, c, u, r, i, t, y, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, g, o, o, g, l, e, -, d, a, t, a, -, a, n, a, l, y, t, i, c, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, g, o, o, g, l, e, -, d, i, g, i, t, a, l, -, m, a, r, k, e, t, i, n, g, -, e, c, o, m, m, e, r, c, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, g, o, o, g, l, e, -, i, t, -, a, u, t, o, m, a, t, i, o, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, g, o, o, g, l, e, -, i, t, -, s, u, p, p, o, r, t, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, g, o, o, g, l, e, -, p, r, o, j, e, c, t, -, m, a, n, a, g, 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e, r, y, =, c, y, b, e, r, s, e, c, u, r, i, t, y, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, b, r, o, w, s, e, /, d, a, t, a, -, s, c, i, e, n, c, e, /, d, a, t, a, -, a, n, a, l, y, s, i, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, b, r, o, w, s, e, /, d, a, t, a, -, s, c, i, e, n, c, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, d, i, g, i, t, a, l, +, m, a, r, k, e, t, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, m, i, c, r, o, s, o, f, t, +, e, x, c, e, l, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, g, o, o, g, l, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, p, o, w, e, r, +, b, i, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, p, r, o, f, e, s, s, i, o, n, a, l, -, c, e, r, t, i, f, i, c, a, t, e, s, /, m, e, t, a, -, f, r, o, n, t, -, e, n, d, -, d, e, v, e, l, o, p, e, r, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, p, r, o, j, e, c, t, +, m, a, n, a, g, e, m, e, n, t, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, p, y, t, h, o, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, s, q, l, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, h, o, w, -, t, o, -, b, e, c, o, m, e, -, a, -, d, a, t, a, -, a, n, a, l, y, s, t, ,, , h, t, t, p, s, :, /, /, w, w, w, 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s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, t, h, e, -, p, m, p, -, c, e, r, t, i, f, i, c, a, t, i, o, n, -, a, -, g, u, i, d, e, -, t, o, -, g, e, t, t, i, n, g, -, s, t, a, r, t, e, d, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, p, o, p, u, l, a, r, -, c, y, b, e, r, s, e, c, u, r, i, t, y, -, c, e, r, t, i, f, i, c, a, t, i, o, n, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, d, a, t, a, -, a, n, a, l, y, t, i, c, s, -, c, e, r, t, i, f, i, c, a, t, i, o, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, a, -, g, u, i, d, e, -, t, o, -, p, m, i, -, c, e, r, t, i, f, i, c, a, t, i, o, n, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, s, q, l, -, c, e, r, t, i, f, i, c, a, t, i, o, n, s, -, f, 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/, p, y, t, h, o, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, s, p, e, c, i, a, l, i, z, a, t, i, o, n, s, /, u, i, -, u, x, -, d, e, s, i, g, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, c, y, b, e, r, s, e, c, u, r, i, t, y, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, b, r, o, w, s, e, /, d, a, t, a, -, s, c, i, e, n, c, e, /, d, a, t, a, -, a, n, a, l, y, s, i, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, b, r, o, w, s, e, /, d, a, t, a, -, s, c, i, e, n, c, e, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, d, i, g, i, t, a, l, +, m, a, r, k, e, t, i, n, g, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, c, o, u, r, s, e, s, ?, q, u, e, r, y, =, m, i, c, r, o, s, o, f, t, +, e, x, c, e, 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c, e, r, t, i, f, i, c, a, t, i, o, n, s, -, e, n, t, r, y, -, l, e, v, e, l, -, a, n, d, -, b, e, g, i, n, n, e, r, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, h, i, g, h, -, i, n, c, o, m, e, -, s, k, i, l, l, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, t, h, e, -, p, m, p, -, c, e, r, t, i, f, i, c, a, t, i, o, n, -, a, -, g, u, i, d, e, -, t, o, -, g, e, t, t, i, n, g, -, s, t, a, r, t, e, d, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, p, o, p, u, l, a, r, -, c, y, b, e, r, s, e, c, u, r, i, t, y, -, c, e, r, t, i, f, i, c, a, t, i, o, n, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, d, a, t, a, -, a, n, a, l, y, t, i, c, s, -, c, e, r, t, i, f, i, c, a, t, i, o, n, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, a, -, g, u, i, d, e, -, t, o, -, p, m, i, -, c, e, r, t, i, f, i, c, a, t, i, o, n, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, /, s, q, l, -, c, e, r, t, i, f, i, c, a, t, i, o, n, s, -, f, o, r, -, y, o, u, r, -, d, a, t, a, -, c, a, r, e, e, r, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, b, o, u, t, /, p, a, r, t, n, e, r, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., c, o, u, r, s, e, r, a, ., o, r, g, /, a, r, t, i, c, l, e, s

# URL: https://flask.palletsprojects.com/en/2.3.x/patterns/flashing/

Title: Message Flashing — Flask Documentation (2.3.x)

Content: <!DOCTYPE html><html lang="en"> <head> <meta charset="utf-8" /> <meta name="viewport" content="width=device-width, initial-scale=1.0" /> <meta name="viewport" content="width=device-width, initial-scale=1"> <title>Message Flashing &#8212; Flask Documentation (2.3.x)</title> <link rel="stylesheet" type="text/css" href="../../\_static/pygments.css" /> <link rel="stylesheet" type="text/css" href="../../\_static/flask.css" /> <link rel="stylesheet" type="text/css" href="../../\_static/tabs.css" /> <link rel="stylesheet" type="text/css" href="/\_/static/css/badge\_only.css" /> <script data-url\_root="../../" id="documentation\_options" src="../../\_static/documentation\_options.js"></script> <script src="../../\_static/doctools.js"></script> <script src="../../\_static/sphinx\_highlight.js"></script> <script async="async" src="/\_/static/javascript/readthedocs-doc-embed.js"></script> <link rel="icon" href="../../\_static/shortcut-icon.png"/> <link rel="index" title="Index" href="../../genindex/" /> <link rel="search" title="Search" href="../../search/" /> <link rel="next" title="JavaScript, fetch, and JSON" href="../javascript/" /> <link rel="prev" title="Template Inheritance" href="../templateinheritance/" /> <!-- RTD Extra Head --><link rel="stylesheet" href="/\_/static/css/readthedocs-doc-embed.css" type="text/css" /><script type="application/json" id="READTHEDOCS\_DATA">{"ad\_free": false, "api\_host": "https://readthedocs.org", "builder": "sphinx", "canonical\_url": null, "docroot": "/docs/", "features": {"docsearch\_disabled": true}, "global\_analytics\_code": "UA-17997319-1", "language": "en", "page": "patterns/flashing", "programming\_language": "py", "project": "flask", "proxied\_api\_host": "/\_", "source\_suffix": ".rst", "subprojects": {}, "theme": "flask", "user\_analytics\_code": "", "version": "2.3.x"}</script><!--Using this variable directly instead of using `JSON.parse` is deprecated.The READTHEDOCS\_DATA global variable will be removed in the future.--><script type="text/javascript">READTHEDOCS\_DATA = JSON.parse(document.getElementById('READTHEDOCS\_DATA').innerHTML);</script><script type="text/javascript" src="/\_/static/javascript/readthedocs-analytics.js" async="async"></script><!-- end RTD <extrahead> --></head><body> <div class="related" role="navigation" aria-label="related navigation"> <h3>Navigation</h3> <ul> <li class="right" style="margin-right: 10px"> <a href="../../genindex/" title="General Index" accesskey="I">index</a></li> <li class="right" > <a href="../../py-modindex/" title="Python Module Index" >modules</a> |</li> <li class="right" > <a href="../javascript/" title="JavaScript, fetch, and JSON" accesskey="N">next</a> |</li> <li class="right" > <a href="../templateinheritance/" title="Template Inheritance" accesskey="P">previous</a> |</li> <li class="nav-item nav-item-0"><a href="../../">Flask Documentation (2.3.x)</a> &#187;</li> <li class="nav-item nav-item-1"><a href="../" accesskey="U">Patterns for Flask</a> &#187;</li> <li class="nav-item nav-item-this"><a href="">Message Flashing</a></li> </ul> </div> <div class="document"> <div class="documentwrapper"> <div class="bodywrapper"> <div class="body" role="main"> <section id="message-flashing"><h1>Message Flashing<a class="headerlink" href="#message-flashing" title="Permalink to this heading">¶</a></h1><p>Good applications and user interfaces are all about feedback. If the userdoes not get enough feedback they will probably end up hating theapplication. Flask provides a really simple way to give feedback to auser with the flashing system. The flashing system basically makes itpossible to record a message at the end of a request and access it nextrequest and only next request. This is usually combined with a layouttemplate that does this. Note that browsers and sometimes web servers enforcea limit on cookie sizes. This means that flashing messages that are toolarge for session cookies causes message flashing to fail silently.</p><section id="simple-flashing"><h2>Simple Flashing<a class="headerlink" href="#simple-flashing" title="Permalink to this heading">¶</a></h2><p>So here is a full example:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="kn">from</span> <span class="nn">flask</span> <span class="kn">import</span> <span class="n">Flask</span><span class="p">,</span> <span class="n">flash</span><span class="p">,</span> <span class="n">redirect</span><span class="p">,</span> <span class="n">render\_template</span><span class="p">,</span> \ <span class="n">request</span><span class="p">,</span> <span class="n">url\_for</span><span class="n">app</span> <span class="o">=</span> <span class="n">Flask</span><span class="p">(</span><span class="vm">\_\_name\_\_</span><span class="p">)</span><span class="n">app</span><span class="o">.</span><span class="n">secret\_key</span> <span class="o">=</span> <span class="sa">b</span><span class="s1">&#39;\_5#y2L&quot;F4Q8z</span><span class="se">\n\xec</span><span class="s1">]/&#39;</span><span class="nd">@app</span><span class="o">.</span><span class="n">route</span><span class="p">(</span><span class="s1">&#39;/&#39;</span><span class="p">)</span><span class="k">def</span> <span class="nf">index</span><span class="p">():</span> <span class="k">return</span> <span class="n">render\_template</span><span class="p">(</span><span class="s1">&#39;index.html&#39;</span><span class="p">)</span><span class="nd">@app</span><span class="o">.</span><span class="n">route</span><span class="p">(</span><span class="s1">&#39;/login&#39;</span><span class="p">,</span> <span class="n">methods</span><span class="o">=</span><span class="p">[</span><span class="s1">&#39;GET&#39;</span><span class="p">,</span> <span class="s1">&#39;POST&#39;</span><span class="p">])</span><span class="k">def</span> <span class="nf">login</span><span class="p">():</span> <span class="n">error</span> <span class="o">=</span> <span class="kc">None</span> <span class="k">if</span> <span class="n">request</span><span class="o">.</span><span class="n">method</span> <span class="o">==</span> <span class="s1">&#39;POST&#39;</span><span class="p">:</span> <span class="k">if</span> <span class="n">request</span><span class="o">.</span><span class="n">form</span><span class="p">[</span><span class="s1">&#39;username&#39;</span><span class="p">]</span> <span class="o">!=</span> <span class="s1">&#39;admin&#39;</span> <span class="ow">or</span> \ <span class="n">request</span><span class="o">.</span><span class="n">form</span><span class="p">[</span><span class="s1">&#39;password&#39;</span><span class="p">]</span> <span class="o">!=</span> <span class="s1">&#39;secret&#39;</span><span class="p">:</span> <span class="n">error</span> <span class="o">=</span> <span class="s1">&#39;Invalid credentials&#39;</span> <span class="k">else</span><span class="p">:</span> <span class="n">flash</span><span class="p">(</span><span class="s1">&#39;You were successfully logged in&#39;</span><span class="p">)</span> <span class="k">return</span> <span class="n">redirect</span><span class="p">(</span><span class="n">url\_for</span><span class="p">(</span><span class="s1">&#39;index&#39;</span><span class="p">))</span> <span class="k">return</span> <span class="n">render\_template</span><span class="p">(</span><span class="s1">&#39;login.html&#39;</span><span class="p">,</span> <span class="n">error</span><span class="o">=</span><span class="n">error</span><span class="p">)</span></pre></div></div><p>And here is the <code class="file docutils literal notranslate"><span class="pre">layout.html</span></code> template which does the magic:</p><div class="highlight-html+jinja notranslate"><div class="highlight"><pre><span></span><span class="cp">&lt;!doctype html&gt;</span><span class="p">&lt;</span><span class="nt">title</span><span class="p">&gt;</span>My Application<span class="p">&lt;/</span><span class="nt">title</span><span class="p">&gt;</span><span class="cp">{%</span> <span class="k">with</span> <span class="nv">messages</span> <span class="o">=</span> <span class="nv">get\_flashed\_messages</span><span class="o">()</span> <span class="cp">%}</span> <span class="cp">{%</span> <span class="k">if</span> <span class="nv">messages</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">ul</span> <span class="na">class</span><span class="o">=</span><span class="s">flashes</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">for</span> <span class="nv">message</span> <span class="k">in</span> <span class="nv">messages</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">li</span><span class="p">&gt;</span><span class="cp">{{</span> <span class="nv">message</span> <span class="cp">}}</span><span class="p">&lt;/</span><span class="nt">li</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">endfor</span> <span class="cp">%}</span> <span class="p">&lt;/</span><span class="nt">ul</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">endif</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">endwith</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">block</span> <span class="nv">body</span> <span class="cp">%}{%</span> <span class="k">endblock</span> <span class="cp">%}</span></pre></div></div><p>Here is the <code class="file docutils literal notranslate"><span class="pre">index.html</span></code> template which inherits from <code class="file docutils literal notranslate"><span class="pre">layout.html</span></code>:</p><div class="highlight-html+jinja notranslate"><div class="highlight"><pre><span></span><span class="cp">{%</span> <span class="k">extends</span> <span class="s2">&quot;layout.html&quot;</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">block</span> <span class="nv">body</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">h1</span><span class="p">&gt;</span>Overview<span class="p">&lt;/</span><span class="nt">h1</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">p</span><span class="p">&gt;</span>Do you want to <span class="p">&lt;</span><span class="nt">a</span> <span class="na">href</span><span class="o">=</span><span class="s">&quot;</span><span class="cp">{{</span> <span class="nv">url\_for</span><span class="o">(</span><span class="s1">&#39;login&#39;</span><span class="o">)</span> <span class="cp">}}</span><span class="s">&quot;</span><span class="p">&gt;</span>log in?<span class="p">&lt;/</span><span class="nt">a</span><span class="p">&gt;</span><span class="cp">{%</span> <span class="k">endblock</span> <span class="cp">%}</span></pre></div></div><p>And here is the <code class="file docutils literal notranslate"><span class="pre">login.html</span></code> template which also inherits from<code class="file docutils literal notranslate"><span class="pre">layout.html</span></code>:</p><div class="highlight-html+jinja notranslate"><div class="highlight"><pre><span></span><span class="cp">{%</span> <span class="k">extends</span> <span class="s2">&quot;layout.html&quot;</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">block</span> <span class="nv">body</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">h1</span><span class="p">&gt;</span>Login<span class="p">&lt;/</span><span class="nt">h1</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">if</span> <span class="nv">error</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">p</span> <span class="na">class</span><span class="o">=</span><span class="s">error</span><span class="p">&gt;&lt;</span><span class="nt">strong</span><span class="p">&gt;</span>Error:<span class="p">&lt;/</span><span class="nt">strong</span><span class="p">&gt;</span> <span class="cp">{{</span> <span class="nv">error</span> <span class="cp">}}</span> <span class="cp">{%</span> <span class="k">endif</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">form</span> <span class="na">method</span><span class="o">=</span><span class="s">post</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">dl</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">dt</span><span class="p">&gt;</span>Username: <span class="p">&lt;</span><span class="nt">dd</span><span class="p">&gt;&lt;</span><span class="nt">input</span> <span class="na">type</span><span class="o">=</span><span class="s">text</span> <span class="na">name</span><span class="o">=</span><span class="s">username</span> <span class="na">value</span><span class="o">=</span><span class="s">&quot;</span><span class="cp">{{</span> <span class="nv">request.form.username</span> <span class="cp">}}</span><span class="s">&quot;</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">dt</span><span class="p">&gt;</span>Password: <span class="p">&lt;</span><span class="nt">dd</span><span class="p">&gt;&lt;</span><span class="nt">input</span> <span class="na">type</span><span class="o">=</span><span class="s">password</span> <span class="na">name</span><span class="o">=</span><span class="s">password</span><span class="p">&gt;</span> <span class="p">&lt;/</span><span class="nt">dl</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">p</span><span class="p">&gt;&lt;</span><span class="nt">input</span> <span class="na">type</span><span class="o">=</span><span class="s">submit</span> <span class="na">value</span><span class="o">=</span><span class="s">Login</span><span class="p">&gt;</span> <span class="p">&lt;/</span><span class="nt">form</span><span class="p">&gt;</span><span class="cp">{%</span> <span class="k">endblock</span> <span class="cp">%}</span></pre></div></div></section><section id="flashing-with-categories"><h2>Flashing With Categories<a class="headerlink" href="#flashing-with-categories" title="Permalink to this heading">¶</a></h2><details class="changelog"><summary>Changelog</summary><div class="versionadded"><p><span class="versionmodified added">New in version 0.3.</span></p></div></details><p>It is also possible to provide categories when flashing a message. Thedefault category if nothing is provided is <code class="docutils literal notranslate"><span class="pre">'message'</span></code>. Alternativecategories can be used to give the user better feedback. For exampleerror messages could be displayed with a red background.</p><p>To flash a message with a different category, just use the second argumentto the <a class="reference internal" href="../../api/#flask.flash" title="flask.flash"><code class="xref py py-func docutils literal notranslate"><span class="pre">flash()</span></code></a> function:</p><div class="highlight-default notranslate"><div class="highlight"><pre><span></span><span class="n">flash</span><span class="p">(</span><span class="s1">&#39;Invalid password provided&#39;</span><span class="p">,</span> <span class="s1">&#39;error&#39;</span><span class="p">)</span></pre></div></div><p>Inside the template you then have to tell the<a class="reference internal" href="../../api/#flask.get\_flashed\_messages" title="flask.get\_flashed\_messages"><code class="xref py py-func docutils literal notranslate"><span class="pre">get\_flashed\_messages()</span></code></a> function to also return thecategories. The loop looks slightly different in that situation then:</p><div class="highlight-html+jinja notranslate"><div class="highlight"><pre><span></span><span class="cp">{%</span> <span class="k">with</span> <span class="nv">messages</span> <span class="o">=</span> <span class="nv">get\_flashed\_messages</span><span class="o">(</span><span class="nv">with\_categories</span><span class="o">=</span><span class="kp">true</span><span class="o">)</span> <span class="cp">%}</span> <span class="cp">{%</span> <span class="k">if</span> <span class="nv">messages</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">ul</span> <span class="na">class</span><span class="o">=</span><span class="s">flashes</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">for</span> <span class="nv">category</span><span class="o">,</span> <span class="nv">message</span> <span class="k">in</span> <span class="nv">messages</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">li</span> <span class="na">class</span><span class="o">=</span><span class="s">&quot;</span><span class="cp">{{</span> <span class="nv">category</span> <span class="cp">}}</span><span class="s">&quot;</span><span class="p">&gt;</span><span class="cp">{{</span> <span class="nv">message</span> <span class="cp">}}</span><span class="p">&lt;/</span><span class="nt">li</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">endfor</span> <span class="cp">%}</span> <span class="p">&lt;/</span><span class="nt">ul</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">endif</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">endwith</span> <span class="cp">%}</span></pre></div></div><p>This is just one example of how to render these flashed messages. Onemight also use the category to add a prefix such as<code class="docutils literal notranslate"><span class="pre">&lt;strong&gt;Error:&lt;/strong&gt;</span></code> to the message.</p></section><section id="filtering-flash-messages"><h2>Filtering Flash Messages<a class="headerlink" href="#filtering-flash-messages" title="Permalink to this heading">¶</a></h2><details class="changelog"><summary>Changelog</summary><div class="versionadded"><p><span class="versionmodified added">New in version 0.9.</span></p></div></details><p>Optionally you can pass a list of categories which filters the results of<a class="reference internal" href="../../api/#flask.get\_flashed\_messages" title="flask.get\_flashed\_messages"><code class="xref py py-func docutils literal notranslate"><span class="pre">get\_flashed\_messages()</span></code></a>. This is useful if you wish torender each category in a separate block.</p><div class="highlight-html+jinja notranslate"><div class="highlight"><pre><span></span><span class="cp">{%</span> <span class="k">with</span> <span class="nv">errors</span> <span class="o">=</span> <span class="nv">get\_flashed\_messages</span><span class="o">(</span><span class="nv">category\_filter</span><span class="o">=[</span><span class="s2">&quot;error&quot;</span><span class="o">])</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">if</span> <span class="nv">errors</span> <span class="cp">%}</span><span class="p">&lt;</span><span class="nt">div</span> <span class="na">class</span><span class="o">=</span><span class="s">&quot;alert-message block-message error&quot;</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">a</span> <span class="na">class</span><span class="o">=</span><span class="s">&quot;close&quot;</span> <span class="na">href</span><span class="o">=</span><span class="s">&quot;#&quot;</span><span class="p">&gt;</span>×<span class="p">&lt;/</span><span class="nt">a</span><span class="p">&gt;</span> <span class="p">&lt;</span><span class="nt">ul</span><span class="p">&gt;</span> <span class="cp">{%</span>- <span class="k">for</span> <span class="nv">msg</span> <span class="k">in</span> <span class="nv">errors</span> <span class="cp">%}</span> <span class="p">&lt;</span><span class="nt">li</span><span class="p">&gt;</span><span class="cp">{{</span> <span class="nv">msg</span> <span class="cp">}}</span><span class="p">&lt;/</span><span class="nt">li</span><span class="p">&gt;</span> <span class="cp">{%</span> <span class="k">endfor</span> -<span class="cp">%}</span> <span class="p">&lt;/</span><span class="nt">ul</span><span class="p">&gt;</span><span class="p">&lt;/</span><span class="nt">div</span><span class="p">&gt;</span><span class="cp">{%</span> <span class="k">endif</span> <span class="cp">%}</span><span class="cp">{%</span> <span class="k">endwith</span> <span class="cp">%}</span></pre></div></div></section></section> <div class="clearer"></div> </div> </div> </div> <span id="sidebar-top"></span> <div class="sphinxsidebar" role="navigation" aria-label="main navigation"> <div class="sphinxsidebarwrapper"> <p class="logo"><a href="../../"> <img class="logo" src="../../\_static/flask-vertical.png" alt="Logo"/> </a></p> <h3>Contents</h3> <ul><li><a class="reference internal" href="#">Message Flashing</a><ul><li><a class="reference internal" href="#simple-flashing">Simple Flashing</a></li><li><a class="reference internal" href="#flashing-with-categories">Flashing With Categories</a></li><li><a class="reference internal" href="#filtering-flash-messages">Filtering Flash Messages</a></li></ul></li></ul><h3>Navigation</h3><ul> <li><a href="../../">Overview</a> <ul> <li><a href="../">Patterns for Flask</a> <ul> <li>Previous: <a href="../templateinheritance/" title="previous chapter">Template Inheritance</a> <li>Next: <a href="../javascript/" title="next chapter">JavaScript, <code class="docutils literal notranslate"><span class="pre">fetch</span></code>, and JSON</a></ul> </li> </ul> </li></ul><div id="searchbox" style="display: none" role="search"> <h3 id="searchlabel">Quick search</h3> <div class="searchformwrapper"> <form class="search" action="../../search/" method="get"> <input type="text" name="q" aria-labelledby="searchlabel" autocomplete="off" autocorrect="off" autocapitalize="off" spellcheck="false"/> <input type="submit" value="Go" /> </form> </div></div><script>document.getElementById('searchbox').style.display = "block"</script><div id="ethical-ad-placement"></div> </div> </div> <div class="clearer"></div> </div> <div class="footer" role="contentinfo"> &#169; Copyright 2010 Pallets. Created using <a href="https://www.sphinx-doc.org/">Sphinx</a> 7.0.1. </div> <script src="../../\_static/version\_warning\_offset.js"></script> </body></html>

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# URL: https://flask.palletsprojects.com/en/3.0.x/

Title: Welcome to Flask — Flask Documentation (3.0.x)

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Get started with <a class="reference internal" href="installation/"><span class="doc">Installation</span></a>and then get an overview with the <a class="reference internal" href="quickstart/"><span class="doc">Quickstart</span></a>. There is also amore detailed <a class="reference internal" href="tutorial/"><span class="doc">Tutorial</span></a> that shows how to create a small butcomplete application with Flask. Common patterns are described in the<a class="reference internal" href="patterns/"><span class="doc">Patterns for Flask</span></a> section. The rest of the docs describe eachcomponent of Flask in detail, with a full reference in the <a class="reference internal" href="api/"><span class="doc">API</span></a>section.</p><p>Flask depends on the <a class="reference external" href="https://werkzeug.palletsprojects.com">Werkzeug</a> WSGI toolkit, the <a class="reference external" href="https://jinja.palletsprojects.com">Jinja</a> template engine, and the<a class="reference external" href="https://click.palletsprojects.com">Click</a> CLI toolkit. Be sure to check their documentation as well as Flask’s whenlooking for information.</p><section id="user-s-guide"><h2>User’s Guide<a class="headerlink" href="#user-s-guide" title="Link to this heading">¶</a></h2><p>Flask provides configuration and conventions, with sensible defaults, to get started.This section of the documentation explains the different parts of the Flask frameworkand how they can be used, customized, and extended. Beyond Flask itself, look forcommunity-maintained extensions to add even more functionality.</p><div class="toctree-wrapper compound"><ul><li class="toctree-l1"><a class="reference internal" href="installation/">Installation</a><ul><li class="toctree-l2"><a class="reference internal" href="installation/#python-version">Python Version</a></li><li class="toctree-l2"><a class="reference internal" href="installation/#dependencies">Dependencies</a></li><li class="toctree-l2"><a class="reference internal" href="installation/#virtual-environments">Virtual environments</a></li><li class="toctree-l2"><a class="reference internal" href="installation/#install-flask">Install Flask</a></li></ul></li><li class="toctree-l1"><a class="reference internal" href="quickstart/">Quickstart</a><ul><li class="toctree-l2"><a class="reference internal" href="quickstart/#a-minimal-application">A Minimal Application</a></li><li class="toctree-l2"><a class="reference internal" href="quickstart/#debug-mode">Debug 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href="https://github.com/pallets/flask/">Source Code</a> <li><a href="https://github.com/pallets/flask/issues/">Issue Tracker</a> <li><a href="https://discord.gg/pallets">Chat</a> </ul> <h3>Contents</h3> <ul><li><a class="reference internal" href="#">Welcome to Flask</a><ul><li><a class="reference internal" href="#user-s-guide">User’s Guide</a></li><li><a class="reference internal" href="#api-reference">API Reference</a></li><li><a class="reference internal" href="#additional-notes">Additional Notes</a></li></ul></li></ul><div id="searchbox" style="display: none" role="search"> <h3 id="searchlabel">Quick search</h3> <div class="searchformwrapper"> <form class="search" action="search/" method="get"> <input type="text" name="q" aria-labelledby="searchlabel" autocomplete="off" autocorrect="off" autocapitalize="off" spellcheck="false"/> <input type="submit" value="Go" /> </form> </div></div><script>document.getElementById('searchbox').style.display = "block"</script><div id="ethical-ad-placement"></div> </div> </div> <div class="clearer"></div> </div> <div class="footer" role="contentinfo"> &#169; Copyright 2010 Pallets. 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File Path: N/A

Links: g, e, n, i, n, d, e, x, /, ,, , p, y, -, m, o, d, i, n, d, e, x, /, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, ,, , #, ,, , #, w, e, l, c, o, m, e, -, t, o, -, f, l, a, s, k, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, ,, , q, u, i, c, k, s, t, a, r, t, /, ,, , t, u, t, o, r, i, a, l, /, ,, , p, a, t, t, e, r, n, s, /, ,, , a, p, i, /, ,, , h, t, t, p, s, :, /, /, w, e, r, k, z, e, u, g, ., p, a, l, l, e, t, s, p, r, o, j, e, c, t, s, ., c, o, m, ,, , h, t, t, p, s, :, /, /, j, i, n, j, a, ., p, a, l, l, e, t, s, p, r, o, j, e, c, t, s, ., c, o, m, ,, , h, t, t, p, s, :, /, /, c, l, i, c, k, ., p, a, l, l, e, t, s, p, r, o, j, e, c, t, s, ., c, o, m, ,, , #, u, s, e, r, -, s, -, g, u, i, d, e, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, #, p, y, t, h, o, n, -, v, e, r, s, i, o, n, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, #, d, e, p, e, n, d, e, n, c, i, e, s, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, #, v, i, r, t, u, a, l, -, e, n, v, i, r, o, n, m, e, n, t, s, ,, , i, n, s, t, a, l, l, a, t, i, o, n, /, #, i, n, s, t, a, l, l, -, f, l, a, s, k, ,, , q, u, i, c, k, s, t, a, r, t, /, ,, , q, u, i, c, k, s, t, a, r, t, /, #, a, -, m, i, n, i, m, a, l, -, a, p, p, l, i, c, a, t, i, o, n, ,, , q, u, i, c, k, s, t, a, r, t, /, #, d, e, b, u, g, -, m, o, d, e, ,, , q, u, i, c, k, s, t, a, r, t, /, #, h, t, m, l, -, e, s, c, a, p, i, n, g, ,, , q, u, i, c, k, s, t, a, r, t, /, #, r, o, u, t, i, n, g, ,, , q, u, i, c, k, s, t, a, r, t, /, #, s, t, a, t, i, c, -, f, i, l, e, s, ,, , q, u, i, c, k, s, t, a, r, t, /, #, r, e, n, d, e, r, i, n, g, -, t, e, m, p, l, a, t, e, s, ,, , q, u, i, c, k, s, t, a, r, t, /, #, a, c, c, e, s, s, i, n, g, -, r, e, q, u, e, s, t, -, d, a, t, a, ,, , q, u, i, c, k, s, t, a, r, t, /, #, r, e, d, i, r, e, c, t, s, -, a, n, d, -, e, r, r, o, r, s, ,, , q, u, i, c, k, s, t, a, r, t, /, #, a, b, o, u, t, -, r, e, s, p, o, n, s, e, s, ,, , q, u, i, c, k, s, t, a, r, t, /, #, s, e, s, s, i, o, n, s, ,, , q, u, i, c, k, s, t, a, r, t, /, #, m, e, s, s, a, g, e, -, f, l, a, s, h, i, n, g, ,, , q, u, i, c, k, s, t, a, r, t, /, #, l, o, g, g, i, n, g, ,, , q, u, i, c, k, s, t, a, r, t, /, #, h, o, o, k, i, n, g, -, i, n, -, w, s, g, i, -, m, i, d, d, l, e, w, a, r, e, ,, , q, u, i, c, k, s, t, a, r, t, /, #, u, s, i, n, g, -, f, l, a, s, k, -, e, x, t, e, n, s, i, o, n, s, ,, , q, u, i, c, k, s, t, a, r, t, /, #, d, e, p, l, o, y, i, n, g, -, t, o, -, a, -, w, e, b, -, s, e, r, v, e, r, ,, , t, u, t, o, r, i, a, l, /, ,, , t, u, t, o, r, i, a, l, /, l, a, y, o, u, t, /, ,, , t, u, t, o, r, i, a, l, /, f, a, c, t, o, r, y, /, ,, , t, u, t, o, r, i, a, l, /, d, a, t, a, b, a, s, e, /, ,, , t, u, t, o, r, i, a, l, /, v, i, e, w, s, /, ,, , t, u, t, o, r, i, a, l, /, t, e, m, p, l, a, t, e, s, /, ,, , t, u, t, o, r, i, a, l, /, s, t, a, t, i, c, /, ,, , t, u, t, o, r, i, a, l, /, b, l, o, g, /, ,, , t, u, t, o, r, i, a, l, /, i, n, s, t, a, l, l, /, ,, , t, u, t, o, r, i, a, l, /, t, e, s, t, s, /, ,, , t, u, t, o, r, i, a, l, /, d, e, p, l, o, y, /, ,, , t, u, t, o, r, i, a, l, /, n, e, x, t, /, ,, , t, e, m, p, l, a, t, i, n, g, /, ,, , t, e, m, p, l, a, t, i, n, g, /, #, j, i, n, j, a, -, s, e, t, u, p, ,, , t, e, m, p, l, a, t, i, n, g, /, #, s, t, a, n, d, a, r, d, -, c, o, n, t, e, x, t, ,, , t, e, m, p, l, a, t, i, n, g, /, #, c, o, n, t, r, o, l, l, i, n, g, -, a, u, t, o, e, s, c, a, p, i, n, g, ,, , t, e, m, p, l, a, t, i, n, g, /, #, r, e, g, i, s, t, e, r, i, n, g, -, f, i, l, t, e, r, s, ,, , t, e, m, p, l, a, t, i, n, g, /, #, c, o, n, t, e, x, t, -, p, r, o, c, e, s, s, o, r, s, ,, , t, e, m, p, l, a, t, i, n, g, /, #, s, t, r, e, a, m, i, n, g, ,, , t, e, s, t, i, n, g, /, ,, , t, e, s, t, i, n, g, /, #, i, d, e, n, t, i, f, y, i, n, g, -, t, e, s, t, s, ,, , t, e, s, t, i, n, g, /, #, f, i, x, t, u, r, e, s, ,, , t, e, s, t, i, n, g, /, #, s, e, n, d, i, n, g, -, r, e, q, u, e, s, t, s, -, w, i, t, h, -, t, h, e, -, t, e, s, t, -, c, l, i, e, n, t, ,, , t, e, s, t, i, n, g, /, #, f, o, l, l, o, w, i, n, g, -, r, e, d, i, r, e, c, t, s, ,, , t, e, s, t, i, n, g, /, #, a, c, c, e, s, s, i, n, g, -, a, n, d, -, m, o, d, i, f, y, i, n, g, -, t, h, e, -, s, e, s, s, i, o, n, ,, , t, e, s, t, i, n, g, /, #, r, u, n, n, i, n, g, -, c, o, m, m, a, n, d, s, -, w, i, t, h, -, t, h, e, -, c, l, i, -, r, u, n, n, e, r, ,, , t, e, s, t, i, n, g, /, #, t, e, s, t, s, -, t, h, a, t, -, d, e, p, e, n, d, -, o, n, -, a, n, -, a, c, t, i, v, e, -, c, o, n, t, e, x, t, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, e, r, r, o, r, -, l, o, g, g, i, n, g, -, t, o, o, l, s, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, e, r, r, o, r, -, h, a, n, d, l, e, r, s, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, c, u, s, t, o, m, -, e, r, r, o, r, -, p, a, g, e, s, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, b, l, u, e, p, r, i, n, t, -, e, r, r, o, r, -, h, a, n, d, l, e, r, s, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, r, e, t, u, r, n, i, n, g, -, a, p, i, -, e, r, r, o, r, s, -, a, s, -, j, s, o, n, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, l, o, g, g, i, n, g, ,, , e, r, r, o, r, h, a, n, d, l, i, n, g, /, #, d, e, b, u, g, g, i, n, g, ,, , d, e, b, u, g, g, i, n, g, /, ,, , d, e, b, u, g, g, i, n, g, /, #, i, n, -, p, r, o, d, u, c, t, i, o, n, ,, , d, e, b, u, g, g, i, n, g, /, #, t, h, e, -, b, u, i, l, t, -, i, n, -, d, e, b, u, g, g, e, r, ,, , d, e, b, u, g, g, i, n, g, /, #, e, x, t, e, r, n, a, l, -, d, e, b, u, g, g, e, r, s, ,, , l, o, g, g, i, n, g, /, ,, , l, o, g, g, i, n, g, /, #, b, a, s, i, c, -, c, o, n, f, i, g, u, r, a, t, i, o, n, ,, , l, o, g, g, i, n, g, /, #, e, m, a, i, l, -, e, r, r, o, r, s, -, t, o, -, a, d, m, i, n, s, ,, , l, o, g, g, i, n, g, /, #, i, n, j, e, c, t, i, n, g, -, r, e, q, u, e, s, t, -, i, n, f, o, r, m, a, t, i, o, n, ,, , l, o, g, g, i, n, g, /, #, o, t, h, e, r, -, l, i, b, r, a, r, i, e, s, ,, , c, o, n, f, i, g, /, ,, , c, o, n, f, i, g, /, #, c, o, n, f, i, g, u, r, a, t, i, o, n, -, b, a, s, i, c, s, ,, , c, o, n, f, i, g, /, #, d, e, b, u, g, -, m, o, d, e, ,, , c, o, n, f, i, g, /, #, b, u, i, l, t, i, n, -, c, o, n, f, i, g, u, r, a, t, i, o, n, -, v, a, l, u, e, s, ,, , c, o, n, f, i, g, /, #, c, o, n, f, i, g, u, r, i, n, g, -, f, r, o, m, -, p, y, t, h, o, n, -, f, i, l, e, s, ,, , c, o, n, f, i, g, /, #, c, o, n, f, i, g, u, r, i, n, g, -, f, r, o, m, -, d, a, t, a, -, f, i, l, e, s, ,, , c, o, n, f, i, g, /, #, c, o, n, f, i, g, u, r, i, n, g, -, f, r, o, m, -, e, n, v, i, r, o, n, m, e, n, t, -, v, a, r, i, a, b, l, e, s, ,, , c, o, n, f, i, g, /, #, c, o, n, f, i, g, u, r, a, t, i, o, n, -, b, e, s, t, -, p, r, a, c, t, i, c, e, s, ,, , c, o, n, f, i, g, /, #, d, e, v, e, l, o, p, m, e, n, t, -, p, r, o, d, u, c, t, i, o, n, ,, , c, o, n, f, i, g, /, #, i, n, s, t, a, n, c, e, -, f, o, l, d, e, r, s, ,, , s, i, g, n, a, l, s, /, ,, , s, i, g, n, a, l, s, /, #, c, o, r, e, -, s, i, g, n, a, l, s, ,, , s, i, g, n, a, l, s, /, #, s, u, b, s, c, r, i, b, i, n, g, -, t, o, -, s, i, g, n, a, l, s, ,, , s, i, g, n, a, l, s, /, #, c, r, e, a, t, i, n, g, -, s, i, g, n, a, l, s, ,, , s, i, g, n, a, l, s, /, #, s, e, n, d, i, n, g, -, s, i, g, n, a, l, s, ,, , s, i, g, n, a, l, s, /, #, s, i, g, n, a, l, s, -, a, n, d, -, f, l, a, s, k, -, s, -, r, e, q, u, e, s, t, -, c, o, n, t, e, x, t, ,, , s, i, g, n, a, l, s, /, #, d, e, c, o, r, a, t, o, r, -, b, a, s, e, d, -, s, i, g, n, a, l, -, s, u, b, s, c, r, i, p, t, i, o, n, s, ,, , v, i, e, w, s, /, ,, , v, i, e, w, s, /, #, b, a, s, i, c, -, r, e, u, s, a, b, l, e, -, v, i, e, w, ,, , v, i, e, w, s, /, #, u, r, l, -, v, a, r, i, a, b, l, e, s, ,, , v, i, e, w, s, /, #, v, i, e, w, -, l, i, f, e, t, i, m, e, -, a, n, d, -, s, e, l, f, ,, , v, i, e, w, s, /, #, v, i, e, w, -, d, e, c, o, r, a, t, o, r, s, ,, , v, i, e, w, s, /, #, m, e, t, h, o, d, -, h, i, n, t, s, ,, , v, i, e, w, s, /, #, m, e, t, h, o, d, -, d, i, s, p, a, t, c, h, i, n, g, -, a, n, d, -, a, p, i, s, ,, , l, i, f, e, c, y, c, l, e, /, ,, , l, i, f, e, c, y, c, l, e, /, #, a, p, p, l, i, c, a, t, i, o, n, -, s, e, t, u, p, ,, , l, i, f, e, c, y, c, l, e, /, #, s, e, r, v, i, n, g, -, t, h, e, -, a, p, p, l, i, c, a, t, i, o, n, ,, , l, i, f, e, c, y, c, l, e, /, #, h, o, w, -, a, -, r, e, q, u, e, s, t, -, i, s, -, h, a, n, d, l, e, d, ,, , a, p, p, c, o, n, t, e, x, t, /, ,, , a, p, p, c, o, n, t, e, x, t, /, #, p, u, r, p, o, s, e, -, o, f, -, t, h, e, -, c, o, n, t, e, x, t, ,, , a, p, p, c, o, n, t, e, x, t, /, #, l, i, f, e, t, i, m, e, -, o, f, -, t, h, e, -, c, o, n, t, e, x, t, ,, , a, p, p, c, o, n, t, e, x, t, /, #, m, a, n, u, a, l, l, y, -, p, u, s, h, -, a, -, c, o, n, t, e, x, t, ,, , a, p, p, c, o, n, t, e, x, t, /, #, s, t, o, r, i, n, g, -, d, a, t, a, ,, , a, p, p, c, o, n, t, e, x, t, /, #, e, v, e, n, t, s, -, a, n, d, -, s, i, g, n, a, l, s, ,, , r, e, q, c, o, n, t, e, x, t, /, ,, , r, e, q, c, o, n, t, e, x, t, /, #, p, u, r, p, o, s, e, -, o, f, -, t, h, e, -, c, o, n, t, e, x, t, ,, , r, e, q, c, o, n, t, e, x, t, /, #, l, i, f, e, t, i, m, e, -, o, f, -, t, h, e, -, c, o, n, t, e, x, t, ,, , r, e, q, c, o, n, t, e, x, t, /, #, m, a, n, u, a, l, l, y, -, p, u, s, h, -, a, -, c, o, n, t, e, x, t, ,, , r, e, q, c, o, n, t, e, x, t, /, #, h, o, w, -, t, h, e, -, c, o, n, t, e, x, t, -, w, o, r, k, s, ,, , r, e, q, c, o, n, t, e, x, t, /, #, c, a, l, l, b, a, c, k, s, -, a, n, d, -, e, r, r, o, r, s, ,, , r, e, q, c, o, n, t, e, x, t, /, #, n, o, t, e, s, -, o, n, -, p, r, o, x, i, e, s, ,, , b, l, u, e, p, r, i, n, t, s, /, ,, , b, l, u, e, p, r, i, n, t, s, /, #, w, h, y, -, b, l, u, e, p, r, i, n, t, s, ,, , b, l, u, e, p, r, i, n, t, s, /, #, t, h, e, -, c, o, n, c, e, p, t, -, o, f, -, b, l, u, e, p, r, i, n, t, s, ,, , b, l, u, e, p, r, i, n, t, s, /, #, m, y, -, f, i, r, s, t, -, b, l, u, e, p, r, i, n, t, ,, , b, l, u, e, p, r, i, n, t, s, /, #, r, e, g, i, s, t, e, r, i, n, g, -, b, l, u, e, p, r, i, n, t, s, ,, , b, l, u, e, p, r, i, n, t, s, /, #, n, e, s, t, i, n, g, -, b, l, u, e, p, r, i, n, t, s, ,, , b, l, u, e, p, r, i, n, t, s, /, #, b, l, u, e, p, r, i, n, t, -, r, e, s, o, u, r, c, e, s, ,, , b, l, u, e, p, r, i, n, t, s, /, #, b, u, i, l, d, i, n, g, -, u, r, l, s, ,, , b, l, u, e, p, r, i, n, t, s, /, #, b, l, u, e, p, r, i, n, t, -, e, r, r, o, r, -, h, a, n, d, l, e, r, s, ,, , e, x, t, e, n, s, i, o, n, s, /, ,, , e, x, t, e, n, s, i, o, n, s, /, #, f, i, n, d, i, n, g, -, e, x, t, e, n, s, i, o, n, s, ,, , e, x, t, e, n, s, i, o, n, s, /, #, u, s, i, n, g, -, e, x, t, e, n, s, i, o, n, s, ,, , e, x, t, e, n, s, i, o, n, s, /, #, b, u, i, l, d, i, n, g, -, e, x, t, e, n, s, i, o, n, s, ,, , c, l, i, /, ,, , c, l, i, /, #, a, p, p, l, i, c, a, t, i, o, n, -, d, i, s, c, o, v, e, r, y, ,, , c, l, i, /, #, r, u, n, -, t, h, e, -, d, e, v, e, l, o, p, m, e, n, t, -, s, e, r, v, e, r, ,, , c, l, i, /, #, o, p, e, n, -, a, -, s, h, e, l, l, ,, , c, l, i, /, #, e, n, v, i, r, o, n, m, e, n, t, -, v, a, r, i, a, b, l, e, s, -, f, r, o, m, -, d, o, t, e, n, v, ,, , c, l, i, /, #, e, n, v, i, r, o, n, m, e, n, t, -, v, a, r, i, a, b, l, e, s, -, f, r, o, m, -, v, i, r, t, u, a, l, e, n, v, ,, , c, l, i, /, #, c, u, s, t, o, m, -, c, o, m, m, a, n, d, s, ,, , c, l, i, /, #, p, l, u, g, i, n, s, ,, , c, l, i, /, #, c, u, s, t, o, m, -, s, c, r, i, p, t, s, ,, , c, l, i, /, #, p, y, c, h, a, r, m, -, i, n, t, e, g, r, a, t, i, o, n, ,, , s, e, r, v, e, r, /, ,, , s, e, r, v, e, r, /, #, c, o, m, m, a, n, d, -, l, i, n, e, ,, , s, e, r, v, e, r, /, #, i, n, -, c, o, d, e, ,, , s, h, e, l, l, /, ,, , s, h, e, l, l, /, #, c, o, m, m, a, n, d, -, l, i, n, e, -, i, n, t, e, r, f, a, c, e, ,, , s, h, e, l, l, /, #, c, r, e, a, t, i, n, g, -, a, -, r, e, q, u, e, s, t, -, c, o, n, t, e, x, t, ,, , s, h, e, l, l, /, #, f, i, r, i, n, g, -, b, e, f, o, r, e, -, a, f, t, e, r, -, r, e, q, u, e, s, t, ,, , s, h, e, l, l, /, #, f, u, r, t, h, e, r, -, i, m, p, r, o, v, i, n, g, -, t, h, e, -, s, h, e, l, l, -, e, x, p, e, r, i, e, n, c, e, ,, , p, a, t, t, e, r, n, s, /, ,, , p, a, t, t, e, r, n, s, /, p, a, c, k, a, g, e, s, /, ,, , p, a, t, t, e, r, n, s, /, a, p, p, f, a, c, t, o, r, i, e, s, /, ,, , p, a, t, t, e, r, n, s, /, a, p, p, d, i, s, p, a, t, c, h, /, ,, , p, a, t, t, e, r, n, s, /, u, r, l, p, r, o, c, e, s, s, o, r, s, /, ,, , p, a, t, t, e, r, n, s, /, s, q, l, i, t, e, 3, /, ,, , p, a, t, t, e, r, n, s, /, s, q, l, a, l, c, h, e, m, y, /, ,, , p, a, t, t, e, r, n, s, /, f, i, l, e, u, p, l, o, a, d, s, /, ,, , p, a, t, t, e, r, n, s, /, c, a, c, h, i, n, g, /, ,, , p, a, t, t, e, r, n, s, /, v, i, e, w, d, e, c, o, r, a, t, o, r, s, /, ,, , p, a, t, t, e, r, n, s, /, w, t, f, o, r, m, s, /, ,, , p, a, t, t, e, r, n, s, /, t, e, m, p, l, a, t, e, i, n, h, e, r, i, t, a, n, c, e, /, ,, , p, a, t, t, e, r, n, s, /, f, l, a, s, h, i, n, g, /, ,, , p, a, t, t, e, r, n, s, /, j, a, v, a, s, c, r, i, p, t, /, ,, , p, a, t, t, e, r, n, s, /, l, a, z, y, l, o, a, d, i, n, g, /, ,, , p, a, t, t, e, r, n, s, /, m, o, n, g, o, e, n, g, i, n, e, /, ,, , p, a, t, t, e, r, n, s, /, f, a, v, i, c, o, n, /, ,, , p, a, t, t, e, r, n, s, /, s, t, r, e, a, m, i, n, g, /, ,, , p, a, t, t, e, r, n, s, /, d, e, f, e, r, r, e, d, c, a, l, l, b, a, c, k, s, /, ,, , p, a, t, t, e, r, n, s, /, m, e, t, h, o, d, o, v, e, r, r, i, d, e, s, /, ,, , p, a, t, t, e, r, n, s, /, r, e, q, u, e, s, t, c, h, e, c, k, s, u, m, /, ,, , p, a, t, t, e, r, n, s, /, c, e, l, e, r, y, /, ,, , p, a, t, t, e, r, n, s, /, s, u, b, c, l, a, s, s, i, n, g, /, ,, , p, a, t, t, e, r, n, s, /, s, i, n, g, l, e, p, a, g, e, a, p, p, l, i, c, a, t, i, o, n, s, /, ,, , s, e, c, u, r, i, t, y, /, ,, , s, e, c, u, r, i, t, y, /, #, c, r, o, s, s, -, s, i, t, e, -, s, c, r, i, p, t, i, n, g, -, x, s, s, ,, , s, e, c, u, r, i, t, y, /, #, c, r, o, s, s, -, s, i, t, e, -, r, e, q, u, e, s, t, -, f, o, r, g, e, r, y, -, c, s, r, f, ,, , s, e, c, u, r, i, t, y, /, #, j, s, o, n, -, s, e, c, u, r, i, t, y, ,, , s, e, c, u, r, i, t, y, /, #, s, e, c, u, r, i, t, y, -, h, e, a, d, e, r, s, ,, , s, e, c, u, r, i, t, y, /, #, c, o, p, y, -, p, a, s, t, e, -, t, o, -, t, e, r, m, i, n, a, l, ,, , d, e, p, l, o, y, i, n, g, /, ,, , d, e, p, l, o, y, i, n, g, /, #, s, e, l, f, -, h, o, s, t, e, d, -, o, p, t, i, o, n, s, ,, , d, e, p, l, o, y, i, n, g, /, #, h, o, s, t, i, n, g, -, p, l, a, t, f, o, r, m, s, ,, , a, s, y, n, c, -, a, w, a, i, t, /, ,, , a, s, y, n, c, -, a, w, a, i, t, /, #, p, e, r, f, o, r, m, a, n, c, e, ,, , a, s, y, n, c, -, a, w, a, i, t, /, #, b, a, c, k, g, r, o, u, n, d, -, t, a, s, k, s, ,, , a, s, y, n, c, -, a, w, a, i, t, /, #, w, h, e, n, -, t, o, -, u, s, e, -, q, u, a, r, t, -, i, n, s, t, e, a, d, ,, , a, s, y, n, c, -, a, w, a, i, t, /, #, e, x, t, e, n, s, i, o, n, s, ,, , a, s, y, n, c, -, a, w, a, i, t, /, #, o, t, h, e, r, -, e, v, e, n, t, -, l, o, o, p, s, ,, , #, a, p, i, -, r, e, f, e, r, e, n, c, e, ,, , a, p, i, /, ,, , a, p, i, /, #, a, p, p, l, i, c, a, t, i, o, n, -, o, b, j, e, c, t, ,, , a, p, i, /, #, b, l, u, e, p, r, i, n, t, -, o, b, j, e, c, t, s, ,, , a, p, i, /, #, i, n, c, o, m, i, n, g, -, r, e, q, u, e, s, t, -, d, a, t, a, ,, , a, p, i, /, #, r, e, s, p, o, n, s, e, -, o, b, j, e, c, t, s, ,, , a, p, i, /, #, s, e, s, s, i, o, n, s, ,, , a, p, i, /, #, s, e, s, s, i, o, n, -, i, n, t, e, r, f, a, c, e, ,, , a, p, i, /, #, t, e, s, t, -, c, l, i, e, n, t, ,, , a, p, i, /, #, t, e, s, t, -, c, l, i, -, r, u, n, n, e, r, ,, , a, p, i, /, #, a, p, p, l, i, c, a, t, i, o, n, -, g, l, o, b, a, l, s, ,, , a, p, i, /, #, u, s, e, f, u, l, -, f, u, n, c, t, i, o, n, s, -, a, n, d, -, c, l, a, s, s, e, s, ,, , a, p, i, /, #, m, e, s, s, a, g, e, -, f, l, a, s, h, i, n, g, ,, , a, p, i, /, #, m, o, d, u, l, e, -, f, l, a, s, k, ., j, s, o, n, ,, , a, p, i, /, #, t, e, m, p, l, a, t, e, -, r, e, n, d, e, r, i, n, g, ,, , a, p, i, /, #, c, o, n, f, i, g, u, r, a, t, i, o, n, ,, , a, p, i, /, #, s, t, r, e, a, m, -, h, e, l, p, e, r, s, ,, , a, p, i, /, #, u, s, e, f, u, l, -, i, n, t, e, r, n, a, l, s, ,, , a, p, i, /, #, s, i, g, n, a, l, s, ,, , a, p, i, /, #, c, l, a, s, s, -, b, a, s, e, d, -, v, i, e, w, s, ,, , a, p, i, /, #, u, r, l, -, r, o, u, t, e, -, r, e, g, i, s, t, r, a, t, i, o, n, s, ,, , a, p, i, /, #, v, i, e, w, -, f, u, n, c, t, i, o, n, -, o, p, t, i, o, n, s, ,, , a, p, i, /, #, c, o, m, m, a, n, d, -, l, i, n, e, -, i, n, t, e, r, f, a, c, e, ,, , #, a, d, d, i, t, i, o, n, a, l, -, n, o, t, e, s, ,, , d, e, s, i, g, n, /, ,, , d, e, s, i, g, n, /, #, t, h, e, -, e, x, p, l, i, c, i, t, -, a, p, p, l, i, c, a, t, i, o, n, -, o, b, j, e, c, t, ,, , d, e, s, i, g, n, /, #, t, h, e, -, r, o, u, t, i, n, g, -, s, y, s, t, e, m, ,, , d, e, s, i, g, n, /, #, o, n, e, -, t, e, m, p, l, a, t, e, -, e, n, g, i, n, e, ,, , d, e, s, i, g, n, /, #, w, h, a, t, -, d, o, e, s, -, m, i, c, r, o, -, m, e, a, n, ,, , d, e, s, i, g, n, /, #, t, h, r, e, a, d, -, l, o, c, a, l, s, ,, , d, e, s, i, g, n, /, #, a, s, y, n, c, -, a, w, a, i, t, -, a, n, d, -, a, s, g, i, -, s, u, p, p, o, r, t, ,, , d, e, s, i, g, n, /, #, w, h, a, t, -, f, l, a, s, k, -, i, s, -, w, h, a, t, -, f, l, a, s, k, -, i, s, -, n, o, t, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, n, a, m, i, n, g, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, t, h, e, -, e, x, t, e, n, s, i, o, n, -, c, l, a, s, s, -, a, n, d, -, i, n, i, t, i, a, l, i, z, a, t, i, o, n, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, a, d, d, i, n, g, -, b, e, h, a, v, i, o, r, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, c, o, n, f, i, g, u, r, a, t, i, o, n, -, t, e, c, h, n, i, q, u, e, s, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, d, a, t, a, -, d, u, r, i, n, g, -, a, -, r, e, q, u, e, s, t, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, v, i, e, w, s, -, a, n, d, -, m, o, d, e, l, s, ,, , e, x, t, e, n, s, i, o, n, d, e, v, /, #, r, e, c, o, m, m, e, n, d, e, d, -, e, x, t, e, n, s, i, o, n, -, g, u, i, d, e, l, i, n, e, s, ,, , c, o, n, t, r, i, b, u, t, i, n, g, /, ,, , c, o, n, t, r, i, b, u, t, i, n, g, /, #, s, u, p, p, o, r, t, -, q, u, e, s, t, i, o, n, s, ,, , c, o, n, t, r, i, b, u, t, i, n, g, /, #, r, e, p, o, r, t, i, n, g, -, i, s, s, u, e, s, ,, , c, o, n, t, r, i, b, u, t, i, n, g, /, #, s, u, b, m, i, t, t, i, n, g, -, p, a, t, c, h, e, s, ,, , l, i, c, e, n, s, e, /, ,, , c, h, a, n, g, e, s, /, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 3, -, 0, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 3, -, 0, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 3, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 3, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 3, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 3, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 2, -, 5, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 2, -, 4, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 2, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 2, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 2, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 2, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 1, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 1, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 1, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 1, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 0, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 0, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 0, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 2, -, 0, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 1, -, 4, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 1, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 1, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 1, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 1, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 0, -, 4, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 0, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 0, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 0, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 1, -, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 2, -, 5, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 2, -, 4, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 2, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 2, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 2, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 1, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 0, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, 0, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 9, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 8, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 8, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 7, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 7, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 7, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 6, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 6, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 5, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 5, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 5, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 4, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 3, -, 1, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 3, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 2, ,, , c, h, a, n, g, e, s, /, #, v, e, r, s, i, o, n, -, 0, -, 1, ,, , h, t, t, p, s, :, /, /, p, a, l, l, e, t, s, p, r, o, j, e, c, t, s, ., c, o, m, /, d, o, n, a, t, e, ,, , h, t, t, p, s, :, /, /, p, y, p, i, ., o, r, g, /, p, r, o, j, e, c, t, /, F, l, a, s, k, /, ,, , h, t, t, p, s, :, /, /, g, i, t, h, u, b, ., c, o, m, /, p, a, l, l, e, t, s, /, f, l, a, s, k, /, ,, , h, t, t, p, s, :, /, /, g, i, t, h, u, b, ., c, o, m, /, p, a, l, l, e, t, s, /, f, l, a, s, k, /, i, s, s, u, e, s, /, ,, , h, t, t, p, s, :, /, /, d, i, s, c, o, r, d, ., g, g, /, p, a, l, l, e, t, s, ,, , #, ,, , #, u, s, e, r, -, s, -, g, u, i, d, e, ,, , #, a, p, i, -, r, e, f, e, r, e, n, c, e, ,, , #, a, d, d, i, t, i, o, n, a, l, -, n, o, t, e, s, ,, , h, t, t, p, s, :, /, /, w, w, w, ., s, p, h, i, n, x, -, d, o, c, ., o, r, g, /, ,, , \_, i, m, a, g, e, s, /, f, l, a, s, k, -, h, o, r, i, z, o, n, t, a, l, ., p, n, g