# Web Scraping Demo

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**Goal: Scraping list of articles from the current CNN homepage**

First two cells from https://realpython.com/python-web-scraping-practical-introduction/
(https://realpython.com/python-web-scraping-practical-introduction/)

```
In [160]:  from bs4 import BeautifulSoup
           from urllib.request import urlopen
           import json
           import time
```

```
In [161]:  # Begin wall-timing workflow for web scraping
           start = time.time()
```

Make an HTTP request to the CNN server where the connection closing is handled by urllib.

Parse the HTML using BeautifulSoup.

```
In [162]:  url = "https://www.cnn.com"
           page = urlopen(url)
           html = page.read().decode("utf-8")
           soup = BeautifulSoup(html, "html.parser")
```

```
In [163]:  # I outputted 'get_text()' to express the need
           # for more "hacking" on the developer side
           # since this output is not the content we want
           # from the home page (i.e. trending articles)
           print(soup.get_text())
```

CNN - Breaking News, Latest News and Videos

USWorldPoliticsBusinessOpinionHealthEntertainmentStyleTravelSportsVideosEditionU.S.InternationalArabicEspañolSearch CNNOpen MenuSearchEditionU.S.InternationalArabicEspañolUSCrime + JusticeEnergy + EnvironmentExtreme WeatherSpace + ScienceWorldAfricaAmericasAsiaAustraliaChinaEuropeIndiaMiddle EastUnited KingdomPoliticsThe Biden PresidencyFacts FirstUS ElectionsBusinessMarketsTechMediaSuccessPerspectivesVideosOpinionPolitical Op-EdsSocial CommentaryHealthLife, But BetterFitnessFoodSleepMindfulnessRelationshipsEntertainmentStarsScreenBingeCultureMediaTechInnovateGadgetForeseeable FutureMission: AheadUpstartsWork TransformedInnovative CitiesStyleArtsDesignFashionArchitectureLuxuryBeautyVideoTravelDestinationsFood and DrinkStayNewsVideosSportsPro FootballCollege FootballBasketballBaseballSoccerOlympicsHockeyVideosLive TV Digital StudiosCNN FilmsHLNTV ScheduleTV Shows A-ZCNNVRAudioCouponsCNN UnderscoredExploreWellnessGadgetsLifestyleCNN StoreWeatherClimateStorm TrackerWildfire TrackerVideoMorePhotosLongformInvestigationsCNN ProfilesCNN LeadershipCNN NewslettersWork for CNNFollow CNN

SearchUSCrime + JusticeEnergy + EnvironmentExtreme WeatherSpace + ScienceWorldAfricaAmericasAsiaAustraliaChinaEuropeIndiaMiddle EastUnited KingdomPoliticsThe Biden PresidencyFacts FirstUS ElectionsBusinessMarketsTechMediaSuccessPerspectivesVideosOpinionPolitical Op-EdsSocial CommentaryHealthLife, But BetterFitnessFoodSleepMindfulnessRelationshipsEntertainmentStarsScreenBingeCultureMediaTechInnovateGadgetForeseeable FutureMission: AheadUpstartsWork TransformedInnovative CitiesStyleArtsDesignFashionArchitectureLuxuryBeautyVideoTravelDestinationsFood and DrinkStayNewsVideosSportsPro FootballCollege FootballBasketballBaseballSoccerOlympicsHockeyVideosLive TV Digital StudiosCNN FilmsHLNTV ScheduleTV Shows A-ZCNNVRAudioCouponsCNN UnderscoredExploreWellnessGadgetsLifestyleCNN StoreWeatherClimateStorm TrackerWildfire TrackerVideoMorePhotosLongformInvestigationsCNN ProfilesCNN LeadershipCNN NewslettersWork for CNNFollow CNN Terms of UsePrivacy PolicyAccessibility & CCAd ChoicesAbout UsCNN StoreNewslettersTranscriptsLicense FootageCNN NewsourceSitemap© 2022 Cable News Network.A Warner Media Company.All Rights Reserved.CNN Sans ™ & © 2016 Cable News Network.

We can get a structured string with BeautifulSoup's 'prettify' function, which we then turn into a list.

The prettify output separated each HTML tag on a new line, so we can use '\n' as our delimiter to turn this string into a list/array.

```
In [164]:  pretty_soup = soup.prettify()
```

```
In [165]:  pretty_bowl = pretty_soup.split('\n')
           pretty_bowl[0:50]
```

```
Out[165]:  ['<!DOCTYPE html>',
            '<html class="no-js">',
            ' <head>',
            '  <meta content="IE=edge,chrome=1" http-equiv="X-UA-Compatible"/>'
           ,
            '  <meta charset="utf-8"/>',
            '  <meta content="text/html" http-equiv="Content-Type"/>',
            '  <meta content="width=device-width, initial-scale=1.0, minimum-sc
           ale=1.0" name="viewport"/>',
            '  <link href="/optimizelyjs/131788053.js" rel="dns-prefetch"/>',
            '  <link href="//tpc.googlesyndication.com" rel="dns-prefetch"/>',
            '  <link href="//pagead2.googlesyndication.com" rel="dns-prefetch"/
           >',
            '  <link href="//www.googletagservices.com" rel="dns-prefetch"/>',
            '  <link href="//partner.googleadservices.com" rel="dns-prefetch"/>
           ',
            '  <link href="//www.google.com" rel="dns-prefetch"/>',
            '  <link href="//aax.amazon-adsystem.com" rel="dns-prefetch"/>',
            '  <link href="//c.amazon-adsystem.com" rel="dns-prefetch"/>',
            '  <link href="//cdn.krxd.net" rel="dns-prefetch"/>',
            '  <link href="//ads.rubiconproject.com" rel="dns-prefetch"/>',
            '  <link href="//optimized-by.rubiconproject.com" rel="dns-prefetch
           "/>',
            '  <link href="//fastlane.rubiconproject.com" rel="dns-prefetch"/>'
           ,
            '  <link href="//fastlane-adv.rubiconproject.com" rel="dns-prefetch
           "/>',
            '  <link href="”//ib.adnxs.com”/" rel="dns-prefetch"/>',
            '  <link href="”//prebid.adnxs.com”/" rel="dns-prefetch"/>',
            '  <link href="http://segment-data-us-east.zqtk.net/turner-47fcf6"
           rel="dns-prefetch">',
            '   <link href="//static.yieldmo.com" rel="dns-prefetch">',
            '    <link href="//w.usabilla.com" rel="dns-prefetch"/>',
            '    <link href="" rel="dns-prefetch"/>',
            '    <link href="//data.api.cnn.io" rel="dns-prefetch"/>',
            '    <link href="//pmd.cdn.turner.com" rel="dns-prefetch"/>',
            '    <link href="//amd.cdn.turner.com" rel="dns-prefetch"/>',
            '    <link href="//ht.cdn.turner.com" rel="dns-prefetch"/>',
            '    <link href="//www.ugdturner.com" rel="dns-prefetch"/>',
            '    <link href="//vrt.outbrain.com" rel="dns-prefetch"/>',
            '    <link href="//consent.truste.com" rel="dns-prefetch"/>',
```

```
       '        <link href="//as.casalemedia.com" rel="dns-prefetch"/>',
       '        <link href="//as-sec.casalemedia.com" rel="dns-prefetch"/>',
       '        <link href="//dsum-sec.casalemedia.com" rel="dns-prefetch"/>',
       '        <link href="//js-sec.indexww.com" rel="dns-prefetch"/>',
       '        <link href="//data.cnn.com" rel="dns-prefetch"/>',
       '        <link href="//cdn.cnn.com" rel="dns-prefetch"/>',
       '        <link href="//www.i.cdn.cnn.com" rel="dns-prefetch"/>',
       '        <link as="fetch" crossorigin="anonymous" href="//cdn.cnn.com/a
       ds/cnn/cnn_homepage.json" rel="preload" type="application/json"/>',
       '        <link as="script" href="/.a/bundles/header.82f0a1272663c09179f
       e.bundle.js" rel="preload" type="application/javascript"/>',
       '        <link as="script" href="https://www.googletagservices.com/tag/
       js/gpt.js" rel="preload" type="text/javascript"/>',
       '        <link as="script" href="https://c.amazon-adsystem.com/aax2/aps
       tag.js" rel="preload" type="application/javascript"/>',
       '        <link as="script" href="/.a/2.283.0/js/cnn-header-second-react
       .min.js" rel="preload" type="application/javascript"/>',
       '        <link as="script" href="/optimizelyjs/131788053.js" rel="prelo
       ad" type="text/javascript"/>',
       '        <link as="script" href="https://cdn.cookielaw.org/scripttempla
       tes/otSDKStub.js" rel="preload" type="application/javascript"/>',
       '        <link as="font" crossorigin="anonymous" href="//www.i.cdn.cnn.
       com/.a/fonts/cnn/3.9.0/cnnsans-regular.woff2" rel="preload" type="fo
       nt/woff2"/>',
       '        <link as="font" crossorigin="anonymous" href="//www.i.cdn.cnn.
       com/.a/fonts/cnn/3.9.0/cnnsans-lightit.woff2" rel="preload" type="fo
       nt/woff2"/>',
       '        <link as="font" crossorigin="anonymous" href="//www.i.cdn.cnn.
       com/.a/fonts/cnn/3.9.0/cnnsans-italic.woff2" rel="preload" type="fon
       t/woff2"/>']
```

Since we are dealing with article data, we only want the lines associated with article data.

We can use these tags to subset the amount of string we are looking at. Most importantly, without needing to know what string formatting the CNN HTML uses in advance. The last line shows a small preview of what the output looks like. It's not necessary to keep it unless you really need it.

```
In [166]: tags = ['subTitle', 'name', 'title', 'headline', 'description', 'src',
          'mpId']
```

```
In [167]:  subset = []

           for row in pretty_bowl:
               valid = True
               for tag in tags:
                   if tag not in row:
                       valid = False
               if valid:
                   subset.append(row)

           subset[0][0:500]
```

Out[167]: '          window.CNN = window.CNN || {};window.CNNI = window.CNNI ||
          {},window.FAVE = window.FAVE || {};window.WM = window.WM || {};windo
          w.document.domain = \'cnn.com\';if (typeof window.console === \'unde
          fined\') {window.console = {debug: function() {return true;},error:
          function() {return true;},info: function() {return false;},warn: fun
          ction() {return false;},log: function() {return false;},timeStamp: f
          unction() {return false;}}}CNN.isWebview = false;CNN.adTargets = {pr
          otocol: "ssl"};CNN.AdsConfig'

Having found our (naively) most important subset of the string, we can more precisely extract the list of articles.

```
In [168]:  len(subset) # start at "values:" end at "}]}"
```

Out[168]: 1

```
In [169]:  start_text = "{\"articleList\":"
           start_index = subset[0].find(start_text) + len(start_text)

           end_text = "\"layout\":\"\"}]"
           end_index = subset[0].find(end_text) + len(end_text) # The 'find' modu
           le gives the start, NOT the end

           print(start_index)
           print(end_index)
```

           105806
           131848

```
In [170]: article_list = subset[0][start_index:end_index]
          article_list[0:500]
```

Out[170]: '[{"uri":"/2022/01/06/politics/joe-biden-january-6-speech-anniversar
          y/index.html","headline":"\\u003cstrong>It\'s likely to be the line
          repeated most today and in days to come\\u003c/strong>","thumbnail":
          "//cdn.cnn.com/cnnnext/dam/assets/220106093419-03-biden-jan-6-speech
          -small-11.jpg","duration":"","description":"","layout":""},{"uri":"/
          2022/01/06/politics/january-6-anniversary/index.html","headline":"Bi
          den condemns Trump as a threat to democracy","thumbnail":"//cdn.cnn.
          com/cnnnext/dam/assets/22010'

We then load this string into JSON to get a preferred JSON object of articles.

```
In [171]: data = json.loads(article_list)
          data
```

Out[171]: [{'uri': '/2022/01/06/politics/joe-biden-january-6-speech-anniversar
          y/index.html',
            'headline': "<strong>It's likely to be the line repeated most toda
          y and in days to come</strong>",
            'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106093419-03-bid
          en-jan-6-speech-small-11.jpg',
            'duration': '',
            'description': '',
            'layout': ''},
           {'uri': '/2022/01/06/politics/january-6-anniversary/index.html',
            'headline': 'Biden condemns Trump as a threat to democracy',
            'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106092029-02-bid
          en-jan-6-speech-small-11.jpg',
            'duration': '',
            'description': '<a href="https://www.cnn.com/specials/politics/joe
          -biden-news" target="_blank">President Joe Biden</a> on Thursday mar
          ked the first anniversary of the January 6 insurrection by forcefull
          y calling out former President Donald Trump for attempting to undo A
          merican democracy, saying such an insurrection must never happen aga
          in.',
            'layout': ''},
           {'uri': '/videos/politics/2022/01/06/stephanie-grisham-donald-trump
          -ego-newday-vpx.cnn',
            'headline': "Ex-Trump aide describes the worry with Trump's 'fragi
          le ego'",
            'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106091107-stepha
          nie-grisham-donald-trump-small-11.jpg',
            'duration': '01:50',
            'description': 'Stephanie Grisham, former communications director
          and press secretary for the Trump administration, talks to New Day a
          fter speaking with the House Select Committee on January 6, about wh
          at she and other former Trump staff and administration officials are
          planning to do to stop the former President.',
            'layout': '',
```

      'iconType': 'video'},
     {'uri': '/2022/01/06/opinions/what-i-saw-on-january-6-chideya/index
    .html',
       'headline': "<strong>Opinion:</strong> I was there on January 6. H
    ere's what I've learned in the year since",
       'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106052132-child-
    stop-the-steal-penn-file-11052020-small-11.jpg',
       'duration': '',
       'description': 'On January 6, 2021, I left the Maryland suburbs an
    d drove to downtown Washington, DC for the "Stop the Steal" rally. '
    ,
       'layout': ''},
     {'uri': '/2022/01/06/politics/stephanie-grisham-trump-officials-mee
    ting-cnntv/index.html',
       'headline': "Stephanie Grisham says group of ex-Trump officials to
    meet next week to discuss how to 'stop' him",
       'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/200407100829-stepha
    nie-grisham-trump-file-small-11.jpg',
       'duration': '',
       'description': 'Former White House press secretary <a href="https:
    //www.cnn.com/2022/01/05/politics/stephanie-grisham-committee-meetin
    g/index.html" target="_blank">Stephanie Grisham</a> said Thursday th
    at more than a dozen of her former Trump administration colleagues p
    lan to meet next week to try and stop former President Donald Trump
    as he continues to "manipulate people and divide our country."',
       'layout': ''},
     {'uri': '/2022/01/06/opinions/president-biden-speech-democracy-warr
    ior-ghitis/index.html',
       'headline': "<strong>Opinion</strong>: Biden assumes role of Ameri
    ca's democracy warrior",
       'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106093511-04-bid
    en-jan-6-speech-small-11.jpg',
       'duration': '',
       'description': 'President Joe Biden, marking the anniversary of th
    e January 6 attack at the US Capitol, delivered the <a href="https:/
    /www.cnn.com/videos/politics/2022/01/06/president-joe-biden-january-
    6th-anniversary-trump-defeated-remarks-vpx.cnn" target="_blank">most
    powerful, blistering speech</a> of his presidency thus far, signalin
    g a stark shift in his approach to the nation\'s ongoing crisis of d
    emocracy.',
       'layout': ''},
     {'uri': '/2022/01/06/politics/trump-tweet-january-6/index.html',
       'headline': "<strong>Trump did not want to tweet 'stay peaceful' d
    uring January 6 riot, key former aide says</strong>",
       'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106084508-capito
    l-reality-check-01062022-small-11.jpg',
       'duration': '',
       'description': '',
       'layout': ''},
     {'uri': '/videos/politics/2022/01/06/senator-joe-neguse-experience-
    evacuating-insurrection-king-intv-vpx.cnn',
       'headline': 'Senator shares defining moment from January 6',
       'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/210210131744-rep-jo

```
e-neguse-0210-small-11.jpg',
   'duration': '01:54',
   'description': 'Sen. Joe Neguse (D-CO) joins Inside Politics to di
scuss his experience last year when he was evacuated from the senate
floor during the insurrection.',
   'layout': '',
   'iconType': 'video'},
 {'uri': '/2022/01/06/politics/january-6-capitol-riot/index.html',
   'headline': '<strong>Analysis: </strong>What a reporter trapped in
the Capitol on Jan. 6 will always remember about that day',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/211119115714-angry-
white-men-angry-captiol-riot-010621-file-small-11.jpg',
   'duration': '',
   'description': '<a href="https://www.cnn.com/specials/politics/cap
itol-riot-investigations" target="_blank"><em>January 6, 2021</em></
a><em> started like lots of days on Capitol Hill for CNN reporter </
em><a href="https://twitter.com/DaniellaMicaela" target="_blank"><em
>Daniella Diaz</em></a><em>. She was braced for a very long day as C
ongress was set to formalize Joe Biden\'s Electoral College victory.
What transpired over the next 21 hours -- rioters storming the US Ca
pitol in an attempted coup -- was history in the making. On the anni
versary of that fateful day, I reached out to Daniella to talk about
her recollections -- and what memories have stayed with her. Our con
versation -- conducted via email and lightly edited for flow -- is b
elow.</em>',
   'layout': ''},
 {'uri': '/videos/politics/2022/01/06/dick-cheney-liz-cheney-only-go
p-january-6-house-floor-nr-sot-vpx.cnn',
   'headline': 'Dick Cheney slams GOP over January 6th',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106143222-dick-c
heney-2015-file-small-11.jpeg',
   'duration': '01:32',
   'description': "Former Republican Vice President Dick Cheney and h
is daughter Rep. Liz Cheney (R-WY) were the only two Republicans on
the House floor during a remembrance of the January 6th riot. CNN's
Manu Raju reports.",
   'layout': '',
   'iconType': 'video'},
 {'uri': '/videos/us/2022/01/05/january-6-children-of-rioters-teen-v
ogue-fortesa-latifi-newday-vpx.cnn',
   'headline': 'Teen who called FBI on his dad before Capitol riot sp
eaks to writer',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/210321231141-capito
l-hill-riot-0106-small-11.jpg',
   'duration': '03:01',
   'description': 'Fortesa Latifi, a "Teen Vogue" contributor, joins
New Day to discuss her article about children of rioters who attacke
d the Capitol building on January 6, 2021. ',
   'layout': '',
   'iconType': 'video'},
 {'uri': '/2022/01/05/opinions/january-6-anniversary-voting-rights-a
llred/index.html',
   'headline': '<strong>Opinion: </strong>The text I sent my wife ins
```

ide the Capitol',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220104115624-januar
y-6-riot-file-2021-small-11.jpg',
   'duration': '',
   'description': 'On January 6, I woke up knowing it was going to be
a difficult day, but I had no idea that it would take the harrowing
turn that it did. ',
   'layout': ''},
 {'uri': '/2022/01/06/media/jan-6-anniversary-right-wing-conspiracy-
lies/index.html',
   'headline': 'How right-wing media is marking the Jan. 6 anniversar
y',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220104235037-sean-h
annity-file-02282019-small-11.jpg',
   'duration': '',
   'description': '',
   'layout': ''},
 {'uri': '/2022/01/06/politics/january-6-insurrection-legacy/index.h
tml',
   'headline': '<strong>Analysis</strong>: January 6 may be only a pr
eview of a deeper democratic rupture',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106062045-file-c
apitol-010621-restricted-small-11.jpg',
   'duration': '',
   'description': '',
   'layout': ''},
 {'uri': '/2022/01/05/politics/jimmy-carter-democracy-jan-6-oped/ind
ex.html',
   'headline': "Carter warns America 'teeters on the brink of a widen
ing abyss' in stark op-ed",
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105191200-jimmy-
carter-file-2018-small-11.jpg',
   'duration': '',
   'description': '<a href="https://www.cnn.com/2013/01/08/us/jimmy-c
arter---fast-facts/index.html" target="_blank">Former President Jimm
y Carter</a> warned Wednesday that democracy is being threatened thr
oughout the country, cautioning that "our great nation now teeters o
n the brink of a widening abyss." ',
   'layout': ''},
 {'uri': '/videos/politics/2022/01/06/jake-tapper-republicans-januar
y-6-democracy-newday-vpx.cnn',
   'headline': "See Jake Tapper's plea to Republicans",
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106090428-jake-t
apper-newday-01062022-small-11.jpeg',
   'duration': '03:06',
   'description': "CNN's Jake Tapper calls on leaders in the Republic
an party to stand up for democracy in the United States.",
   'layout': '',
   'iconType': 'video'},
 {'uri': '/2022/01/06/politics/cheney-pence-january-6/index.html',
   'headline': "Cheney: Jan. 6 committee 'looks forward to' cooperati
on from Pence",
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105134039-05-jan

```
-6-committee-pivotal-year-cheney-small-11.jpg',
   'duration': '',
   'description': '',
   'layout': ''},
 {'uri': '/2022/01/04/opinions/voter-restrictions-trump-big-lie-coat
es/index.html',
   'headline': '<strong>Opinion: </strong>The bigger lie threatening
US democracy',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/211103083741-electi
ons-voting-small-11.jpg',
   'duration': '',
   'description': 'There\'s an even bigger lie than the so-called "<a
href="https://www.cnn.com/2021/09/16/politics/trump-big-lie-gop-elec
tion/index.html" target="_blank">Big Lie</a>" that we don\'t have fa
ir and free elections in this country -- and perhaps one that is eve
n more dangerous to our democracy.',
   'layout': ''},
 {'uri': '/2022/01/06/politics/lindsey-graham-biden-jan-6-insurrecti
on-speech/index.html',
   'headline': "<strong>Analysis</strong>: Lindsey Graham's unreal re
sponse to Joe Biden's January 6 speech",
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/210802175054-01-lin
dsey-graham-0730-small-11.jpg',
   'duration': '',
   'description': 'In the moments after President Joe Biden <a href="
https://www.cnn.com/2022/01/06/politics/january-6-anniversary/index.
html" target="_blank">concluded his speech</a> commemorating the one
-year anniversary of the January 6 riot at the US Capitol, South Car
olina Sen. Lindsey Graham leapt at the chance to offer his own respo
nse.',
   'layout': ''},
 {'uri': '/2022/01/06/politics/elaine-luria-reelection-announcement/
index.html',
   'headline': 'Jan. 6 panel member launches reelection bid amid back
drop of insurrection anniversary',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105134038-06-jan
-6-committee-pivotal-year-luria-small-11.jpg',
   'duration': '',
   'description': 'Rep. Elaine Luria, a Democrat from Virginia and a
member of the House committee investigating the Capitol Riot, announ
ced on the anniversary of the attack that she will run for reelectio
n in her Virginia Beach swing district. ',
   'layout': ''},
 {'uri': '/2022/01/06/us/dzhokhar-tsarnaev-boston-bomber-covid-stimu
lus/index.html',
   'headline': "US Attorney's office requests Boston Marathon bomber
to turn over funds",
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106150124-boston
-marathon-bomber-covid-relief-check-file-041513-small-11.jpg',
   'duration': '',
   'description': "Boston Marathon bomber Dzhokhar Tsarnaev should tu
rn over money to his victims, including a previously deposited $1,40
0 federal stimulus payment, the US Attorney's Office of Massachusett
```

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    s said in a filing Wednesday morning.",
    'layout': ''},
  {'uri': '/videos/politics/2022/01/06/what-does-marjorie-taylor-gree
ne-do-all-day-cillizza-the-point.cnn',
    'headline': 'What does Marjorie Taylor Greene do during the day?',
    'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106112737-the-po
int-marjorie-taylor-greene-small-11.jpg',
    'duration': '06:02',
    'description': 'Controversial Republican Congresswoman and frequen
t tweeter Marjorie Taylor Greene has been "permanently suspended" fr
om Twitter, raising the question -- what else does she actually do a
ll day, besides engage on the social media site? In the latest episo
de of The Point, CNN\'s Chris Cillizza unpacks everything Taylor Gre
ene has contributed to Congress so far and how, despite it all, she
is still winning the branding game.',
    'layout': '',
    'iconType': 'video'},
  {'uri': '/2022/01/06/weather/snow-storm-warning-advisory-forecast-t
hursday/index.html',
    'headline': "A winter storm is hitting from Mississippi to Maine.
Here's what to expect",
    'thumbnail': '',
    'duration': '',
    'description': 'Winter weather alerts stretched from coast to coas
t Thursday with over 100 million people impacted as multiple storm s
ystems are forecast to move across the US over the next 48 hours.',
    'layout': ''},
  {'uri': '/videos/media/2022/01/06/carl-cameron-sean-hannity-texts-s
ot-ac360-vpx.cnn',
    'headline': "Ex-Fox reporter reacts to Hannity's texts",
    'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105222118-carl-c
ameron-small-11.jpeg',
    'duration': '01:35',
    'description': "Former Fox reporter Carl Cameron reacts to Sean Ha
nnity's text message released from the January 6 committee, and the
lack of response from his former colleague on the matter. ",
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    'headline': 'Giant dying star explodes as scientists watch in real
time — a first for astronomy',
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pergiant-star-supernova-small-11.jpg',
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d violent events in space -- and astronomers had an unprecedented fr
ont-row seat to the explosive end of a stellar giant.',
    'layout': ''},
  {'uri': '/videos/world/2022/01/05/north-korea-weapons-capability-sf
c-lon-orig.cnn',
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e more sophisticated over the years. CNN's Paula Hancocks looks at s
ome of the country's main weapons and the damage they can do.",
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tml',
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beverage",
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106083313-fresca
-soda-file-restricted-small-11.jpg',
  'duration': '',
  'description': 'Coca-Cola is tapping into the <a href="https://www
.cnn.com/2021/08/10/business/hard-mountain-dew-launch/index.html" ta
rget="_blank">canned cocktail craze</a> with a boozy version of its
Fresca soda.',
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/index.html',
  'headline': '<strong>Partying passengers stuck in Mexico after air
lines decline to fly them home</strong>',
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g-plane-toronto-121621-restricted-small-11.jpg',
  'duration': '',
  'description': 'Some members of a rowdy group shown dancing, drink
ing and vaping maskless aboard a flight to Cancun find themselves st
randed in Mexico after their return flight to Canada was scrubbed an
d other airlines have declined to fly them home.',
  'layout': ''},
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ine-god/index.html',
  'headline': "<strong>Analysis: </strong>What this Republican Senat
or doesn't know about Covid-19 is, well, a lot",
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/210802183234-ron-jo
hnson-dc-statehood-hearing-small-11.jpg',
  'duration': '',
  'description': 'Wisconsin Republican Sen. Ron Johnson has made a n
ame for himself as one of the least well-informed elected officials
during the nearly two years that the world has been battling the Cov
id-19 pandemic.',
  'layout': ''},
 {'uri': '/videos/opinions/2022/01/05/se-cupp-unfiltered-covid-fatig
ue-vpx.cnn',
  'headline': 'SE Cupp: Covid-19 messaging is exhausting us all',
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105113139-se-cup
p-1-5-small-11.jpg',
  'duration': '05:45',
  'description': 'In this week\'s episode of "Unfiltered," CNN\'s SE
Cupp talks Covid-19 fatigue as cases of Omicron surge across the cou
ntry and families are facing confusing CDC guidelines. ',
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     'iconType': 'video'},
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ml',
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rs-tavern-small-11.jpg',
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arter of the staff tested positive for Covid-19. The bakery missed o
ut on 25% of its monthly sales.',
    'layout': ''},
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turns-covid-cec/index.html',
    'headline': "An actor returned to Broadway after 7 years to save '
Wicked' from a cast shortage",
    'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220106123446-01-car
la-stickler-file-small-11.jpg',
    'duration': '',
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ant disrupting numerous Broadway productions, one former Broadway ac
tor recently stepped in to save the day.',
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but preventative measures will still be key",
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husetts-covid-hospital-12292021-restricted-small-11.jpg',
    'duration': '',
    'description': 'While the highly transmissible Omicron variant con
tinues to drive up Covid-19 <a href="https://www.cnn.com/2022/01/04/
health/us-coronavirus-tuesday/index.html" target="_blank">cases and
hospitalizations</a> -- and the numbers are likely to get worse befo
re they get better -- health experts say it\'s critical Americans co
ntinue safe practices to prevent infections.',
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otter/index.html',
    'headline': "<strong>Emma Watson responds to 'Harry Potter' reunio
n mix up with Emma Roberts</strong> ",
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a-watson-emma-roberts-split-small-11.jpg',
    'duration': '',
    'description': 'Emma Watson is taking a Emma Roberts photo snafu i
n stride.',
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l',
    'headline': "The 'Ozark' Season 4 trailer delivers the goods",
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-jan-streaming-2022-ozark-s4-p1-small-11.jpg',
    'duration': '',
    'description': 'Netflix\'s "Ozark"<a href="https://www.cnn.com/201
7/07/20/tv-shows/ozark-review/index.html" target="_blank"> is back</

     a> for Seaon 4. ',
       'layout': ''},
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    ill celebrate her life",
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    ty-white-animal-activism-small-11.jpg',
       'duration': '',
       'description': 'The service arrangements for Betty White will be p
    rivate, her friend and agent Jeff Witjas told CNN Thursday.',
       'layout': ''},
      {'uri': '/style/article/the-one-megamansion-bel-air-auction/index.h
    tml',
       'headline': 'LA megamansion could sell for $295 million',
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    t-expensive-home-los-angeles-auction-small-11.jpg',
       'duration': '',
       'description': 'A 105,000-square-foot mansion in Bel Air, dubbed "
    The One," could become the most expensive property to sell in the Un
    ited States when it hits the auction block next month. ',
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    html',
       'headline': "'Squid Game' star is the first Korean to appear solo
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    game-vogue-cover-010622-small-11.jpg',
       'duration': '',
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    on Jung.',
       'layout': ''},
      {'uri': '/videos/business/2022/01/06/bmw-color-changing-technology-
    orig.cnn-business',
       'headline': 'This BMW color-changing concept SUV will mess with yo
    ur head',
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       'duration': '00:53',
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    l',
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    inter weather ',
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    ar-preparedness-restricted-small-11.jpg',
       'duration': '',
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    inter storm -- like many Virginians were this week -- being prepared
    can be the difference between survival and serious harm or death. ",
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on-idnty/index.html',
   'headline': '<strong>British Sikh Army officer becomes first woman
of color to ski solo to the South Pole</strong>',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220103123301-07b-pr
eet-chandi-small-11.jpg',
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come the first woman of color to complete a solo expedition to the S
outh Pole',
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-safest-airlines-2022-small-11.jpg',
   'duration': '',
   'description': "Covid-19 has continued to dominate conversations a
round air safety, leading to some significant changes in airline saf
ety and product review website AirlineRatings.com's annual list.",
   'layout': ''},
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g-intl-hnk-ml/index.html',
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korea-f35a-file-03192019-small-11.jpg',
   'duration': '',
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an emergency "belly landing" at an air base on Tuesday after its lan
ding gear malfunctioned due to electronic issues, a South Korean Air
Force spokesperson said.',
   'layout': ''},
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tl-gbr/index.html',
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for copyright infringement',
   'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105124813-meghan
-markle-duchess-of-sussex-0925-file-restricted-small-11.jpg',
   'duration': '',
   'description': '<a href="http://www.cnn.com/2018/04/16/europe/megh
an-markle-fast-facts/index.html" target="_blank">Meghan, Duchess of
Sussex</a> will receive a confidential sum from the Mail on Sunday f
or infringement of copyright as her <a href="https://www.cnn.com/202
1/11/12/europe/royal-news-newsletter-11-12-21-scli-gbr-cmd-intl/inde
x.html" target="_blank">lengthy legal battle </a>against the British
tabloid comes to an end, court documents show.',
   'layout': ''},
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orld in 2022',
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icipated-architecture-2022-small-11.jpg',
   'duration': '',
   'description': 'With <a href="https://www.cnn.com/specials/world/c
oronavirus-outbreak-intl-hnk" target="_blank">Covid-19</a> causing d

elays in construction schedules and project openings, compiling CNN\
's annual architecture lookahead has become a tricky business. Indee
d, several entries in <a href="https://www.cnn.com/style/article/ant
icipated-buildings-2021/index.html" target="_blank">last year\'s</a>
list (and <a href="https://www.cnn.com/style/article/anticipated-bui
ldings-2020/index.html" target="_blank">even 2020\'s</a>) are yet to
officially open their doors. ',
  'layout': ''},
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  'headline': "'Never seen such a huge shark scar:' Photographer sha
res image with mysterious bite mark",
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105130730-shark-
bite-crop-small-11.jpg',
  'duration': '',
  'description': 'Photographer Jalil Najafov\'s first thought when h
e saw the great white was: "Is that real?"',
  'layout': ''},
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i/index.html',
  'headline': "Gal Gadot says controversial 'Imagine' video was in '
poor taste'",
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105103551-gal-ga
dot-imagine-intl-scli-file-small-11.jpg',
  'duration': '',
  'description': '<a href="https://www.cnn.com/2020/05/16/entertainm
ent/gal-gadot-graduation-special-trnd/index.html" target="_blank">Ga
l Gadot</a> has kicked off 2022 by thoroughly addressing the controv
ersial, <a href="https://www.cnn.com/2020/03/19/celebrities/gal-gado
t-celebrities-imagine-coronavirus-scli-intl/index.html" target="_bla
nk">star-studded "Imagine" video</a> that went viral for all the wro
ng reasons at the start of the global pandemic.',
  'layout': ''},
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spt/index.html',
  'headline': 'Antonio Brown says Buccaneers fired him for having a
painful ankle injury before he left mid-game',
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/220105223655-02-ant
onio-brown-bucs-jets-01022022-small-11.jpg',
  'duration': '',
  'description': 'Tampa Bay Buccaneers wide receiver Antonio Brown s
aid Wednesday he was fired "for having a painful injury" during a ga
me Sunday.',
  'layout': ''},
 {'uri': '/2022/01/06/health/creative-workout-motivation-wellness/in
dex.html',
  'headline': '6 creative ways to transform your workouts',
  'thumbnail': '//cdn.cnn.com/cnnnext/dam/assets/211228091834-04-upd
ate-workouts-wellness-small-11.jpg',
  'duration': '',
  'description': 'Most people know working out is good for your heal
th, both physical and mental. But staying motivated -- especially fo
r the long haul -- can be a struggle. Sure, you may get excited abou
t training for a 5K or 10K, but once the race is over, your interest

```
      in running may quickly wane. Or you may be crazy about your new spin
      class, only to become tired of it after a few weeks.',
        'layout': ''}]
```

Data science folks may also want to use this data in pandas! It's easy from here to export to CSV.

In [172]: `import pandas as pd`

In [173]:
```
cnn_df = pd.json_normalize(data)
cnn_df # use .to_csv() for CSV exporting
```

Out[173]:

| | uri | headline | |
|---|---|---|---|
| 0 | /2022/01/06/politics/joe-biden-january-6-speec... | \<strong\>It's likely to be the line repeated mo... | //cdn.cnn.com/cnnnext/dam/ass |
| 1 | /2022/01/06/politics/january-6-anniversary/ind... | Biden condemns Trump as a threat to democracy | //cdn.cnn.com/cnnnext/dam/ass |
| 2 | /videos/politics/2022/01/06/stephanie-grisham-... | Ex-Trump aide describes the worry with Trump's... | //cdn.cnn.com/cnnnext/dam/ass |
| 3 | /2022/01/06/opinions/what-i-saw-on-january-6-c... | \<strong\>Opinion:\</strong\> I was there on Janua... | //cdn.cnn.com/cnnnext/dam/ass |
| 4 | /2022/01/06/politics/stephanie-grisham-trump-o... | Stephanie Grisham says group of ex-Trump offic... | //cdn.cnn.com/cnnnext/dam/ass |
| 5 | /2022/01/06/opinions/president-biden-speech-de... | \<strong\>Opinion\</strong\>: Biden assumes role o... | //cdn.cnn.com/cnnnext/dam/ass |
| 6 | /2022/01/06/politics/trump-tweet-january-6/ind... | \<strong\>Trump did not want to tweet 'stay peac... | //cdn.cnn.com/cnnnext/dam/ass |
| 7 | /videos/politics/2022/01/06/senator-joe-neguse... | Senator shares defining moment from January 6 | //cdn.cnn.com/cnnnext/dam/ass |
| 8 | /2022/01/06/politics/january-6-capitol-riot/in... | \<strong\>Analysis: \</strong\>What a reporter tra... | //cdn.cnn.com/cnnnext/dam/ass |
| 9 | /videos/politics/2022/01/06/dick-cheney-liz-ch... | Dick Cheney slams GOP over January 6th | //cdn.cnn.com/cnnnext/dam/ass |
| 10 | /videos/us/2022/01/05/january-6-children-of-ri... | Teen who called FBI on his dad before Capitol ... | //cdn.cnn.com/cnnnext/dam/ass |
| 11 | /2022/01/05/opinions/january-6-anniversary-vot... | \<strong\>Opinion: \</strong\>The text I sent my w... | //cdn.cnn.com/cnnnext/dam/ass |
| 12 | /2022/01/06/media/jan-6-anniversary-right-wing... | How right-wing media is marking the Jan. 6 ann... | //cdn.cnn.com/cnnnext/dam/ass |
| 13 | /2022/01/06/politics/january-6-insurrection-le... | \<strong\>Analysis\</strong\>: January 6 may be on... | //cdn.cnn.com/cnnnext/dam/ass |
| 14 | /2022/01/05/politics/jimmy-carter-democracy-ja... | Carter warns America 'teeters on the brink of ... | //cdn.cnn.com/cnnnext/dam/ass |
| | /videos/politics/2022/01/06/jake- | See Jake Tapper's plea to | |

| | | | |
|---|---|---|---|
| 15 | tapper-republ... | Republicans | //cdn.cnn.com/cnnnext/dam/ass |
| 16 | /2022/01/06/politics/cheney-pence-january-6/in... | Cheney: Jan. 6 committee 'looks forward to' co... | //cdn.cnn.com/cnnnext/dam/ass |
| 17 | /2022/01/04/opinions/voter-restrictions-trump-... | <strong>Opinion:</strong>The bigger lie threa... | //cdn.cnn.com/cnnnext/dam/ass |
| 18 | /2022/01/06/politics/lindsey-graham-biden-jan-... | <strong>Analysis</strong>: Lindsey Graham's un... | //cdn.cnn.com/cnnnext/dam/ass |
| 19 | /2022/01/06/politics/elaine-luria-reelection-a... | Jan. 6 panel member launches reelection bid am... | //cdn.cnn.com/cnnnext/dam/ass |
| 20 | /2022/01/06/us/dzhokhar-tsarnaev-boston-bomber... | US Attorney's office requests Boston Marathon ... | //cdn.cnn.com/cnnnext/dam/ass |
| 21 | /videos/politics/2022/01/06/what-does-marjorie... | What does Marjorie Taylor Greene do during the... | //cdn.cnn.com/cnnnext/dam/ass |
| 22 | /2022/01/06/weather/snow-storm-warning-advisor... | A winter storm is hitting from Mississippi to ... | |
| 23 | /videos/media/2022/01/06/carl-cameron-sean-han... | Ex-Fox reporter reacts to Hannity's texts | //cdn.cnn.com/cnnnext/dam/ass |
| 24 | /2022/01/06/world/red-supergiant-star-supernov... | Giant dying star explodes as scientists watch ... | //cdn.cnn.com/cnnnext/dam/ass |
| 25 | /videos/world/2022/01/05/north-korea-weapons-c... | What's the damage North Korea's weapons do? | //cdn.cnn.com/cnnnext/dam/ass |
| 26 | /2022/01/06/business/fresca-alcoholic-drink-la... | One of Coke's most popular sodas is becoming a... | //cdn.cnn.com/cnnnext/dam/ass |
| 27 | /travel/article/airline-passengers-partying-ca... | <strong>Partying passengers stuck in Mexico af... | //cdn.cnn.com/cnnnext/dam/ass |
| 28 | /2022/01/06/politics/republican-sen-ron-johnso... | <strong>Analysis:</strong>What this Republica... | //cdn.cnn.com/cnnnext/dam/ass |
| 29 | /videos/opinions/2022/01/05/se-cupp-unfiltered... | SE Cupp: Covid-19 messaging is exhausting us all | //cdn.cnn.com/cnnnext/dam/ass |
| 30 | /2022/01/06/economy/business-jobs-workers-omic... | America calls out sick | //cdn.cnn.com/cnnnext/dam/ass |
| 31 | /2022/01/06/entertainment/wicked-elphaba-broad... | An actor returned to Broadway after 7 years to... | //cdn.cnn.com/cnnnext/dam/ass |
| 32 | /2022/01/06/health/us-coronavirus-thursday/ind... | An 'awful' month of Covid-19 lies ahead, docto... | //cdn.cnn.com/cnnnext/dam/ass |
| 33 | /2022/01/06/entertainment/emma-watson-emma-rob... | <strong>Emma Watson responds to 'Harry Potter'... | //cdn.cnn.com/cnnnext/dam/ass |
| 34 | /2022/01/06/entertainment/ozark-season-4-trail... | The 'Ozark' Season 4 trailer delivers the goods | //cdn.cnn.com/cnnnext/dam/ass |

| | | | |
|---|---|---|---|
| 35 | /2022/01/06/entertainment/betty-white-funeral/... | Betty White's funeral will be private, but you... | //cdn.cnn.com/cnnnext/dam/ass |
| 36 | /style/article/the-one-megamansion-bel-air-auc... | LA megamansion could sell for $295 million | //cdn.cnn.com/cnnnext/dam/ass |
| 37 | /style/article/hoyeon-jung-vogue-february-cove... | 'Squid Game' star is the first Korean to appea... | //cdn.cnn.com/cnnnext/dam/ass |
| 38 | /videos/business/2022/01/06/bmw-color-changing... | This BMW color-changing concept SUV will mess ... | |
| 39 | /travel/article/car-tips-winter-weather-wellne... | What to pack in your car to stay safe during s... | //cdn.cnn.com/cnnnext/dam/ass |
| 40 | /travel/article/preet-chandi-completes-south-p... | <strong>British Sikh Army officer becomes firs... | //cdn.cnn.com/cnnnext/dam/ass |
| 41 | /travel/article/worlds-safest-airlines-2022/in... | The world's safest airline for 2022 revealed | //cdn.cnn.com/cnnnext/dam/ass |
| 42 | /2022/01/05/asia/south-korea-f-35-fighter-jet-... | $100M warplane lands with wheels retracted | //cdn.cnn.com/cnnnext/dam/ass |
| 43 | /2022/01/05/media/duchess-of-sussex-mail-on-su... | Meghan to receive confidential sum from UK new... | //cdn.cnn.com/cnnnext/dam/ass |
| 44 | /style/article/architecture-projects-in-2022/i... | The striking architecture projects set to shap... | //cdn.cnn.com/cnnnext/dam/ass |
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In [174]:
```python
# End wall-timing of web scraping workflow
end = time.time()
print(format(end - start, '.4f'), "seconds")
```

0.2963 seconds