

Web Applications

CSE183

Fall 2020

Universal Resource Locators



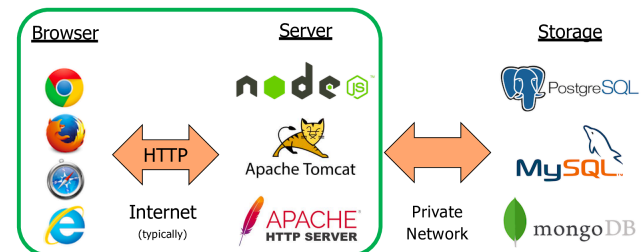
Today's Lecture

- Hypertext
- URLs
- Query Parameters
- HTML Links
- URL Encoding
- Assignment 2
- Questions

Notices

- **Administration 1 & 2** due 23:59 **Thursday October 15**
- **Assignment 2** due 23:59 **Thursday October 15**
- **Quiz 1** during lecture **Friday October 16**

Full Stack Web Applications



Hypertext

- Text with **links** to other text
 - Original Idea:
 - Click on a link to go to another location in a document
 - Expanded to include:
 - Click on a link to go to another document
 - Originated in the early 60's
 - Find the 1968 "Mother of All Demos" by Doug Englebart and others from SRI
- HTML adopted the idea
 - Links in the same document:


```
<a href="#ref1">Click me!</a>
<p id="ref1">Some paragraph...</p>
```
 - Links to other documents:


```
<a href="https://en.wikipedia.org/wiki/URL">URL</a>
```

Uniform Resource Locator

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URL Component parts

scheme://host:port/path?query#fragment

- Scheme: Web protocol, usually HTTPS
- Host: The internet Protocol (IP) host that holds the resource
E.g. `www.ucsc.edu` or `localhost`
- Port: IP port number for hosts running multiple services
"Well known" (traditionally used) ports exist for common schemes
HTTPS = 443, HTTP = 80
- Path: "Location" of resource on the host
No longer always a direct mapping to an HTML file on disk
- Query: If present, passed on to resource when retrieved
- Fragment: Not sent to server, browser will scroll to anchor tag

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URL Example

`https://www.exp.com/staff/detail.html?name=Alice&dept=Sales#tr2`

- Scheme: HTTPS
- Host: `www.exp.com`
- Port: 443 (the "well known" port for HTTPS)
- Path: `/staff/detail.html`
- Query: Two parameters: `name=Alice` and `dept=Sales`
- Fragment: Browser will scroll to tag with id `tr2` after retrieval

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URL Path

- Passed to server for interpretation
- Early Web Servers:
 - Path to static HTML file (e.g. `/staff/index.html`)
 - Path to HTML generation script (e.g. `/customer/orders.php`)
- Web Apps:
 - Contains **routing** information
 - Map path to HTML generation function and (possibly) parameters
- Application Programming Interfaces (APIs):
 - Map to Create/Retrieve/Update/Delete (CRUD) operations:
 - `/customer/create`
 - `/customer/list`
 - `/customer/ec4b51c8e91b469891e62dba8577b86f`
 - `/customer/delete/f85eba2ac36b43478bc8496b69a6d78c`

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Query Parameters

- Originally:
 - Pass arguments to an operation
`https://www.exp.com/order.php?id=1234`
 - Send form data to server
`?field1=value1&field2=value2&...`
- Recently:
 - User tracking instead of cookies
 - Add unique id as param to every generated link
`Do foo`

HTML Links

- Browser maintains a notion of current location
 - The URL the current HTML document was loaded from
- Links:
 - Content in a page which, when clicked, requests the browser fetch a new HTML document from a URL
 - Implemented with the `<a>` tag:
`2020 Sales`

HTML Links

- URLs:
 - Full:
`2020 Sales`
 - Absolute:
``
Same as: ``
 - Relative:
``
Same as: ``
- Other:
 - Anchors:
 - Jump to a specific location in the current document
`Click me!`
`<p id="ref1">Some paragraph...</p>`

URLs in HTML

- Loading a new page:
`` Or type the URL into your browser
- Load an image:
``
- Load a stylesheet:
`<link rel="stylesheet" type="text/css" href="...">`
- Embed a page:
`<iframe src="http://www.ucsc.edu">`

URL Encoding

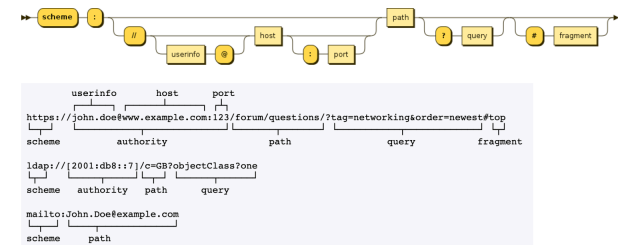
- Punctuation and white space in URLs is problematic
`https://www.demo.com/customer?name=M&S Stores`
- Characters other than upper- and lower-case letters, digits, and any of `_`, `.` or `~` in a URL must be represented as `%xx` where `xx` is the hex value of the character
`https://www.demo.com/customer?name=M%26S%20Stores`

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URL vs. URI

- Universal Resource Identifier



- URLs can be thought of as URIs with an HTTP(S) scheme

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https://en.wikipedia.com/wiki/Uniform_Resource_Identifier

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Assignment 2

- Simple HTML and CSS exercise
 - Single HTML file
 - Three different style sheets
 - Browser renders quite differently styled versions of the same content
- Three requirements
 - Basic - 2 points
 - Display some vertical text at the top center of the page
 - Advanced - 1 points
 - Split the text - letters top left, numbers bottom right
 - Implement hover effects
 - Stretch - 1 point
 - Use some fancy effects we did not cover in class
 - Do your own research on how they work
- 1-point deduction for poorly formatted code

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Upcoming Lectures

- Monday: JavaScript I
- Tuesday: JavaScript II
- Friday: Quiz 1 & Assignment 3
- Monday: JavaScript III

Tasks

- Administration 1 & 2** due 23:59 **Thursday October 15**
- Assignment 2** due 23:59 **Thursday October 15**

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