Welcome Welcome

Basics of the Web + HTML

Basics of the Web

At its core, we can generalize the web as having two sides:

Client vs Server

For Software? Hardware?

Basics of the Web: IP Addresses

What is it?

Basics of the Web: IP Addresses

What is it?

Unique address for a machine on internet

Where do we get it from?

Basics of the Web: IP Addresses

What is it?

Unique address for a machine on internet

Where do we get it from?

Your Internet Service Provider (ISP) when connecting to the internet

IP Protocols- IPv4 and IPv6

These protocols define how data is sent between computers over packet-switched network

IPv4:

- 32-bit unsigned integer: 128.8.128.8
- Domain name: cs.umd.edu
- localhost: 127.0.0.1

IPv6:

- 128 bit addresses
- Replaces IPv4
- How many possibilities do we have now?

Basics of the Web: Web Servers

What are they?

A computer program that delivers web pages

What are some examples?

Apache http://www.apache.org/

IIS Internet Information Services

Sun Java System Web Server

Basics of the Web: Web Servers pt.2

You can install and run a web server in your computer

https://www.apachefriends.org/

Local address: http://localhost or http://127.0.0.1/

In other words all you need is:

- IP address
- Connection to the internet
- Computer with web server software

Basics of the Web: DNS

DNS Domain Name Systems

Protocol for translating domain names to IP addresses

Example: cs.umd.edu → 128.8.128.44

Multiple DNS servers on internet

DNS server may need to query other DNS servers

edu DNS server queries umd.edu server to find cs.umd.edu

Basics of the Web: URLs

URL – Uniform Resource Locator

Represents web resource

- Arbitrary files
- Web pages

Examples

- http://www.cs.umd.edu/index.html
- ftp://ftp.funet.fi/pub/standards/RFC/rfc959.txt
- https://login.yahoo.com/
- file://dir/my.txt

Basics of the Web: URL Structure

A URL consists of:

- A Protocol
  - Http
  - Ftp
  - Https
  - File
  - …
- IP Address
- Port (usually left empty)
- Path

Please use Chrome

My rule actually is: don't use internet explorer.

Let's look at some things we can do….

HTTP

Hypertext Transfer Protocol (HTTP) protocol that defines how user agents (e.g., browser) and web server can communicate

HTTP is a request/response protocol between clients and servers

Some methods (operations) defined as part of the protocol

- GET Use to download a resource (e.g., image, web page). Most common method used
- HEAD Returns only the header
- POST Submits data (e.g., form data) to the server

HTTP Request Cycle

A typical HTTP request / response circle:

- The browser requests an HTML page. The server returns an HTML file.
- The browser requests a style sheet. The server returns a CSS file.
- The browser requests an JPG image. The server returns a JPG file.
- The browser requests JavaScript code. The server returns a JS file
- The browser requests data. The server returns data (in XML or JSON).

HTML

- The Language used to define webpages
- HTML is what the server sends to the browser
- Renders the pages based on the tags
  - May require other things from the server to fully load

Let's take a look at an example of a webpage!

Pull the coding examples!

What do our editors do?

Example editors:

- Atom
- Notepad++
- Sublime
- **Visual Studio**
- Komodo Edit
- Eclipse
- JetBrains

Creating Web Pages

HTML - HyperText Markup Language

HTML Standard

- Developed by the World Wide Web Consortium (W3C)
- http://www.w3.org

Document is described through a series of commands and directives present in a text file

Creating Web Pages Pt. 2

HTML goal is to describe structure only. Presentation should be left to cascading style sheets

When interpreted by an HTML viewer those commands determine the appearance of the page

HTML documents are entirely ASCII text

Commands are explicitly inserted

Your Bestest Friends

W3 Schools: http://w3schools.com/

Mozilla Web Docs: https://developer.mozilla.org/

Let's Look at an Example!

Go Ahead and pull from Upstream, find the codeExamples folder, and open example.html

Basics

Tags dictate the webpage, here are teh non-negotionable ones:

<!DOCTYPE html>

<html>

<!-- Other tags go here, also this is a comment -->

</html>

Head Tag

Can be used in conjunction with inner tags:

- \<title> \</title>
  - It is required
  - Search engines depend on it
  - Provide a meaningful name as it is bookmarked
- \<meta>
  - Document's metadata (e.g., keywords, description, encoding, etc.)
- \<link>
  - Specifies relationship between document and resource
- \<style> and \<script>
  - To define CSS style in the document or JavaScript

Lists

Unordered list:

```
<ul>

    <li>item1</li>

    <li>item2</li>

</ul>
```

Ordered list:

```
<ol>

    <li>item1</li>

    <li>item2</li>

</ol>
```

Not impressed? Me neither

Attributes allow us to customize our tags to what we want:

<ELEM ATTR= "value">Text</ELEM>

<ol type = "A">Ordered element with letters

Some attributes don't need a value, if they are a boolean.

Tables

```
<table>

	<tr> <th>Header</th> </tr>

	<tr> <td>the data</td></tr>

	<tr> <td>the data row 2</td></tr>

</table>
```

Images

<img> tag used for image inclusion

Attributes:

- src
- width
- height
- alt

To reduce the image size without losing proportions specify either the width or height and the browser will compute the other

Links

Links are created using the\<a\> tag

- \<a href="http://www.cnn.com">CNN Page\</a\>
- Need to specify http://

You can also link a page with another as follows:

\<a href="page.html">

You can create links to elements in the same document using the id attribute

Validation

http://validator.w3.org/

Last thing!

You have free space to host webpages using terpconnect!

terpconnect.umd.edu

WTWAW (What To Walk Away With)

Basics of how the internet works:

- What is HTML?
- What are IP addresses?
- What are the parts to a URL?
- What is HTTP?
- Basic HTML tags

If your git doesn't work go to office hours!