Module 2.1 - Introduction to HTML, CSS, and Javascript

Overview

- Web Development
- Parts of a web page
- Web Site Components
  - Structure (X/HTML)
  - Presentation (CSS)
  - Behavior (Javascript)
- Simple Web Pages
- More Complete Web Page Example

Web Development

- Requirements
  - Web Server
  - File location that the web server accesses for requested content
  - Files must be readable by all users
- General Process
  - Create basic content in HTML or XHTML (structure)
  - Change appearance of content through the definitions of styles using CSS (presentation)
  - Add dynamic capabilities to content through Javascript (behavior)
  - REPEAT over and over and over and over again

Parts of a Web Page

```
<html>
    <!-- The HTML block is the container for all of your page content -->
    <head>
        <!-- The head is where you include pointers to external resources
        (i.e. style sheets and javascript files), blocks of Javascript code
        , styles, etc.  -->
        <title>The page title also goes in here</title>
    </head>
    <body>
        <!-- The body is where you put all of the content for the page
        (i.e. the material that will be displayed in the web browser)  -->
        <h1>Headers</h1>
        <div>Generic blocks of content
        <p>Paragraphs</p>
        <table>Tables</table>
        <img ...>Images</img>
        <form ...>Forms</form>
        <ul>Unordered Lists</ul>
        <ol>Ordered Lists</ol>
    </body>
</html>
```

Web Site Components - Structure

Content is defined in terms of the structural elements available in HTML/XHTML

- Sample HTML/XHTML Tags
  - Paragraphs (i.e. blocks of text) are contained within `<p>...</p>` tags
  - Headings (i.e. section headings, sub-headings) are contained within numerically defined header tags: `<h1>...</h1>, <h2>...</h2>, <h3>...</h3>`, etc.
  - Tabular data are within `<table>...</table>` tags
  - List are specified within `<ol>...</ol>` or `<ul>...</ul>` tags, depending upon whether the list is ordered (numbered) or unordered (e.g. bulleted)
  - User input elements are put within `<form>...</form>` tags
  - Blocks of content (i.e. sections or divisions) are defined within `<div>...</div>` tags
- Structure is translated into the Document Object Model (DOM) for later use by CSS and Javascript

Web Site Components - Presentation

Modifications to default rendering of HTML/XHTML elements are made through styles defined in CSS

- Styles may be
  - defined in an external file that is referenced within the `<head>` block (the preferred method when doing "real" web development)
  - directly defined within the `<head>` block of a web page
  - directly embedded in the elements to which they apply (generally not a "Good Thing")
- When not embedded within an element, a style definition consists of
  - A selector
  - The style definition, enclosed in "curly-brackets", separated by "semi-colons"
  - For example: `h1 {color:red; font-size:18px;}`

CSS Selectors

Selectors may be based on several criteria

- Element name: `h1`, `p`, `table`, `ul`, etc.
  - Element: `<h1>A top level heading</h1>`
  - Selector: `h1 {color:red; font-size:18px}`
- Element ID: a unique name assigned to HTML/XHTML elements within the structure of the document
  - Element: `<p id="para01">Some text goes here</p>`
  - Selector: `#para01 {color:blue; font-size:12px}`
- Class ID: a name assigned to multiple elements which may be modified through reference to their class
  - Element: `<p class="instructions">Here are some instructions</p>`
  - Another Element: `<p class="instructions">Here are some more instructions</p>`
  - Selector: `.instructions {color:red; font-size:12px; text-decoration:blink}`
- Selectors may be combined in a variety of ways

Web Site Components - Behavior

The most interoperable language for adding dynamic behavior to web sites is *Javascript* - supported by most browsers on most operating systems

- A full-fledged programming language
  - A non-trivial undertaking to become proficient in
  - Experience in other programming languages can contribute to learning Javascript
- Defines actions that may be taken on/by DOM elements
- Allows for modification of existing DOM elements, creation of new DOM elements after the page has finished loading from the server, retrieval of new content after page loads
  - An interactive web page that may behave like a local desktop application

Reference Links

- w3schools.com
  - HTML 4.0 / XHTML 1.0 Tag Reference
  - Cascading Style Sheet (CSS) selectors and elements
  - Javascript reference
- World Wide Web Consortium (W3C)
  - HTML and CSS Background
  - HTML and CSS Tutorial Links Page
  - Validators Page
- Webmonkey.com
  - HTML Cheat Sheet
  - CSS Guide

Simple Web Page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <meta http-equiv="Content-Type" content="text/html;charset=utf-8" />
        <title>This is a simple web page</title>
    </head>
    <body>
        <h1>They don't get any simpler than this!</h1>
        <p>OK, not much simpler than this.</p>
        <p>Hello World?</p>
    </body>
</html>
```

link to example

Simple Web Page with CSS

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <meta http-equiv="Content-Type" content="text/html;charset=utf-8" />
        <title>This is a simple web page - with styling</title>
        <style type="text/css">
            h1 {color:blue; font-size:large}
            p.para {color:#777777; font-size:small}
            #annoying {color:red; text-decoration:line-through}
        </style>
    </head>
    <body>
        <h1>They don't get any simpler than this!</h1>
        <p class="para">OK, not much simpler than this.</p>
        <p id="annoying" class="para">Hello World?</p>
    </body>
</html>
```

link to example

Simple Web Page with Javascript

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <meta http-equiv="Content-Type" content="text/html;charset=utf-8" />
        <title>This is a simple web page with Javascript</title>
        <script type="text/javascript">
            function genericAlert() {
                alert("You just did something ...")
                document.getElementById("clickMe").style.color = "red"
            }
        </script>
    </head>
    <body>
        <h1>They don't get any simpler than this!</h1>
        <p>OK, not much simpler than this.</p>
        <p>Hello World?</p>
        <p id="clickMe" onclick="genericAlert();">What happens when you click me?</p>
    </body>
</html>
```

link to example

More Complete Web Page Example

[Figure 1 about here.]

List of Figures

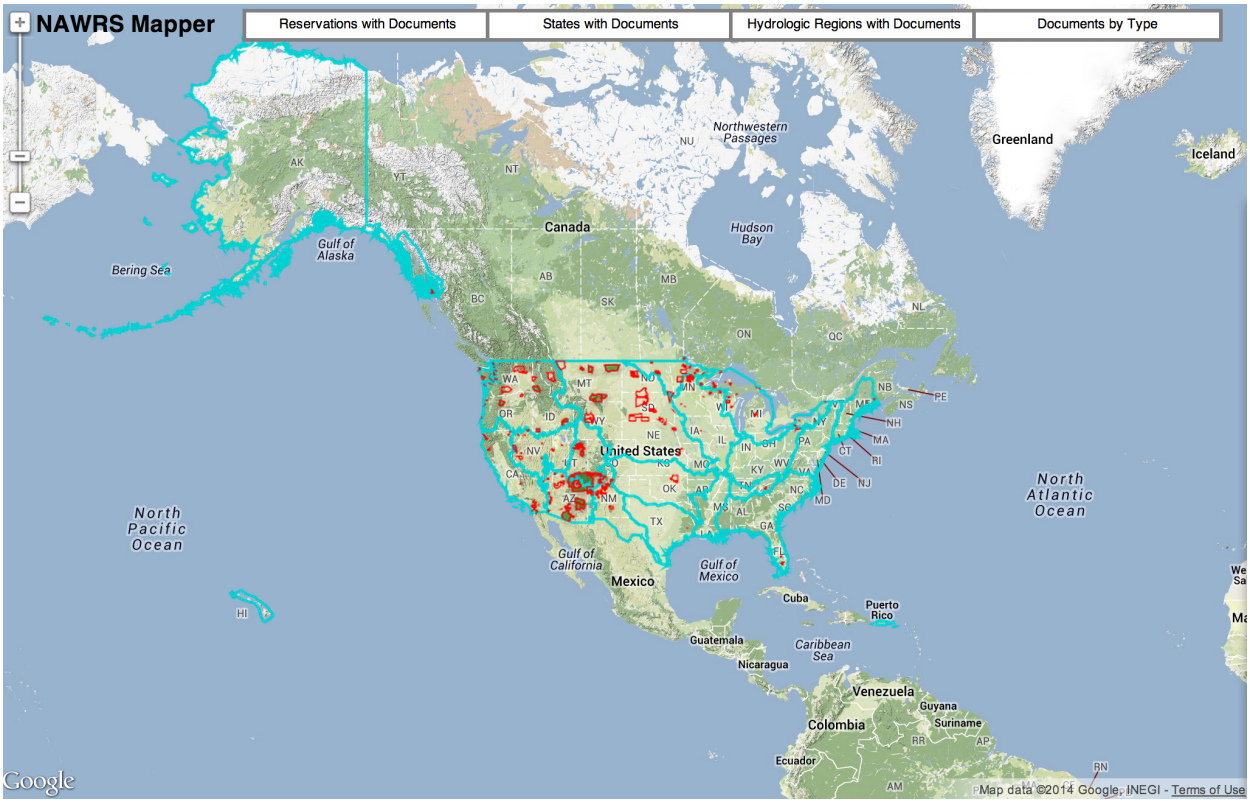

Figure 1: NAWRS Mapper. *HTML*: 39 Lines; *CSS*: 136 Lines; *core.js*: 515 Lines + Google Maps API and JQuery Framework