CMSC335

Web Application Development with JavaScript

HTML I

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IDE

- Visual Studio Code (VS Code) - https://code.visualstudio.com/
  - Recommended extensions: Prettier, Live Server, W3C Web Validator by Celian Riboulet, ESLint (Microsoft), Live Preview (Microsoft)
- Let's take a quick look at VS Code
  - You want to open a folder where your files reside
  - The icon at the top controls the Explorer
  - Select the "Extensions" icon to search/manage extensions
    - » Let's look for the Prettier extension
  - You can create an HTML boilerplate file by
    - » Expand the folder (select >) you have opened in VS Code
    - » Select the square with a + to create a new file
    - » Name the file with a .html extension
    - » Type ! at the beginning of the file and press enter

Creating Web Pages

- HTML (Hyper-Text 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
- **HTML goal is to describe structure only**. The presentation should be left to CSS (cascading style sheets)
- When interpreted by an HTML viewer, those commands determine the structure of the page
- HTML commands are entirely ASCII text
- Commands are explicitly inserted
- HTML/CSS tutorial site
  - http://www.w3schools.com

HTML Basics

- HTML documents rely on tags
  - Specifies a command or directive
  - It surrounds the content and applies meaning to that content
  - <title>This is the document title</title>
  - General format<elementName attributes>
  - Most HTML elements have two tags (start tag and end tag)
  - **Example:** <h1> text </h1>
- An HTML document has two main parts
  - **Head**: provides the browser's information and resources to render the page. It does not generate displayed contents
  - **Body**: page contents
- **Viewport:** browser window size

HTML Basics

- **Example:** BasicHTMLSkeleton.html
- Let's validate our document both using:
  - https://validator.w3.org/#validate_by_uri
  - Using **VS Code W3C Web Validator** by Celian Riboulet
    - » Select W3C validation in status bar
    - » Expand the "PROBLEMS" area (next to OUTPUT)
- Let's introduce an error and validate
- Favicon generator - https://realfavicongenerator.net/

Attributes

- An attribute extends or modifies a tag
- **Attributes**
  - Only appear in the start tag
  - Several can appear in one tag, each separated by spaces
  - Order is immaterial: Some take values that are specified after an =
- **General format**
  - <elem attr="attrValue">Displayed Text</elem>
  - **Example:**

    <img **src**="bear.gif" **width**="100" **height**="75" **alt**="bear image">
- **Boolean Attributes**
  - Don't require a value
  - Represent **true** is present and **false** otherwise
  - **Example:** <input type="checkbox" name="room" **checked**>

Head

- **<head>** tag may include **lang** attribute to define the language used in a document or an element   <html lang="en">
- Elements in the **head** section
  - **<title></title>**
  - Required and search engines rely on it
  - Provides a meaningful name as it is bookmarked
- **<meta**>
  - Document metadata (e.g., keywords, description, encoding, refresh cycle, etc.)
  - **Example:** MetaExample.html
- **<link>**
  - Specifies the relationship between the document and a resource
- **<style>**
  - To define CSS style in the document
- **<script>**
  - To declare or load JavaScript
  - Can also appear in the <body></body>

Nested Tags and Spaces

- Nested tags are possible - keep the tag order
  - Incorrect: Message
  - Correct: Message
- Browser Processing
  - Multiple spaces are converted to one space

John   Mary   Peter

will be converted to:

John Mary Peter

- Line returns are ignored
- Let's see an example

Comments

- Represented by:

<!-- (multi-line) comments here **-->**

- Two sets of double hyphen symbols
- Use comments to disable HTML

Frequently Used Tags

- **Heading:** <h1> thru <h6>
- **Paragraph: <p>** text here **</p>**
- **Line Breaks**:
- **Emphasis**

  **** text here **** *Text usually rendered in italics*

  **** text here ** Text usually rendered in bold**
- **Super/Subscript**
  - **_{** text here **}**
  - **^{** text here **}**
- **<pre> spacing of text is respected (NOT verbatim)**
  - **<pre>** The   space   will   appear**</pre>**
  - You can have tags inside them
- **Example**: CommonTags.html

HTML Lists

- **Unordered lists**
  - identify the list
  - each list item
- **Ordered lists**
  - identify the list
  - each list item
- **Definition lists**
  - <dt></dt> - term
  - <dd></dd> - description
- **Lists can be nested**
  - Notice where the text inside of the main list appears
- **Example:** Lists.html

HTML Image Inclusion

- <img> tag used for image inclusion
- Som <img> attributes
  - **src**
  - **width**
  - **height**
  - **title**
  - **alt**
- To reduce the image size without losing proportions, specify either the width or height, and the browser will compute the other dimension
- **Example:** Image.html

HTML Links (1/2)

- Hyperlink: Connection between web resources
- Links are created using the anchor **<a>** tag
  - CNN Page
  - You need to specify http:// (protocol)
- You can also link a local page with another as follows:
  - <a href="page.html">
- You can create links to elements in the same document using the **id** attribute
- **Example:** Links.html
  - If you add the **download** attribute to the CourseDescription.pdf file link, you can see the attribute effect if you open the file using a web server (e.g., Live Server), but you will not see it by just opening the file with the browser
- Example that shows the download attribute
  - https://www.cs.umd.edu/~nelson/classes/resources/HTML5CSS3/downloadLink/

HTML Links (2/2)

- <a> can include a target attribute that indicates the destination where the document will be opened
    - **_blank** (new window)
    - **_self** (default)
    - **_parent** (parent frame)
    - **_top** (current window)

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Character Entity References

- **UTF-8 is the default HTML5 character encoding**
- **Special Characters (Character Entity References)**
  - Copyright: **©**
  - Registered Trademark: **®**
  - Ampersand: **&**
  - Less than (<): **<**
  - Greater than (>): **>**
  - Non-break space: ** ** (Allow us to add a single space in the document)
- **Unicode**
  - You can display **Unicode** characters as well
  - E.g., **♛** will display ♛
- Useful links:
  - https://home.unicode.org/
- **Example:** CharacterReferences.html

Suggestions for Writing HTML Code

- **Use indentation**

- **Have a consistent style**

- Use comments to separate sections of your code

- Validate your code as you develop it (not at the end)

Useful Sites

- HTML/CSS tutorial site
  http://www.w3schools.com/

HTML Tables <table>

- To define a table, use the **<table>** tag
- By default, borders are not visible
- Use CSS to see borders
- **Tags for table**
  - <tr></tr> - defines a **r**ow
  - <th></th> - defines a **h**eader data element
  - <td></td> - defines a **d**ata element
  - <caption></caption>
    » **Must be inserted immediately after the <table> tag**
- **rowspan** & **colspan** attributes: to cover multiple rows/cols
- **Example:** TableNoBorders.html, TableWithBorders.html

HTML Tables <thead> <tbody> <tfoot>

- **<table>**, <**thead**>, <**tbody**>, and <**tfoot**>
- <tbody> - Groups the table content
- <thead> - table header
  - Defines what each column contains
- <tfoot> - table footer
- **Allows:**
  - Scrolling table body independently of the header and footer
  - For large tables, it allows the printing of several pages where each has a header and footer
- **Example:** TableTheadTbody.html
- **Example:** TableWithBordersLongTable.html