

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 “New File...” option (square with a + symbol)
 - » 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) created by **Sir Tim Berners-Lee**
 - https://en.wikipedia.org/wiki/Tim_Berners-Lee
- **HTML Standard**
 - Developed by the World Wide Web Consortium (W3C)
 - <http://www.w3.org>
- HTML - written in a text file
- **HTML goal is to describe structure only.** The presentation should be left to CSS (cascading style sheets)
- HTML/CSS/JavaScript/Bootstrap tutorial site
 - <http://www.w3schools.com>

HTML Basics

- HTML documents rely on **tags**
 - A tag is defined using `< >` and a word in between (start tag) or `</>` and a word in between (end tag)
 - **<title>**This is the document title**</title>**
 - Tag - surrounds the content and applies meaning to that content
 - Most HTML elements have two tags (start tag and end tag)
 - Some tags are self-closing (e.g., `
`)
 - HTML comments specified using `<!--` and `-->`
 - » **Example:** `<!-- Multiline comment-here -->`
- HTML document structure
 - DOCTYPE specification
 - `<html></html>` tags defines the document
 - Two sections: head and body (contained within the `<html></html>` tags)
 - **<html>** tag may include **lang** attribute to define the language used in a document or an element `<html lang="en">`. For example, you can use "fr" instead of "en" for french

HTML Basics

- **head** - provides the browser's information and resources to render the page. It does not generate displayed content
 - Identified by **<head>** tag
- **body** - page contents
 - Identified by **<body>** tag
- **<meta>** - document metadata tag (e.g., charset, description, keyword)
- **<h1></h1>** - for main header specification
- **<p></p>** - to define a paragraph
- **UTF-8** is the default HTML5 character encoding
- **Example:** HTMLTemplate1.html
- **width=device-width** - the page's width will follow the screen's width of the device
- **initial-scale=1.0** - initial zoom level when the page is first loaded

HTML Basics

- 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
 - Although `<!doctype html>` validates with the external validator, it does not validate with the VS Code extension (doctype needs to be in uppercase in VS Code)

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="attributeValue">Displayed Text</elem>`
 - **Example:**
``
- **Boolean attributes**
 - Do not require a value
 - Represent **true** is present and **false** otherwise
 - **Example:** `<input type="checkbox" name="room" checked>`

Elements in <head>

- **<title>**
 - **<title></title>**
 - Required and search engines rely on it
 - Provide a meaningful name as it is bookmarked
- **<meta>**
 - Document metadata (e.g., keywords, description, encoding, refresh cycle, etc.)
- **Viewport:** user's visible area of a web page. Generally the same as the browser's window
 - The following should be part of every page:
 - » **<meta name="viewport" content="width=device-width, initial-scale=1.0">**
 - **width=device-width** - the page's width will follow the screen's width of the device
 - **initial-scale=1.0** - initial zoom level when the page is first loaded

Elements in <head>

- **<link>**
 - Specifies the relationship between the current document and an external resource
 - » Common uses: to add style sheets and favicons
 - » Favicon - **browser tab icon**. Small icon representing your page
 - » Favicon generator - <https://realfavicongenerator.net/>
- **<style>**
 - To define CSS style in the document
- **Example:** HTMLTemplate2.html
- **File types** (mime types)
 - **MIME** (Multipurpose Internet Mail Extensions) - standard to indicate the nature of a file, document or group of bytes
 - In the previous example **image/png** is a mime type
 - <https://mimetype.io/all-types>
- **Example:** RefreshingPageWithMetaTag.html

Nested Tags and Spaces

- Nested tags are possible (but keep the correct order)
 - **Incorrect** - `Message`
 - **Correct** - `Message`
- Browser processing of spaces - multiple spaces are converted to one space

John Mary Peter

will be converted to:

John Mary Peter
- Line returns are ignored
- The same rule regarding spaces applies to text appearing in between tags
 - `<h1>There is a bird</h1>` - only one space in-between **there** and **is**
- Let's see an example
 - We can use `<pre>` to preserve the spaces

Frequently Used Tags

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

- **Emphasized Text **
 - text here *Text is usually rendered in italics*
- **Important Text **
 - text here **Text usually rendered in bold**
- **Super/Subscript**
 - _{text here}
 - ^{text here}
- **Preformatted text <pre>**
 - Spacing of text is respected (NOT verbatim)
 - <pre> The space will appear</pre>
 - You can have tags inside them
- **
** - Single line break
- **Example:** FrequentlyUsedTags.html



Character Entity References

- **Special Characters (Character Entity References)**

- Non-break space: ** **; (allow us to add a single space in the document)
- Copyright: **©**;
- Registered Trademark: **®**;
- Ampersand: **&**;
- Less than (<): **<**;
- Greater than (>): **>**;

» The previous two allow us to display a tag on a page (e.g., **<p>**;)

- **Unicode**

- You can display **Unicode** characters as well
- E.g., **♛** will display 
- E.g., **⚀** will display 

- Unicode Site: <https://home.unicode.org/>
- List: <https://tools.w3cub.com/html-entities>
- **Example:** CharacterReferences.html

HTML Lists

- **Unordered lists**
 - `` identify the list
 - `` each list item
- **Ordered lists**
 - `` identify the list
 - `` each list item
 - **start** attribute used to define the starting point
 - **reversed** attribute used to reverse order
 - **type** attribute to define item type (e.g., A, a, I, I, 1)
- **Definition lists**
 - `<dt></dt>` - term
 - `<dd></dd>` - description
- **Lists can be nested**
 - Notice where the text inside of the main list appears
 - Notice the different symbols for the unordered list that is nested
- **Example:** Lists.html

HTML Image Inclusion

- **** tag used for image inclusion
- Some **** attributes
 - **src**
 - **width (optional)** and in pixels
 - **height (optional)** and in pixels
 - **title (optional)**
 - **alt**
- **** are rendered next to each other on the same line (inline element)
- To reduce the image size without losing proportions, specify either the **width** or **height**, and the browser will compute the other dimension
- **Example:** Images.html
- **<hr>** - thematic change, rendered as a horizontal rule
- Image can be online (not necessarily locally)

HTML Hyperlink (anchor <a> tag)

- Hyperlink: connection between web resources
- Links are created using the anchor **<a>** tag
 - `CNN Page`
 - You need to specify `http://` (protocol)
 - You can add a **title** using `title="News"`
- You can also link a local page with another
 - `page.html`
- You can create links (bookmarks) to elements in the same document using the **id** attribute
- You can turn an image into a link by replacing the text in `<a>` with an ``
- A reference to the same page ``

HTML Hyperlink (anchor <a> tag)

- **Example:** Hyperlinks.html
 - Adding the download attribute downloads instead of rendering the file
 - You need to use a web server to see the effect (you will not see it by just opening the file with the browser)
- Example that shows the **download** attribute (including renaming downloaded file)
 - <https://www.cs.umd.edu/~nelson/classes/resources/HTML5CSS3/downloadLink/>
- <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)