

# CMSC388A

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## Web Application Development with JavaScript



## HTML I

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# IDE

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- 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

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- 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

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- 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

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- **Example:** BasicHTMLSkeleton.html
- Let's validate our document both using:
  - [https://validator.w3.org/#validate\\_by\\_uri](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

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- 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:**  
``
- **Boolean Attributes**
  - Don't require a value
  - Represent **true** is present and **false** otherwise
  - **Example:** `<input type="checkbox" name="room" checked>`

# Head

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- **<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

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- Nested tags are possible - keep the tag order
  - Incorrect: `<em><strong>Message</em></strong>`
  - Correct: `<em><strong>Message</strong></em>`
- 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

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- Represented by:

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

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

# Frequently Used Tags

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- **Heading:** <h1> thru <h6>
- **Paragraph:** <p> text here </p>
- **Line Breaks:** <br>
- **Emphasis**
  - <em> text here </em> *Text usually rendered in italics*
  - <strong> text here </strong> **Text usually rendered in bold**
- **Super/Subscript**
  - <sub> text here </sub>
  - <sup> text here </sup>
- **<pre> spacing of text is respected (NOT verbatim)**
  - <pre> <strong>The    space    will    appear</strong></pre>
  - You can have tags inside them
- **Example:** CommonTags.html

# HTML Lists

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- **Unordered lists**
  - `<ul></ul>` identify the list
  - `<li></li>` each list item
- **Ordered lists**
  - `<ol></ol>` identify the list
  - `<li></li>` 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

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- <img> tag used for image inclusion
- Some <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)

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- Hyperlink: Connection between web resources
- Links are created using the anchor `<a>` tag
  - `<a href="http://www.cnn.com">CNN Page</a>`
  - 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)

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- `<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)

# Character Entity References

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- **UTF-8 is the default HTML5 character encoding**
- **Special Characters (Character Entity References)**
  - Copyright: **&copy;**
  - Registered Trademark: **&reg;**
  - Ampersand: **&amp;**
  - Less than (<): **&lt;**
  - Greater than (>): **&gt;**
  - Non-break space: **&nbsp;**; (Allow us to add a single space in the document)
- **Unicode**
  - You can display **Unicode** characters as well
  - E.g., **&#x265B;** will display 
- Useful links:
  - <https://home.unicode.org/>
- **Example:** CharacterReferences.html

# Suggestions for Writing HTML Code

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- **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

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

# HTML Tables <table>

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- 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 **row**
  - `<th></th>` - defines a **header** data element
  - `<td></td>` - defines a **data** 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>

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- **<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