CMSC335

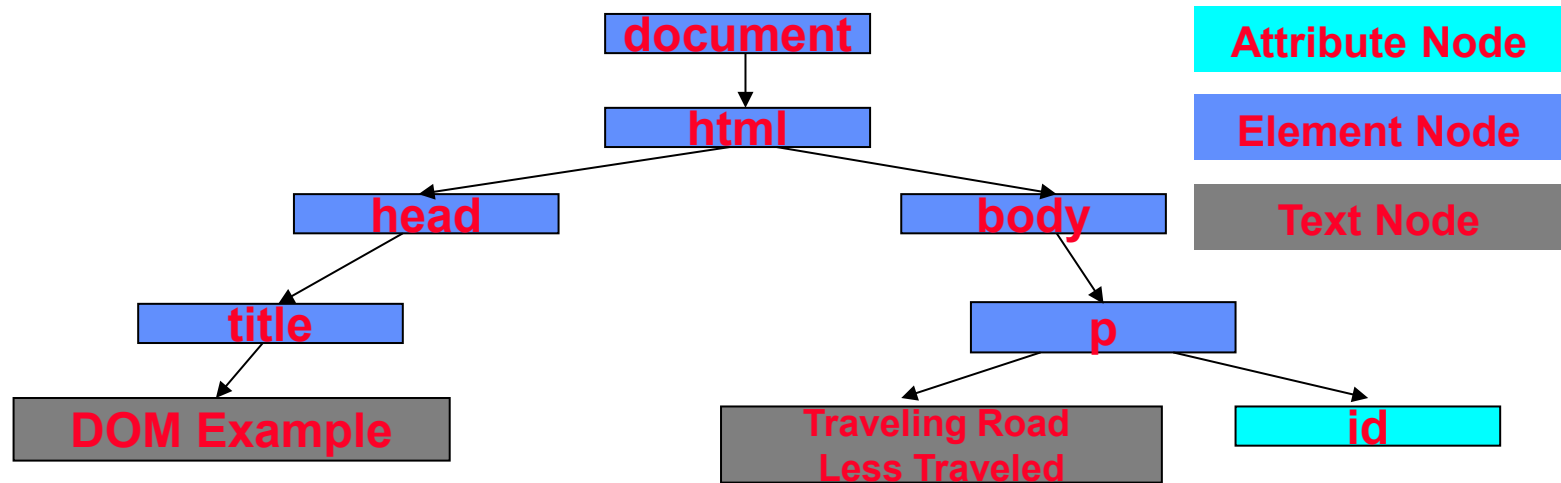## Web Application Development with JavaScript

HTML II

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DOM (Document Object Model)

- A cross-platform and language-independent **programming interface** for HTML and XML documents

- Represents a document with a logical tree wherein each node is an object representing a part of the document

- Each branch of the tree ends in a node, and each node contains objects

- Allow programmatic access to the tree

  - DOM allows changes to the structure, style, or content of a document

  - Nodes can have event handlers attached to them. Once an event is triggered, the event handlers get executed

Example DOM for HTML File


```
<html>
    <head><title>DOM Example</title>
    </head>
    <body>
        <p id="message">Traveling the road less traveled. </p>
     </body>
</html>
```

- head - child of html
- head and body - siblings

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 cell
  - <td></td> - defines a **d**ata cell
  - <caption></caption>
    - » **Must be inserted immediately after the <table> tag**
- **rowspan** & **colspan** attributes: to cover multiple rows/cols
- **Example:** Tables.html

HTML Tables <thead> <tbody> <tfoot>

- **<table>**, <**thead**>, <**tbody**>, and <**tfoot**>
- **<tbody>** - groups the table body
- **<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

<div> and

- **<div>**
  - Generic container (block-level)
- ****
  - Generic container (inline) - for example, to identify a line section
- In the past, <div>'s were used to identify header, footer, contents, and navigation sections. For example:

<div id="nav">

   The secret

   <!-- links to pages -->

</div>

Display Values

- Elements (e.g., <p>, <img>) can have different display values (e.g., **block** or **inline)**. Keep in mind they have a default value (e.g., <p> is block element)
- **Block element**
  - Begins on a new line (nothing to the left)
  - **Stretches to the left and right as far as possible**
    - » Try a paragraph with a background color and borders
  - **Examples:** <p>, <table>, <h1>…<h6>, <ul>, <ol>, <div>
- **Inline element**
  - Does not start on a new line
  - Takes only as much space as necessary
  - **Example:** <img>, <a>, <strong>, <em>
- You can display inline elements as block elements and vice versa
- Block elements may contain other block elements, inline elements, and data. Some block elements may not contain other block elements
  - e.g., <h1>
- **Example:** BlockInline.html

Global HTML5 Attributes

- The following attributes can be applied to most elements
- **hidden** - hides element from display
- **contenteditable** - user can modify the contents of an element
- **spellcheck** - allows for spelling and grammar check
- **draggable** - element can be dragged
- **Example:** GlobalAttributes.hml
- List of Global Attributes
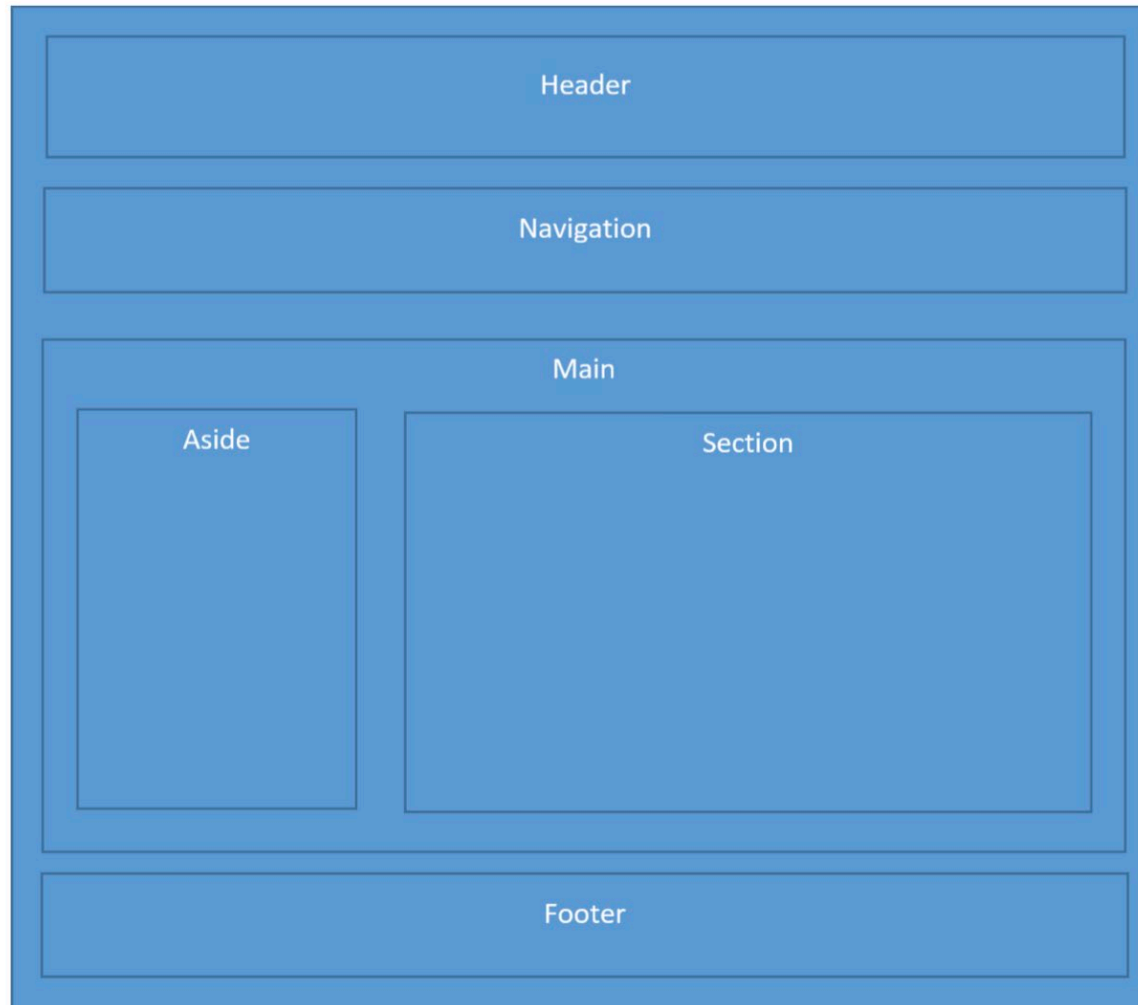 - https://www.w3schools.com/tags/ref_standardattributes.asp

HTML Elements - iframe

- **iframe** - to embed an HTML document within the current document
- **Format:**

  <iframe src="URL_TO_DISPLAY" title="description"></iframe>

- **Additional attributes**
  - width and height
  - To remove the border use style="border:none"
- **Playing YouTube videos with iframe**
  - http://www.w3schools.com/html/html_youtube.asp
  - You can customize the video interaction by adding options after the link
  - ?controls=0 : player controls do not display while playing video
  - ?loop=1 : video will loop (forever)
  - YouTube <object> and <embed> were deprecated
- **Example:** UsingIFrames.html
  - Notice the restrictions on accessing sites outside of the home one
- **Example:**

  https://www.cs.umd.edu/~nelson/classes/resources/cmsc335/IFrameExample.html

HTML5 Elements

- **<main>**
  - Contains the central topic of the document
- **<nav>**
  - Defines a section with navigation links
  - There can be several of them in a document
- **<article>**
  - **Independent, self-contained** item (e.g., magazine article, blog entry)
  - Intended to be independently distributable
- **<section>**
  - Sections in a document, typically with a heading

HTML5 Elements

Example: Html5Elements.html

HTML5 Elements

- **<aside>**
  - Information related to main content (e.g., references)
  - Like a sidebar

- **<header>**
  - header
  - <article>, <section>, <nav> can have their own **header**

- **<footer>**
  - footer
  - <article>, <section>, <nav> can have their own **footer**

HTML5 Video

- HTML5 **<video>** element allows embedding of video on a web page. It is no longer necessary to rely on third-party plug-in software

- **Example:**

  <video width= "400" height= "400" **controls**>
      <source src= "mystery.mp4" type="video/mp4">

      <source in another video format… >

      <source in another video format… >

      video tag not supported by the browser

  </video>

- Several files can be listed, and the browser will use the first recognized format

- **Example:**

  – http://www.w3schools.com/html/tryit.asp?filename=tryhtml5_video_all

HTML5 Audio

- HTML5 **<audio>** element allows playing audio files. It is no longer necessary to rely on third-party plug-in software
- **Example:**

  <audio **controls**>
      <source src= "macarena.mp3" type="audio/mpeg">
      audio tag not supported by the browser
  </audio>
- Several files can be listed, and the browser will use the first recognized format
- **Example:**
  - http://www.w3schools.com/html/tryit.asp?filename=tryhtml5_audio_all

HTML5 Video/Audio Attributes

- HTML5 **<video>** and **<audio>** elements support the following attributes
- **controls** - playback controls should be displayed
  - **Example:** <video **controls**>…</video>
- **autoplay** - media should play as soon as it is ready
- **preload** - media should be loaded when the page loads
- **loop** - media should start over again when finished (use along with **controls** or **autoplay**)

Miscellaneous Elements

- **<details>** - defines a clickable heading where the contents appear/disappear when clicked. The **<summary>** tag defines the default title for the contents
- **<figure>/<figcaption>** - To enclose figures, diagrams, illustrations
- **<meter>** - graphical representation of a value
- **<mark>** - highlights a section
- **Example:** Miscellaneous.html

Microdata

- Microdata - part of the HTML standard
- Microdata is an attempt to provide a simpler approach to annotating HTML elements with machine-readable tags
- Provides attributes you can add to most HTML elements to describe their contents to search engines, web crawlers, or alternative browsers
- Allows search engines to understand the data on a webpage
- Related term: Semantic Web (goal: make internet data machine-readable)
- **Example:**
  - https://schema.org/MusicEvent
    - » Scroll down until you see Example 1 and select "No Markup", "Microdata"
- **References:**
  - https://developer.mozilla.org/en-US/docs/Web/HTML/Microdata

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 tutorial site
  https://www.w3schools.com/html/
- Full HTML List (you should try to read it at some point)
  - https://www.w3schools.com/tags/ (alphabetical order)
  - https://www.w3schools.com/tags/ref_byfunc.asp (by category)