CMSC335

Web Application Development with JavaScript

CSS

Department of Computer Science
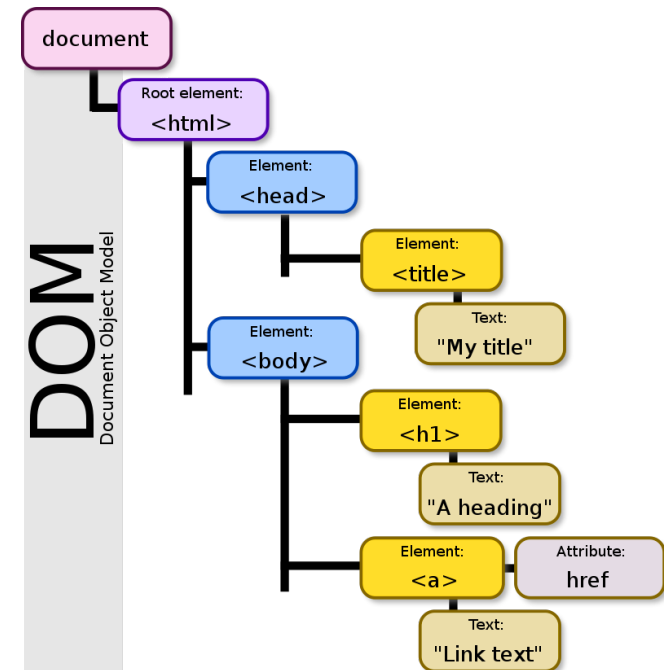
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Slides material developed by Ilchul Yoon, Nelson Padua-Perez

VS Code Settings

- Select wheel (bottom left) and then "Settings"
- Auto Save with **afterDelay** option automatically saves every second
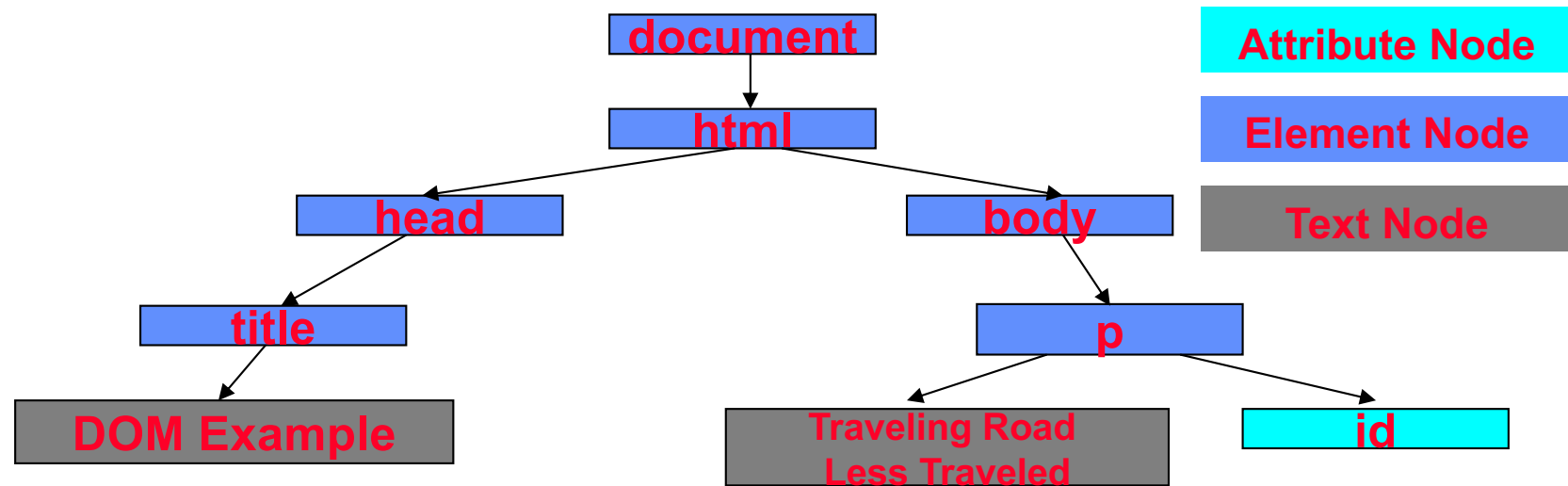 - Recommended

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

Souce: Wikipedia

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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
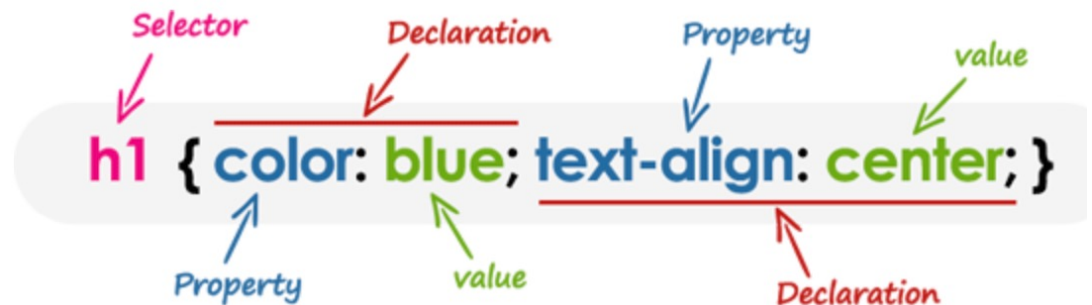
CSS (Cascading Style Sheets)

- Official W3C standard **for controlling presentation**
- Style Sheets
    - Text file with rules. It includes no HTML
    - Style sheets files use a **.css** extension
    - Allows you to apply typographic styles (font size, line spacing, etc.)
    - Allows you to have page layout control
    - Smaller HTML files by avoiding redundancy in style specification
    - Easy update a collection of pages by updating only a single file
- **Example:** ExternalFile.css
- Why CSS?
    - http://www.csszengarden.com/
- Clearing CSS cache
    - https://www.cs.umd.edu/~nelson/classes/resources/web/#clearcsscachechrome

CSS

- Rule
  - Basic element of a style sheet
  - **Describes the formatting associated with a page element**
- Rule format

selector declarationBlock

- **Selector**: identifies what should be styled in a web document
  - e.g., h1, p

- **Declaration block:** a group of declarations describing styling information (what and how that portion of the web document should be modified)

- **Declaration:** property/value pair

Selector — Declaration — Property — value

h1 { color: blue; text-align: center; }

Property — value — Declaration

CSS

- **Declaration:** consists of **property**: **value** pair

  Example: **font-size**: **2em**;

- Popular properties

  – color, font-size, text-decoration, …

- CSS Properties

  – http://www.w3schools.com/cssref/

- Comments: Surrounded by /* */

  – You may use them to disable styles

- **Example:** ExternalFile.css

Types of Style Sheets

- **Inline**
  - Style information applied to a specific tag
    (e.g., <p style="**font-size**: **2em**;">New Semester</p>)
  - Avoid if possible
- **Internal**
  - Using the <style> tag in the header of the HTML document
  - Convenient to provide own style to a specific page
  - **Example:** InternalStyle.html
- **External**
  - External style sheet which web pages link to (see <link> tag)
  - Preferred approach
- **Example:** ExternalFile.html, ExternalFile.css

CSS Validator

- http://jigsaw.w3.org/css-validator/
- Notice you have three choices
    - By URI
    - By file upload
    - By direct input
- Look at the "More Options" section
- We can also validate using the W3C VS Code extension
    - Let's see a demo

Colors

- You can specify colors using one of the following predefined colors (e.g., **yellow, white, red, purple, blue**)

- You can specify a color by indicating the red, green, and blue components. For example, all the following are equivalent:

  - red

  - rgb(255,0,0)

  - #ff0000 or #f00 (shorter, cannot use it for all colors)

- RGBA adds an alpha channel that allows us to specify the opacity for a color

  - RGBA color specification: **rgba(RED, GREEN, BLUE, ALPHA)**

  - Alpha value of 0 (transparent), alpha value of 1.0 (opaque)

    » **Example:** rgba(125, 125, 125, 0.5);

- In VS Code, you can define a particular color (including opacity). Hover over a color of a CSS declaration in VS Code to see options

- References:

  - http://www.w3schools.com/css/css3_colors.asp

Setting Size

- Length units - centimeters (cm), millimeters (mm), etc.
- Whitespace cannot appear between number and the unit (correct: 3em, incorrect: 3 em)
  - If the value is zero, the unit can be omitted
- Two types of length units:
  - **Relative** (e.g., em, rem)
  - **Absolute** (e.g., cm, pc)
- Relative
  - **em**: Relative to the size of the current font
    - » 3em: 3 times the size of the current font
  - **rem ("root em")**: inherits its value from the base font size of the root element
    - » In HTML, the root element is the <html> element
    - » **rem** is constant throughout a document
  - http://www.sitepoint.com/power-em-units-css/

Setting Size

- Preferred: relative and percentages
- The **em** and **rem** units are practical in creating a scalable layout
- **Example:** SizeRemVsEm.html, SizeRemVsEm.css
- **Viewport**: browser window size
- http://www.w3schools.com/cssref/css_units.asp
- https://www.w3.org/Style/Examples/007/units.en.html#units

Property inheritance

- Inheritance of Properties:
  - A child element inherits the same properties of its parent element (unless otherwise indicated by the CSS specification)
- **Examples of inherited properties**
  - color, font-family, font-size, letter-spacing, …
- **Examples of non-inherited properties**
  - border, margin, padding, …
- **Example:** PropInheritance.html, PropInheritance.css

Kinds of Selectors

- **Type Selectors**:
  - Based on the name of an HTML tag (e.g., p, table, etc.)
  - **p** { color: red; }
- **Class Selectors**:
  - Allow us to define a style ("type of style") we can apply to several elements
    - » Allow us to apply the same rules to a set of elements
  - Created with a period **.** (also known as a full stop)
- **ID Selectors:**
  - Similar to class selectors but appear only once in the document
  - Used when you need to apply a style only once in your document, or you want to capitalize on an id that already exists
  - Created using **#**
- **Example:** Selectors.html, Selectors.css

Kinds of Selectors

- **Pseudo-class** - "phantom class" that allows assigning style to elements based on the state of certain elements (e.g., a link has been clicked) or markup patterns (e.g., odd rows of a table)
  - Attached to selectors (e.g., p:hover)
  - Four popular pseudo-classes uses are
    - » **a:link**: the initial color of a link
    - » **a:visited**: color for a visited link
    - » **a:hover**: color when the mouse hovers over the link
    - » **a:active**: color during the clicking of the link
- **Example:** Selectors.html, Selectors.css