CSS Presentation Description Language

HTML3: (Hyper Text Markup Language) 1990
- Interpreted Language by Web Browser
- Describes both the *structure* and *format* of document

XHTML and HTML5
- Extensible Hyper Text Markup Language
- Document structure language
- Describes *structure* using elements in an html document.
- **<b>** = stylistic offset text
- **<i>** = alternative voice

CSS → CSS3:
- Cascaded Style Sheets
- Describes *presentation* of html elements in an html document.
- Different presentations for different devices
- Not all CSS3 supported
- http://caniuse.com

Copyright © 2016 R.M. Laurie   1

Cascaded Style Sheets - CSS

- **CSS** provides presentation specifications for XHTML/HTML structural elements
- **Three ways to create *Style Definitions***
  - *Inline Styles* = Format for single element
  - *Internal CSS* = Format all similar elements within an HTML document
  - *External CSS* = Link to external CSS file that may be shared by many html documents
- **Three types of *Style Sheet Selectors***
  - *Type* selectors target elements by their element type
  - *.Class* selectors select an element based on the element's class attribute value
  - *#ID* selectors target one unique element at a time, based on element's id attribute

Copyright © 2016 R.M. Laurie   2

Anatomy of a Style

Inline Style Definition

<p style = "font-size: 14px; color: #0000FF">

Element | Attribute | Property | Value | Property | Value
Declaration | Declaration

Style Sheet Rule (Embedded CSS & External CSS)

h1 { font-family: Verdana; color: #009900}

Selector | Property | Value | Property | Value
Declaration | Declaration

Listing of all CSS Properties
Refer to http://www.w3schools.com/css/

Copyright © 2016 R.M. Laurie   3

Measurement Specification

- **Absolute Length Measurements**
  - **12pt** — 12 points (1 point = 1/72 inch)
  - **0.167in** — 1/6 inch
  - **0.423cm** — 0.423 centimeters
  - **4.23mm** — 4.23 millimeters
- **Relative Length Measurements** most popular
  - **14px** — 14 pixels (1 point = 1/96 inch approximate)
  - **2em** — 2 times height uppercase M parent element
  - **4ex** — 4 times the height of lowercase x
  - **120%** — 120 percent of default size
  - **2rem** — Root-em relative to the font-size of <html>
- **Relative Font Specification**
  - **xx-small | x-small | medium | large | x-large | xx-large**

Copyright © 2016 R.M. Laurie   4

Color Properties and Specifiers

❖ **CSS Comment can be applied multiline**
   /* this is comment */
❖ **Properties**
   ◆ **color:** rgb(255, 255, 204);   **/* Text Color */**
   ◆ **background-color:** #000066; /* Background Color */
❖ **RGB Color Specifiers most popular**
   ◆ **#FFFFCC;**   **Hexadecimal RGB Code**
   ◆ **rgb(255, 255, 204);**   **Decimal RGB code 0..255**
   ◆ **hsl(180, 50%, 80%);**   **CSS3 hue, sat, lightness**
   ◆ **rgba(255, 255, 204, 0.25); CSS3 RGBAlpha Ch. 0..1**
   ◆ **hsla(180, 50%, 80%, 0.75); CSS3 HSLAlpha Ch. 0..1**
   ◆ **Named color: red, green, blue, fuchsia, black white**

Copyright © 2016 R.M. Laurie   5

CSS font-family Specifications

❖ **Times New Roman is the default font for all text on most Internet browsers**
❖ **Other fonts may be specified using the CSS property font-family**
❖ **Font must be available on client computer with order of preference left to right**
❖ **Font Groups**
   ◆ **Serif = Best for paragraphs**
      ♦ **font-family: Georgia, "Times New Roman", Times, serif;**
   ◆ **Sans-Serif = Best for headings**
      ♦ **font-family: Verdana, Arial, Helvetica, sans-serif;**
   ◆ **Monospace = Equal width characters code**
      ♦ **font-family: "Courier New" , Courier, monospace;**
   ◆ **Special Characters = Non-text symbols**
      ♦ **font-family: Wingdings;**

Copyright © 2016 R.M. Laurie   6

Font Related Styles Properties

❖ **Individual font related style properities**
   ◆ **font-family:** Verdana, Arial, sans-serif;
   ◆ **font-size:** 18px;   /* Can also use pt, rem */
   ◆ **font-weight:** 600;   /* Range 100 to 900 */
   ◆ **font-style:** italic;   /* or normal */
   ◆ **font-variant:** small-caps; /* or normal */
   ◆ **line-height:** 22px;   /* Can also use pt */
❖ **Combined form font properties**
   ◆ **font:** italic 400 14px/15px Georgia
         style   weight   size line-height   font-family
   ◆ **text-align:** center;   /* or left, right, justify */
   ◆ **text-transform:** capitalize; /* uppercase, lowercase */
   ◆ **text-decoration:** underline; /* none, overline. strike-through */
   ◆ **text-indent:** 16px;   /* first line of paragraph indent */

Copyright © 2016 R.M. Laurie   7

Inline Style Example

This is a test of setting various text style attributes:
Here is some **Strong** text,

Blue H3 Text

Text that is *Emphasized* can look like this.

```
<head>
  <title>Inline Style Example</title>
</head>
<body>
  <p style="font-size: 14px; font-family: Arial;">This is a
  test of setting various text style attributes:<br>Here is
  some <strong style="font-size: 22px; font-weight: 700">
    Strong</strong> text,</p>
  <h3 style="color: #0000FF" >Blue H3 Text</h3>
    <p>Text that is <em>Emphasized</em>
    can look like this. </p>
</body>
```

Copyright © 2016 R.M. Laurie   8

Internal Style Sheet with Redefined Elements

```html
<head>
    <title>Embedded CSS Example</title>
    <style type="text/css">
      body { background-color: #FFFFFF; color: #000000; }
      p {  font-family: Arial; font-size: 14px; }
      strong {  font-size: 18px; font-weight: 600; }
      h3 {  color: #0000FF; }
      em {  font-size: 16px; font-style: italic;
          text-transform: uppercase; color: #990000;
          background-color: #CCFFFF}
    </style>
</head>
<body>
    <p>This is a test of
    setting various text style
    attributes:<br>
    Here is some <strong>Strong</strong> text,</p>
    <h3>Blue H3 Text</h3>
    <p>Text that is <em>Emphasized</em> can look like this.</p>
</body>
```

This is a test of setting various text style attributes:
Here is some **Strong** text,

Blue H3 Text

Text that is *EMPHASIZED* can look like this.

Copyright © 2016 R.M. Laurie   9

External Style Sheet with Redefined Elements

```html
<head>
    <title>External CSS Example</title>
<link rel="stylesheet" type="text/css" href="example2.css">
</head>
<body>
    <p>This is a test of setting
    various text style
    attributes:<br>
    Here is some <strong>Strong</strong> text,</p>
    <h3>Blue H3 Text</h3><p>Text that is
    <em>Emphasized</em> can look like this.</p>
</body>
```

This is a test of setting various text style attributes:
Here is some **Strong** text,

Blue H3 Text

Text that is *EMPHASIZED* can look like this.

```css
/* example2.css file that is linked to from html document */
body {background-color: #FFFFFF; color: #000000}
p {font-family: Arial; font-size: 14px}
strong {font-size: 22px; font-weight: 600}
h3 {color: #0000FF}
em {font-size: 16px; font-style: italic; text-transform: uppercase;
color: #990000; background-color: #CCFFFF }
```

Copyright © 2016 R.M. Laurie   10

Inheritance - Cascade Rules

❖ *Child* elements inherit styles from *parent*
   ◆ Determines element appearance if no style property is specified for an element
   ◆ Inline elements inherit styles of block-level element
   ◆ Nesting Order of inline elements define inheritance

```html
<head>
  <title>Inheritance Example</title>
  <style type="text/css">
    body { font-family: Arial; font-size: 18px;}
    p { color:#0000FF; background-color:#FFFF00;}
    em { color:#FF0000; text-decoration: underline;}
    strong { color: #00FF00;}
  </style>
</head>
<body>
  <p>Parent <strong>element</strong> p <em>child
  <strong>element</strong>em</em> looks like this.</p>
</body>
```

Parent element p *child element em* looks like this.   11

CSS Classes

❖ **Class = custom style specification that can be associated with any qualifying html element**
❖ **Style Sheet Rule *Class Identifier* is preceded with dot**

```css
.important {text-decoration: underline;}
.Passing {color: #00FF00; font-style: italic;}
.MakeRedAndBold {
  color: #FF0000; font-weight: 800; }
```

❖ **A Style Sheet Class can be selected for an element using the element's class attribute**

```html
<strong class="Passing">Grade = Pass</strong>
<p class="important">For Score &lt; 60 then F</p>
<h2 class="MakeRedAndBold">Grade = Fail</h2>
```

Copyright © 2016 R.M. Laurie   12

Style Sheet Class Example

Bob: *Grade = Pass*

For Score < 60 then F

Henry:

Grade = Fail

```
<head>
 <title>Quiz Results</title>
 <style type="text/css">
  p {  font-family: Verdana, Arial; font-size: 14px }
  .important { text-decoration: underline; }
  .Passing { color: #00FF00; font-style: italic }
  .MakeRedAndBold { color: #FF0000; font-weight: 800 }
 </style>
</head>
<body>
 <p>Bob:
 <strong class="Passing">Grade = Pass</strong></p>
 <p class="important">For Score &lt; 60 then F</p>
 <h2 class="MakeRedAndBold">Henry: Grade = Fail</h2>
</body>
```

Copyright © 2016 R.M. Laurie   13

Resume Example without / with CSS

```
<body>
    <h2>Academic Employment Experience:</h2>
    <h3>University of Guam</h3>
    <h4>Taught courses with the following content:</h4>
    <ul>
        <li>Web Site Design: XHTML, CSS, Web Graphics</li>
        <li>Introduction to Programming: JavaScript, DOM</li>
        <li>Database Management Systems: MS Access, ERD</li>
        <li>Developmental Mathematics: Arithmetic to Algebra</li>
    </ul>
</body>
```

Academic Employment Experience:

University of Gua

Taught courses wit

- Web Site Desig
- Introduction to
- Database Mana
- Developmental

Academic Employment Experience:
University of Guam
Taught courses with the following content:
  ◆ Web Site Design: XHTML, CSS, Web Graphics
  ◆ Introduction to Programming: JavaScript, DOM
  ◆ Database Management Systems: MS Access, ERD
  ◆ Developmental Mathematics: Arithmetic to Algebra

List-Style Margin and padding Properties

❖ **List-Style Properties**
  ◆ **list-style-image:** url(filename);   /* For bullet lists */
  ◆ **list-style-position:** outside;   /* default outside | inside */
  ◆ **list-style-type:** disc;   /* default disc|none|circle|square */
    ◆ decimal | decimal-leading-zero
    ◆ lower-roman | upper-roman | lower-alpha | upper-alpha
    ◆ lower-greek | hebrew | armenian | georgian
    ◆ cjk-ideographic | hiragana | katakana
❖ **Margin is transparent space between elements**
  ◆ **margin-top: 0;**   /* removes top margin */
  ◆ **margin-right: 10px;**
  ◆ **margin-bottom: 6px;** /* only ½ line if 12px font */
  ◆ **margin-left: 20px;**   /* similar to blockquote */
❖ **Combined form margin padding properties**
  ◆ **margin: 0 12px 15px 0;**
  ◆ **padding: 0 12px 15px 0;**
        top right bottom left

Copyright © 2016 R.M. Laurie   15

Academic Employment Experience:
University of Guam
Taught courses with the following content:
  ◆ Web Site Design: XHTML, CSS, Web Graphics
  ◆ Introduction to Programming: JavaScript, DOM
  ◆ Database Management Systems: MS Access, ERD
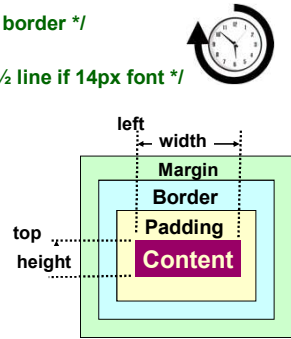 ◆ Developmental Mathematics: Arithmetic to Algebra

```
/* External CSS Fill 03_Experience.css */
body { background-color:#FFFFCC; color:#000033; }
h2 {margin-top:8px; margin-bottom:4px;
     font-weight:900; letter-spacing:2px; font-size: 20px;
     font-family:"Verdana";        color:#003399; }
h3 {margin-top:6px; margin-bottom:3px; margin-left:12px;
     font-weight:700; letter-spacing:1px; font-size:16px;
     font-family:"Verdana"; color:#996600; }
h4 {margin-top:2px; margin-bottom:2px; font-weight:400;
     margin-left:20px; font-size:14px;
     font-family:"Georgia"; }
ul {font-size:14px; font-family:"Georgia"; margin-top:4px;
     margin-bottom:2px;}
li { list-style-image:url(bltDiamond.gif); margin-left:48px;}
```

Copyright © 2016 R.M. Laurie   16

Padding Properties

- ❖ **See Appendix B for details**
- ❖ **Padding is the transparent region between the border and the element contents**
    - ◆ padding-top: 0; /* removes top border */
    - ◆ padding-right: 10px;
    - ◆ padding-bottom: 7px; /* border ½ line if 14px font */
    - ◆ padding-left: 20px;
    - ◆ padding: 0 14px 16px 0;
          top   right   bottom left
- ❖ **Padding can cause problems in older browsers especially IE because top and left point and height and width properties interpreted differently**

left ←— width —→
Margin
Border
Padding
top
height
Content

Copyright © 2016 R.M. Laurie   17

Border Properties

- ❖ **Border a colored region surrounding element**
    - ◆ border-width: 4px;
    - ◆ border-left-width: 20px;
    - ◆ border-top-width: 6px; /* border ⅓ line if 12px font */
    - ◆ border-color: #00FF00;
    - ◆ border-bottom-color: rgb(0, 255, 0);
    - ◆ border-style: solid;
       /* solid (default) | dashed | dotted | double | none
        | outset | inset | ridge | groove */
    - ◆ border-left-style: double;
    - ◆ border-bottom-style: ridge; /* alternative <hr /> */
- ❖ **Combined form border properties**
                  width   style   color
    - ◆ border: 2px   solid   #0000CC;
    - ◆ border-left: 2px   solid   #0000CC;
    - ◆ border-top: 0;   /* no top border; If 0 units not req. */
    - ◆ border-width: 10px 0 20px 40px; /* Sets all widths */
             top   right bottom   left

Copyright © 2016 R.M. Laurie   18

Contextual Selectors

- ❖ **Elements are nested, forming element hierarchy**
    - ◆ **Parent,Child, Sibling, Descendant elements**
- ❖ **Common CSS2.1** and **rarely used** **Contextual Selectors**
    - ◆ *   Matches all elements in document
    - ◆ e   Matches specified element
    - ◆ e1, e2, e3   Matches the group of elements
    - ◆ e1 e2   Matches element e2 that is descendent of e1
    - ◆ e1>e2   Matches element e2 that is direct child of e1
    - ◆ e1+e2   Matches element e2 that is preceded by e1
    - ◆ #identifier   Matches element by attribute id="identifer"
    - ◆ .classname   Matches all elements with class="classname"
    - ◆ e1.classname   Matches all e1 elements of specified class
    - ◆ e1[attr]   Matches all e1 elements with attribute attr
    - ◆ e1[attr="val"] Matches all e1 elements with attribute value
    - ◆ e1[attr~="val"] Matches attribute value contains val

Copyright © 2016 R.M. Laurie   19

Style Sheet Selectors

- ❖ **Grouped Selector**
       h1, h2, h3 {color:#000066; font-weight: 900;}
- ❖ **Descendent Selector (Occurrences of em in h1)**
       h1 em { color:#FF0000; font-weight: 800; }

Context | Element   Property | Value   Property | Value

- ❖ **Outline Nested List Item Descendent Selectors**
       ol { list-style-type: decimal }
       li ol { list-style-type: lower-alpha }
       li ol li ol { list-style-type: lower-roman }
- ❖ **Class Selector**
    .important { text-decoration: underline; }
    em.important { color: #CC0000; }

Context | Class   Occurrences of em with class important

Copyright © 2016 R.M. Laurie   20

Floating and Aligning Properties

❖ **Floating elements used for fluid layout**
  ◆ **float: [left | right]; /* position element & float text */**
  ◆ **clear: [left | right | both]; /* stops floating */**
❖ **Vertically Aligning elements**
  ◆ **vertical-align: [baseline | middle | top |**
    text-top | bottom | text-bottom];

```
<p>
   <img id="myMug" alt="" src="MeSakuraSm.jpg"
   width="150" height="150">
   This is a classic Face-to-Face class and
    we meet entirely in person.
 </p>
#myMug { float: right; margin: 0.4em 0 0.4em 0.4em; }
```

CSS pseudo-class selector for <a>

❖ **Turns off underline for hyperlinks**
```
a { text-decoration: none; }   /* none|underline|overline */
```
❖ **<a> pseudo-classes are available**
```
a:link { text-decoration: none; color: #CC0000; }
a:visited { text-decoration: none; color: #3300CC; }
a:focus { text-decoration: underline; }
a:hover { text-decoration: underline; color: #FF3300;
   background-color: #CCFFCC; }
a:active { text-decoration: none; color: #FF9966; }
```
❖ **A hyperlink can have only one state at a time so best to use above order**

Web Fonts for Modern Browsers

❖ **Web Fonts are available**
  ◆ **Scalable Vector Graphics: Primarily mobile browsers**
  ◆ **Web Open Font Format: New, but little browser support**
  ◆ **Web Fonts will increase the page load requirement**
❖ **Find Web Fonts at https://www.google.com/fonts**
  ◆ **Link to the font using CSS in head element**
    <link href="https://fonts.googleapis.com/css?family=Open+Sans" rel="stylesheet" type="text/css" >
  ◆ **In CSS element specify desired font**

```
body {
   margin: 0;
   padding: 0;
   font-family: 'Open Sans', Arial, sans-serif;
}
```

Cascade Rules - Specificity Precedence

❖ **Determines element appearance if more then one style property is specified for element**
❖ **The strongest selector is the most specific**
❖ **If the same property in inherited elements**
  1. **Inner Nested Inline (Strongest)**
  2. **Block Level**
  3. **Document Elements (Weakest)**
❖ **If the same selector and property**
  1. **Element style attributes Inline Styles (Strongest)**
  2. **Element id attributes applied from CSS rules**
  3. **Element class attributes applied from CSS rules**
  4. **Element has no attributes applied from CSS rules**
❖ **User Agent**
  1. **Author (Strongest)**
  2. **User = Browser defined**
  3. **Browser default (Lowest)**