**CSS Notes**

**Basic Ideas**

1. In much earlier days of the internet, you could style html elements by specifying attributes inside the tags. For example:

<p><font size="2" color="#1c87c9">Blue text</font></p>

<p><font size="3" color="red">Red text, font size increased.</font></p>

<p><font face="arial" color="#8ebf42">Green text, typeface changed.</font></p>

However, now we use a different approach: Cascading Style Sheets (CSS). For example, now, HTML tags support a *style* attribute which is a string composed of property-value pairs, which are similar to the HTML attributes. For example:

<p style="font-size:16px; color:#1c87c9;">Blue text.</p>

<p style="font-size:125%; color:red;">Red text, font size increased.</p>

<p style="font-size:18px; color:#8ebf42; font-family:arial;">Green text, typeface changed.

A number of tags and attributes have been deprecated:

<https://www.w3docs.com/learn-html/deprecated-html-attributes.html>

<https://www.w3docs.com/learn-html/deprecated-html-tags.html>

1. CSS is the only way HTML should be styled. There are many more CSS properties compared to styling with HTML attributes. Probably most sites/apps you use have very sophisticated CSS styling.
2. There are three ways to use CSS. The example above is called *inline* (least used, and only sparingly)*.* The other two was are *internal* and *external*. I would guess that most sites use external, with some internal. We will talk later about when to use each technique. [Three Ways to Insert CSS](http://www.w3schools.com/CSS/css_howto.asp)
3. CSS Syntax (Source: <http://www.w3schools.com/CSS/default.asp>) for using the *internal* or *external* approach:

A CSS rule set consists of a selector and a declaration block:



* The selector points to the HTML element you want to style.
* The declaration block contains one or more declarations separated by semicolons.
* Each declaration includes a property name and a value, separated by a semicolon.
1. We will study different types of selectors. To understand the more complex ones, you need to understand a few basic things about [The HTML Document Tree](http://web.simmons.edu/~grabiner/comm244/weekfour/document-tree.html)

**Selectors**

1. A *selector* defines what elements are to be styled. There are a number of different types of selectors which we consider next. An excellent tutorial on selectors:

<http://css.maxdesign.com.au/selectutorial/index.htm>

1. The first two selectors we consider are:
* Element Selector – Selects elements based on the HTML element name. Also called *type* selector.
* Class Selector – Selects specific HTML elements with a specific *class* attribute.

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| **Style Sheet**  | **HTML** |
| body { /\* Element selector \*/ font-family: Calibri,  sans-serif;}p { /\* Element selector \*/ margin-left: 35px; margin-right: 35px;}p.important { /\* Class selector \*/ margin-left: 35px; font-size: larger; font-weight: bold;} | <p class="important">This is a paragraph that has been styled with the "important" class</p><p>This is a regular paragraph with the default styling</p> |
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1. If two selectors select the same HTML element, and if there is a conflict with the rules, then the more specific selector takes precedence. For example, the *margin-left* properties collide in the two rules on the left below when applied to the HTML in the first paragraph on the right. The class rule is more specific, so the left margin is set to 70 on the first paragraph.

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| **Style Sheet**  | **HTML** |
| p { margin-left: 35px; margin-right: 35px;}p.important { margin-left: 70px; font-size: larger; font-weight: bold;} | <p class="important">This is a paragraph that has been styled with the "important" class</p><p>This is a regular paragraph with the default styling</p> |
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1. Anonymous Class Selector – Selects any HTML elements with a specific *class* attribute

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| **Style Sheet**  | **HTML** |
| .bigNBold { font-size: larger; font-weight: bold; color: #3333FF} | <p class="bigNBold">This is a paragraph that has been  styled with the "bigNBold" anonymous class</p><ol> <li>Monday</li> <li class="bigNBold">Tuesday</li> <li>Wednesday</li></ol> |
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1. ID Selector – Use the *id* attribute of an HTML element to select a specific element. An *id* should be unique so this type of style would apply to exactly one element.

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| **Style Sheet**  | **HTML** |
| #para1 { margin-left: 35px; margin-right: 35px; text-align: center; color: red;} | <p id="para1">Cascading Style Sheets (CSS) is ... </p><p>CSS is designed to enable the separation ...</p> |
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1. Descendant Selector – The descendant selector matches all elements that are descendants of a specified element. The idea with a descendant selector is that you can apply CSS rules to an element depending on what other elements it is nested inside. For instance, suppose that I want all bold tags, <strong> that are nested in a paragraph, <p> to be blue, but, otherwise, I want <strong> to just be a regular (default)\_ bold. In this case, I can define a descendant (contextual) style. In the example below, notice that the style is not applied to the <li>.

Note: According to the HTML 5 specification, the <b> tag should be used as a LAST resort when no other tag is more appropriate. You should use <strong> instead.

1. Example 1

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| **Style Sheet**  | **HTML** |
| p strong {  color: blue; } | <p>This is an <strong>exciting</strong> lecture.</p><ol> <li>Monday</li> <li><strong>Tuesday</strong></li> <li>Wednesday <p>Today is hump day and we are just trying to make it  to <strong>Friday</strong>!</p> </li> <li>Thursday</li></ol> |
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1. Example 2 – Another example is shown below. There, we define a class style, ol.boxed, which puts a dashed line around an ordered list that is classed as "boxed". Next, we define a descendant selector for in list items <li> that appear inside a "boxed" ordered list, providing some space below the list item and a background color. In the HTML, we see that we have one "boxed" ordered list, and one default ordered list. The contextual style is only applied to the "boxed" ordered list.

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| **Style Sheet**  | **HTML** |
| ol.boxed {  border: medium dashed black; } ol.boxed li {  margin-bottom: 15px;  background-color: lightgray; } | <ol class="boxed"> <li>Monday</li> <li>Tuesday</li> <li>Wednesday</li></ol><ol> <li>Monday</li> <li>Tuesday</li> <li>Wednesday</li></ol> |
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1. Example 3 – Another example is shown below, where we define a contextual style with a descendant selector for an ordered list that is inside an ordered list. In other words, the "outer" ordered list contains the list items: Monday, Tuesday (see HTML on right, below). There, we also see that each list item, has an ordered list defined inside it that shows the labels: a. School, b. Homework, etc. This inner ordered list, because of the contextual style, is presented with a background color, some padding, etc. See the [box model](http://www.w3.org/TR/CSS2/box.html) to learn about the difference between padding and margins.

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| **Style Sheet**  | **HTML** |
| ol ol {  padding-top: 10px;  padding-bottom: 10px;  list-style-type : lower-alpha;  background-color: palegoldenrod; color : blue; }  | <ol> <li> Monday <ol> <li>School</li> <li>Homework</li> </ol> </li> <li> Tuesday <ol> <li>Work</li> <li>Feed Dog</li> </ol> </li></ol> |
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1. Child Selector – The child selector selects all elements that are the immediate children of a specified element.

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| **Style Sheet**  | **HTML** |
| div { padding: 25px 25px 25px 25px; background-color: tan;}div > p { padding: 5px 5px 5px 5px; background-color: palegoldenrod;} | <div> <p>Paragraph 1 in the div.</p> <p>Paragraph 2 in the div.</p> <span> <!-- not Child but Descendant --> <p>Paragraph 3 in the div.</p> </span></div><p>Paragraph 4. Not in a div.</p> |

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1. Grouping Selectors

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| **Style Sheet**  | **HTML** |
| h1, h2 { text-align: center; color: red;}h1 { font-style: italic;} | <h1>Cascading Style Sheets (CSS)</h1><h2>Selectors</h2><p>Selectors are used to select (find) the HTML element...</p> |

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**Span**

1. Span – The HTML <span> tag is an inline tag, e.g. it doesn't break the line (unless forced to by the browser). We can use <span> to markup a word, or small group of words in a special way using a CSS class.
2. Example:

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| **Style Sheet**  | **HTML** |
| .keyword {  margin: 10px;  padding: 3px;  font-size: larger;  font-weight: bold;  border: 5px solid lime;  background-color: #cc66ff;  color: yellow; } | <p> This is a <span class="keyword">keyword</span> in a paragraph</p> |

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**Div**

1. Div – The HTML <div> tag is a block tag that surrounds a block of content and usually starts on a new line (unless absolute positioning is used, which we will not consider).
2. Example:

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| **Style Sheet**  | **HTML** |
| div{ margin-left:auto; margin-right:auto; padding:20px; border:10px solid #0066FF; background-color:#00FFFF; margin-top: 30px; letter-spacing: 2px; font-weight:bold;}.ex1 { width:75%;}.ex2 { width:200px; font-size:larger;}.empahsis { font-style:italic; color:red;} | <div class="ex1">“Who wants to die? Everything struggles to live. Look at that tree growing up there out of that grating. It gets no sun, and water only when it rains. It's growing out of sour earth. And it's strong because its hard struggle to live is making it strong. My children will be strong that way.”― <span class="empahsis">Betty Smith, A Tree Grows in Brooklyn</span></div><div class="ex2">“If you need something from somebody always give that person a way to hand it to you.” ― <span class="empahsis">Sue Monk Kidd, The Secret Life of Bees</span></div> |

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1. Example – The example below has a table nested inside two nested <div>'s. To better understand padding and margins, take a look at the [box model](http://www.w3.org/TR/CSS2/box.html). Note that the <table> attribute "cellspacing" can be set in CSS by using the "border-spacing" property. Also, the <table> attribute "cellpadding" can be set in CSS by providing a style that overrides the <td> tag and sets the "padding" property (set as a contextual style below). Finally, centering the table can be a bit problematic. The technique I used below was to set two table properties in CSS: margin-left and margin-right to the value, "auto".

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| **Style Sheet** | **HTML** |
| div.outer {     padding: 15px;     margin-right: 15%;     margin-left: 15%;     background-color: #9999FF; } div.inner {     padding: 15px;     background-color: #6666FF;     font-weight: bold;     font-size: larger;     color: #FFFFFF;     text-align: center; }table.center {     margin-left:auto;     margin-right:auto;     border: thick solid #CCCC99;     border-spacing:10px; } table.center td {     border: medium solid #99CC99;     color: #CCCC99;     padding: 10px 10px 10px 10px; }  |  <div class="outer">     <div class="inner">         <table class="center">             <tr>                 <td>Monday</td>                 <td>Tuesday</td>             </tr>             <tr>                 <td>School</td>                 <td>Work</td>             </tr>         </table>     </div> </div>  |

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1. The preferred way to provide structure for a page is to use div tags. An [example](http://www.w3schools.com/htmL/html_layout.asp) was shown in the w3schools tutorial. We will not consider this. Instead, in one of the examples listed below (*css\_tables.html*) we use a table to structure a page.

Discussion of Tables vs. Div’s:

<https://stackoverflow.com/questions/83073/why-not-use-tables-for-layout-in-html>

<https://stackoverflow.com/questions/6118403/why-is-using-divs-or-spans-tags-better-than-using-a-table-layout>

Using Div’s:

<https://tutorial.techaltum.com/div_based_layout.html>

1. Common CSS Properties:
2. [background-color](http://www.w3schools.com/cssref/pr_background-color.asp)
3. [color](http://www.w3schools.com/cssref/pr_text_color.asp), [text-align](http://www.w3schools.com/cssref/pr_text_text-align.asp)
4. [font-family](http://www.w3schools.com/cssref/pr_font_font-family.asp), [font-style](http://www.w3schools.com/cssref/pr_font_font-style.asp), [font-size](http://www.w3schools.com/cssref/pr_font_font-size.asp), [font-weight](http://www.w3schools.com/cssref/pr_font_weight.asp)
5. [list-style-type](http://www.w3schools.com/cssref/pr_list-style-type.asp)
6. [Box Model](http://www.w3schools.com/CSS/css_boxmodel.asp) ([margin](http://www.w3schools.com/cssref/pr_margin.asp), [border](http://www.w3schools.com/cssref/pr_border.asp), [padding](http://www.w3schools.com/cssref/pr_padding.asp))
7. [width](http://www.w3schools.com/cssref/pr_dim_width.asp), [height](http://www.w3schools.com/cssref/pr_dim_height.asp)
8. [vertical-align](http://www.w3schools.com/cssref/pr_pos_vertical-align.asp)
9. References:
10. [All CSS 3 Properties](http://www.w3schools.com/cssref/default.asp)
11. [All CSS 3 Selectors](http://www.w3schools.com/cssref/css_selectors.asp)
12. Tutorials: [CSSBasics](http://www.cssbasics.com/), [HTML.net](http://www.html.net/tutorials/css/), [w3schools](http://www.w3schools.com/css/default.asp)
13. W3: [Box Model](https://www.w3schools.com/css/css_boxmodel.asp), [CSS 3 Selectors - Specification](http://www.w3.org/TR/css3-selectors/), [Visual Formatting Model](https://www.w3.org/TR/CSS2/visuren.html), [Visual Formatting Details](https://www.w3.org/Style/css2-updates/css2/visudet.html), [contents](http://dev.w3.org/csswg/css2/visudet.html).
14. Color tools: [Creative Bloq](https://www.creativebloq.com/advice/the-best-colour-tools-for-web-designers), web color picker, [Visibone](http://www.visibone.com/colorlab/big.html)
15. CSS Tips and Tricks: [w3.org](https://www.w3.org/Style/Examples/007/), [CSS Tricks](https://css-tricks.com/),
16. [CSSZenGarden](http://csszengarden.com/) - Identical pages, but all styled differently by graphic artists. Seminal page at one time, links are dead mostly.

**Expectations**

You have completed the required reading on CSS and these are the expectations for this topic:

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| **Expectations** |
| 1. Given a description and/or image of a web page, and a collection of styles, write the HTML and styles that create the page.
2. Know how to apply inline, internal, and external styles and their precedence.
3. Know these CSS properties: background-color, color, text-align, font-family, font-style, font-size, font-weight, list-style-type, Box Model (margin, padding, border), width, height, vertical-align
4. Write element, class, anonymous, and descendent selectors.
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