Introduction to Cascading Style Sheets

Giving your Web pages some style!

What exactly is CSS?

- CSS is an abbreviation for *Cascading Style Sheets*
- The W3C (The World Wide Web Consortium) defines CSS as:

  …a simple mechanism for adding style (e.g. fonts, colors, spacing) to Web documents.

- CSS is a separate language with its own *syntax* distinct from HTML
- CSS allows us to separate our marked-up content from the manner in which that content is presented
- Without CSS, Web pages would all look pretty dull

Why use CSS?

- *Better type and layout controls* – A designer can do things that are not possible with HTML alone
- *Less Work* – Edit one stylesheet to change the presentation of an entire site
- *Potentially smaller documents* – <table> code and multiple <font> tags are unnecessary
- *Improved accessibility* – for mobile and non-visual devices
- *Reliable browser support* – mostly

Remember the *layers* of Web design?

- We've already learned how to add structure and *meaning* to our document's content using HTML markup
- Now we shall change the *presentation* of this content using style rules
- You can think of this in another way:
  - HTML provides a structural and *semantic* context for our content
  - CSS will provide a *presentational* context for our content

A Very Important Note

- Every browser (Opera, Safari, Chrome, Firefox, even IE!) has a built-in default style sheet!
- When a page is displayed, this style sheet is applied *first* (but not actually rendered)
- After the default style sheet is applied, any styles provided by *the page* are applied
- Default style sheets cause much of the formatting you see in unstyled pages:
  - tags are rendered in bold
  - tags are rendered in italics
- If there was no default style sheet, and would render as plain text!

What are style rules?

- A style rule consists of three (3) parts:
  1. A selector that provides the *connection* between the rule and our semantic mark-up
  2. A set of *braces* ("{…}") that define the beginning and end of a rule's description
  3. The CSS *property (properties)* that define how elements using this selector should be displayed.

- The "big three" selectors:
  - *Type* selector – rules that are associated with HTML tags
  - *Class* selector – rules applied to a tag using the tag's class attribute
  - *ID* selector – rules applied to a tag using the tag's id attribute

Creating a Style Rule

- Imagine a situation where we want *all* of our level-2 headers to be red instead of the color specified in the browser's default style sheet
- Our first step would be to create the general structure of the rule – the tag followed by a set of braces

```
h2 { }
```

- The definition of our style will go between the braces

Creating a Style Rule Part 2

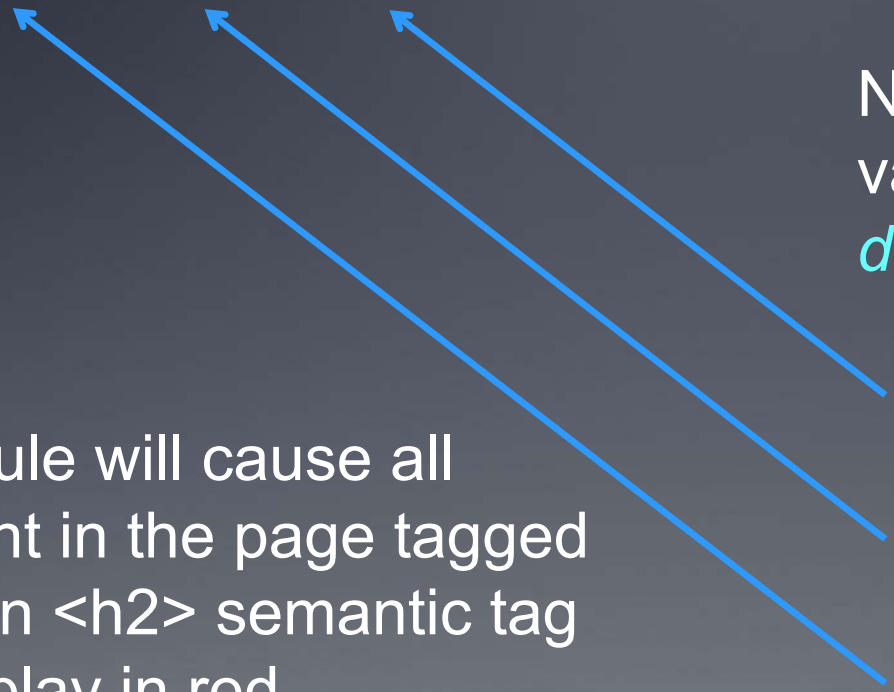
- Now we add the *properties* for this style
  - In this case, we want to set the font color to *red*
  - To do so, we will use the CSS property: *color*
- The completed style rule would look like this:

```
h2 {color: red;}
```

- Notice the colon (“:”) character separates the CSS property and its value
- Also note that a CSS property ends with a semicolon (“;”)

Your First Style Rule

```
h2 {color: red;}
```



Note: the property and value pair is called the *declaration*

Value

Property

Type Selector

This rule will cause all content in the page tagged with an <h2> semantic tag to display in red

Styles with Multiple Declarations

- What if we wanted to do more than just change the color of the level 2 headers? What if:
  - We want the color to be red
  - We want the font size to be 30 pixels
  - We want the font itself to be Trebuchet MS
  - If the user doesn't have Trebuchet MS, use Arial
- That style would look like this:

```
h2 {
    color: red;
    font-size: 30px;
    font-family: "Trebuchet MS", Arial;
}
```

R·I·T

Some General Rules For Style Declarations

- Note that the declarations (the property/value pairs) are separated by semicolons, and all of the declarations for the selector are enclosed in braces
- If the value has a *unit*, there cannot be a space between the value and the unit, e.g.:

```
font-size: 30px Not font-size: 30 px
```

- If there is a space in a value, such as the name of a font, you should put that value in quotes.

```
font-family:"Trebuchet MS", arial;
```

Applying One Rule To Multiple Type Selectors

- Imagine that you want all of your level-1 through level-4 headers to be colored red and use Trebuchet MS as the font with Arial as the alternate

```
h1, h2, h3, h4 {
                    color: red;
                    font-family: “Trebuchet MS”,
                                  Arial;
}
```

- This rule applies to all four header tags anywhere in the document
- Also, notice that (like HTML) CSS ignores unquoted white space! (Except for units as mentioned earlier)

Adding CSS Rules to Your HTML Document

- Style rules for a page can be added three different ways:
  1. *Inline* – the style is added as an *attribute* to an HTML element within the document:

```
<h2 style="color: green;">Welcome!</h2>
```

  2. *Embedded* – (Also known as *Document Level*) Style rules are placed within a set of <style> tags in the <head> section of the document
  3. *External* – the style rules are listed in a separate document. The CSS document "connects" to the HTML document through a *link* tag in the <head> section. (More about that in the next class)

Now that I know about Type Selectors…

What about class and ID selectors?

A new kind of selector, class

- *Class Selectors* let you designate a style that can be used with multiple, unrelated elements
- The name of the class selector always starts with a "." (dot or period)
- HTML elements are assigned to these classes using the *class* attribute

Example of declaring and using a *class* selector…

```
.assignment{
   color: green;
   font-weight: bolder;
   font-size: 125%;
}
…

<h3>Due next week</h3>
<ol>
   <li class="assignment">Project 1</li>
   <li class="assignment">Project 2</li>
   <li>Poetry Reading</li>
</ol>
```

R·I·T

…Renders As:

Due next week

1. **Project 1**
2. **Project 2**
3. Poetry Reading

What About the *id* Selector?

- *id selectors* let you designate a *single* element on a page as the target of your style rule
- The name of the *id* selector always starts with a # symbol
- HTML elements are assigned to these groups using the *id* attribute

Declaring and Using the *id* selector

```
#footer{
   color: yellow;
   font-size: 80%;
}
…

<p id="footer">&copy; Copyright 2010</p>
```

- Renders as:

  © Copyright 2010

- Remember: an *id* can only be used *once* on a page! If you need to use the same style in multiple locations, create a *class* selector

Bonus Selectors – *Pseudo Class Selectors*

- A couple examples:
  - :hover for rollover effects
  - :first-letter for a "drop cap" effect

```
a:hover{
    color:red
}

p:first-letter{
    font-weight:bold;
    font-size: 2em;
}
```

Anchor Pseudo Classes

- a — This is all instances of any <a> tag in the page.
- a: link — This is the normal, untouched <a> tag (the default appearance is blue and underlined).
- a: visited — This is the anchor if it has ever been clicked (the default appearance is purple and underlined).
- a: active — This is the anchor when the mouse button is down while over the anchor text (the default appearance is red and underlined).
- a: hover — This is how the anchor looks when the mouse hovers, or rolls over, it. There is no preset appearance for this.

Properties, Values, and Units of Measure

More about CSS rules and their declarations

CSS Property Values

- The *values* of CSS properties can be specified using one of the following value types:
  - Keywords
  - Absolute Units
  - Relative Units

Keywords

- Keywords map to values that the browser can understand. For example:
  - *medium* sized text is text set at the user's preferred font-size
  - *large* text is a certain percentage larger
  - A *green* background will be rendered by the browser as the hexadecimal color `#00FF00`
  - *solid* or *dotted* can be used to specify how a border is rendered
- There are many other keywords available for use – check your text and on-line documentation for more information

Absolute Units

- *Absolute* units are most useful for printing or if we are ***absolutely*** sure of the device's resolution (for example, a page being viewed on a standardized display or public kiosk)
- The most common absolute unit is the *point* (pt). A point is 1/72 of an inch
- There are other absolute units available, but these are rarely used:
  - **in** (inches)
  - **cm** (centimeters)
  - **mm** (millimeters)
  - **pc** (picas, 1 pica is equal to 12 points)

Relative Units

- *Relative* units specify a size *relative* to the parent container's size property
  - The *em* unit when used with `font-size` is relative to the computed font-size of the parent element
    - For example,

```
h1 {font-size: 1.2em;}
```

      for an h1 element means that the font-size for that element will be 20% larger than the size inherited from the body (parent) tag
  - *Percentages*, such as font-size: 120%, would be comparable to font-size: 1.2em

Relative Units

- The *ex* unit, which is not used frequently, is *relative* to the x-height of that font (the height of a lower-case *x)*.
  - Note: A lower-case *x* is usually the shortest letter in any given font.
  - For example, border-width: 0.5ex would make a border ½ the height of a lower-case x of that font.

The Pixel Unit: A Special Case

- The *pixel* (px) unit specifies the size of an entity based on the number of pixels used to display that entity
- Many designers think of this as an absolute unit
- *It's not* – the size is *relative!*
  - It depends on the size of a pixel on the user's display
  - For example,

```
font-size:72px
```

might appear to be ½" tall on a mobile device, but 1" on a lower-resolution, desktop computer

TMI! I'm Overwhelmed! What Should I Use?

- Generally, your best choice is to stick with *relative* units
- Starting out with pixels (the *px* unit) for all of your measurement units means that your page layout has a better chance of being preserved even if the user is on a mobile device with a high-resolution screen
- Many designers use the *em* unit for the same reason
- There are subtle differences, so check out some CSS design sites and:

  http://www.w3.org/TR/CSS2/syndata.html#values

- For now, when in doubt, use *px* for the screen, and *pt* for printing

CSS Property and Value Examples

Property	Possible Values
color:	red (color keyword); #FFOOOO; #FOO; rgb(100%, 0,0); rgb(255,0,0)
margin-left:	5pt (absolute points); 5px (relative/pixels); 2em (relative/em); 10% (relative/percent)
border:	1px solid black (1 pixel high, solid black border); 5px dotted red (5 pixel high, dotted red border);
list-style-type:	circle (keyword); url(circle_pic.gif) (external file)
background-image:	url(me.jpg) (external file); none (keyword)

CSS Property and Value Examples

Property	Possible Values
background-color:	green (color keyword); #OOFFOO; #OFO; rgb(0, 100%, 0); rgb(0,255,0)
line-height:	14px; 1.4em; 140% (relative sizing) 14pt (absolute sizing)
text-align:	left; right; center; justify (alignment keywords)
font-weight:	normal, bold, bolder (weight keywords)
font-family:	"Times New Roman", serif (serif-style font list) Arial, san-serif (san-serif-style font list)

CSS Property and Value Examples

Property	Possible Values
font-size:	Fixed Sizes: 14pt, .3in, 150mm, 15cm Relative Sizes: 14px, 1em, 2ex, 140% Keywords: xx-small, x-small, small, medium, large, x-large, xx-large
font-variant:	Keywords: smallcaps, normal
font-style:	Keywords: normal, italic, oblique
text-decoration:	Keywords: none, overline, underline, line-through, blink
text-transform:	Keywords: none, capitalize, lowercase, uppercase

How Do I Know What Tags Have Which Properties?

- Online resources:
  - W3C: http://www.w3.org/
  - W3 schools: http://www.w3schools.com/css/css_reference.asp
  - Mozilla Developer Network: https://developer.mozilla.org/en-US/
  - Books 24x7: http://wally.rit.edu/electronic/ebooks.html
- Books
  - Numerous resources at your bookstore. Browse before you buy.

Putting the "C" in CSS: The *Cascade* In Action

How elements *inherit* properties

Inheriting style rules

```
p{color: green;}
…
<p>This is <em>pointless</em>!</p>
```

- The markup above will render as:

This is *pointless*!

- The tag *inherits* the green color from the parent <p> tag, but then adds in its own default appearance (the *italicized* text)
- Remember, the default appearance for the tag is built into the browser's default style sheet

Overriding Inheritance

```
p{color: red;}
em{color: green;}
…
<p>This is <em>pointless</em>!</p>
```

- The markup above will render as:

This is *pointless*!

- The tag *inherits* the red color, but then *overrides* it with a green color.

Not All Properties Will Inherit

```
p{
   color: red;
   border: 1px solid black;
   background-color: gray;
}

   em {color: green;
}
…    <p>This is <em>pointless!</em></p>
```

- Will render as: This is *pointless*!
- Note the tag *inherits* the background-color: gray, but *does not inherit* border: 1px solid black.

How do I know which properties inherit, and which do not?

- *Reason it out*. *Should* nested elements inherit such properties as *border*, *margin* and *padding*? See the previous example. What if the browser allowed the *em* tag to inherit *border*?
- *Test it* in a web browser (actually, test it in *multiple* browsers!)
- See the *online resources* we showed you earlier

When Styles Conflict, Who Wins?

- For example, what happens when an *external* style sheet says that <p> tags are red, and an *embedded* style sheet (in the <style> tag) says that <p> tags are green?
- When styles conflict, the more *specific* rule wins:
  - An *embedded* style beats an *external* style sheet
  - An *inline* style beats them both
  - Inherited declarations are beaten by more specific declarations – see the inheritance examples a few slides back
- How this final (or "used") value is computed is what the "Cascade" in CSS is referring to. See http://www.w3.org/TR/CSS2/cascade.html for the details.

Debugging CSS…

- Right click!
- Inspect!

CSS Applied – get inspired

- Sites:
  - CSS Zen Garden - http://www.csszengarden.com/
  - A List Apart - http://www.alistapart.com/
- CSS 3 (like HTML5, "evolving standard")
  - http://www.css3.info
  - http://www.w3.org/Style/CSS/current-work
  - "CSS Site of Awesomeness"
    - no images used
    - view in Safari for best results.
    - http://www.bobwei.net/cssEffectsPart1/index.html

That's enough for now.

- Demo and ICE!