Computer Science & Engineering 120 Learning to Code

Presenting Data II - CSS

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Part I: Intro to CSS

Topic Overview

Part I:

- ▶ Intro to Cascading Style Sheets
- ► Inline Styling
- ► Span Element
- ► External Style Sheets

Overview

- ▶ It is important to put data into a standard, universal format: raw data can be processed in any number of ways, but data in a static table or program has limited use
- ► Similarly: content should be separated from presentation
- ► HTML semantically marks up a document, Cascading Style Sheets can be used to add stylistic elements
- ► Cascading: HTML elements are nested and *inherit* style *properties* which can be overridden or modified
- You can define "general" rules/properties that apply to all elements in a document to the most specific which can apply to a single element
- Ultimately rules are general; browsers decide how styles are rendered (and often create their own, nonstandard properties)

Overview

- ▶ CSS rules follow a key-value pair syntax
- Key is a CSS property
- ► Value depends on the type of property
- ► Syntax: property: value

Inline Styles

- ► Styles can be applied to particular HTML elements
- ▶ Style rules are placed "inline" with HTML tags
- ▶ The style attribute of any element can contain CSS style rules
- ▶ Multiple rules are separated by a semicolon

```
1 <h1 style="color: red">My Home Page</h1>
2
3 Greetings, this is my webpage.
```

Inheritance

- A style rule applies to an element and all of its children
- ▶ Unless it is overridden by another style

Overview

- Often want to apply a style to a part of a document that is not a distinct HTML element
- ▶ Italicize or bold a word within a paragraph
- ▶ The tag was designed to allow this
- ▶ Doesn't apply any particular semantic meaning to the document
- Used to apply style rules that "span" a particular part of the document

```
1 This course is <span style="font-weight: bold">CSCE 120</span>
2 &ndash; Learning to Code. We meet every Tuesday and Thursday.
3 Please be sure to <span style="font-style: italic;">bring your
4 laptop.</span>
```

External Style Sheets

- ► Inline style logically separates content and presentation, but still places presentation within the document
- ▶ Better to use external style sheets
- ▶ A separate source file (usually .css) that contains presentation rules
- ► Including the style sheet in the header: \link href="myStyles.css" rel="stylesheet" type="text/css">
- ▶ Similar syntax, but rules are enclosed with curly brackets

External Style Sheets

Example

```
1  /*
2   myStyles.css
3   Multiline comments are similar to JavaScript
4   */
5
6   /* style for body element, all children will inherit */
7   body {
8     font-family: helvetica;
9     color: rgb(20, 20, 20);
10   }
11
12   /* rule for all paragraphs */
13   p {
14     margin-left: 2em;
15   }
16
17   h1 {
18     padding: 10px;
19     color: black;
20   }
```

Part II: Common Style Elements

Font Properties I

Property	Values
font-style	normal
	italic
font-weight	normal
	bold
	bolder
	lighter
font-size	medium
	pt, px, em
	x%
	small
	large
font-family	"Times New Roman"
	Helvetica
	Serif

Font Properties II

- ► Font family availability depends on browser/system; best to include generic family
- ▶ Multiple properties can be set at once: font: bold 3em serif;
- ▶ Units: percentage, pixels, points, em

Margins, Borders & Padding I

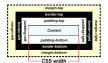


Figure: Margins, Borders, Padding

Margins, Borders & Padding II

- Elements (usually <div> s) have margins, borders, and padding around their content
- ► Each can be set independently: margin-top, margin-right, margin-bottom, margin-left
- ► Can be set all at once using margin: 10px; or margin: 10px 20px 10px 20px; (top, right, bottom, left)
- ► Similar for padding: padding-top, padding-right, padding-bottom, padding-left or padding

Margins, Borders & Padding III

- ► Borders similar but have more components: -width, -style,
- ▶ Styles: none, dotted, dashed, solid, etc.
- ▶ Shortcut: border: 5px solid green
- ▶ Units: px, em, etc.

Colors I

- ► Foreground color (text): color
- ► Background color: background-color
- Many named colors (see http://www.w3schools.com/cssref/css_colorsfull.asp)
- ▶ Main color method: specify red, green, blue color levels
- Numeric: integer value 0 through 255: color: rgb(255, 255, 0); (full red, full green, no blue; yellow)
- ► Additive, so white: color: rgb(255, 255, 255); , black: color: rgb(0, 0, 0);
- ► Hexadecimal: same range, but expressed in base-16: 00, 01, ... 09, 0a,... 0f 10,..., ff
- ► Use a hash mark: color: #ffff00;

Colors II

- Opacity is a measure of how transparent an element is
- ▶ 1.0: completely opaque; 0.0: completely transparent
- ▶ opacity: 0.5;
- ► RGBA ("alpha channel"): color: rgba(255, 0, 0, 0.5);

Visibility

- ▶ Some elements can be "hidden" so they are not displayed
- ► Common when using animation: hide, fade-in, out, etc.
- ▶ Visibility: visibility: visible (or hidden)
- ▶ Display: display: inline (or block or none)
- Inline: does not start on a new line, takes only as much width as necessary (like)
- ▶ Block: starts a new line, takes up the full width of parent element (like <div>)
- ► Visibility vs display: display: none means the element does not affect the layout visibility: hidden does not show the element, but the element still takes up as much space as if it were visible

Other Style Elements

Resources

- ► List of (315) properties: http://meiert.com/en/indices/css-properties/
- ► CSS Playground: http://css3.mikeplate.com/
- ► Another: http://playground.webflow.com/

Part III: Selectors, Combinators, etc.

Topic Overview

- ► Classes, Identifiers, Selectors
- ► Advanced Combinators, etc.
- ► Frameworks

Classes

- ► CSS rules can be made more fine-grained
- You can use the class attribute to give an element one or more "classes" of style rules
- ► HTML:

```
...
...
```

- ► Rules can be applied to classes in a style file using .class syntax
- ► Can be combined with other *selectors*

Classes

Example

```
/* applies to ANY element with a leading class */
2    .leading {
3     font-size: 120%;
4     font-weight: 500;
5    }
6
7    /* applies only to div elements with an important class */
8    div.important {
9        color: red;
10    }
11
12    /* applies to elements with BOTH classes */
13    .leading .important {
14     font-family: serif;
15    }
16
17    /* applies to elements with EITHER class */
18    .leading, .important {
19     background-color: rgb(25, 25, 25);
20 }
```

Identifiers

- ► Any element can have an identifier, id attribute
- ▶ Style rules can be applied to that element only, avoiding inline styling
- ► Syntax: use a hash, #elementId
- ▶ Can do "conditional" style when combined with classes

Identifiers

Example

```
1  /* applies only to the element with id="contactInfo" */
2  #contactInfo {
3  margin: lem;
4  border: solid black 1px;
5  }
6
7  /* applied to id="contactInfo" only if it has a highlighted class */
8  #contactInfo.highlighted
9  div.important {
10  color: red;
11 }
```

Combinators I

► Universal Selector:

-Le

Applies the rule to every element

 Descendent selector: combinations of elements can select nested elements

div p

Applies the rule to any paragraph that is a descendent of a <div> element

► Child Selector:

div > p

Applies the rule to any paragraph that is an *immediate child* of a <div> element

Combinators II

► Adjacent Sibling Selector:

div + p

Applies the rule to any paragraph that *immediately follow* a <div>element

► General Sibling Selector:

div ~ p

Applies the rule to any paragraph that is a sibling (not just following) of a <div> element

Attribute Selectors

Can specify rules to apply to elements with particular attributes and attribute values

```
1 /* applies to any anchor with an href */
2 alref { ... }
3
4 /* applies to any anchor that links to hello.pdf */
5 alref * hello.pdf * ] { ... }
6
7 /* applies to any anchor that links to resources that
8 begin with http */
9 alref * = hitp * ] { ... }
10
11 /* applies to any anchor that links to resources that
12 ends with jpg */
13 allref* = jpg * ] { ... }
14
15 /* applies to any anchor that links to resources that
16 contains case */
17 allref* = "case" ] { ... }
```

Advanced CSS

More:

- ► Animations & Transitions
- ► Calculated Values (calc())
- Gradients
- Webfonts
- ► Media Queries for adaptive styles (mobile, desktop, etc.)
- ► CSS4: more programming-like capabilities

Resources

http://www.w3.org/community/webed/wiki/Advanced_CSS_selectors
http://tutorialzine.com/2013/10/12-awesome-css3-features-you-can-finally-use/

HTML & CSS Frameworks I

- ▶ Coding is hard, graphic design is hard
- ▶ Styling is ever more important with various mobile devices
- Many tools, frameworks and libraries have been developed to help get you started

HTML & CSS Frameworks II

Tools:

- ► Syntactically Awesome Stylesheets (Sass): http://sass-lang.com/
- ▶ LESS: http://lesscss.org/
- ► CSS Next: http://cssnext.io/

Frameworks/Libraries:

- ► HTLM5 Boilerplate (https://html5boilerplate.com/)
- ▶ jQuery UI (http://jqueryui.com)
- ▶ Bootstrap (http://getbootstrap.com/)