CSS: Cascading Style Sheets

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Attribution to Dr. Boris Jukic
Objectives

- Topics covered:
  - using a style sheet to give all the pages of a Web site the same look and feel.
  - style sheet types and cascade precedence
  - CSS syntax for assigning style properties
  - Class selector and using the class attribute to apply styles.
  - using style sheets to separate presentation from content.
Introduction

- Cascading Style Sheets (CSS)
  - Separation of structure from presentation
  - Relationship between the style formatting and the structure/content is no longer 1:1
    - multiple style sheets can be applied to the same Web page
    - same style sheet can be applied to the multiple Web pages
Multiple Levels of Style Definition

- Cascade Precedence: resolves conflicting style rules
  - Inline style sheets
  - Embedded/Internal sheets
  - External style sheets
    - Author vs. User
Inline Styles

- Style information is directly attached to the HTML elements they impact.
- Higher cascade precedence than the other specification methods.
- Declaring an individual element’s format:
  - Attribute style
  - CSS (style) property
    - Followed by a colon and a value
Fig. 6.1: inline.html

<!-- Using inline styles -->

<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <title>Inline Styles</title>
    </head>
    <body>
        <p>This text does not have any style applied to it.</p>
        <!-- The style attribute allows you to declare -->
        <!-- inline styles. Separate multiple styles -->
        <!-- with a semicolon. -->
        <p style="font-size: 20pt">This text has the <em>font-size</em> style applied to it, making it 20pt.</p>
    </body>
</html>
This text has the font-size style applied to it, making it 20pt.

This text has the font-size and color styles applied to it, making it 20pt. and blue.
Embedded/Internal Style Sheets

- this method can only specify style information for the current document:
  - 1:1 relationship
  - However, the same document may have other style definitions applied to it
    - 1:M relationship
- embedded style sheet rule will have higher precedence than external style sheet rule, if there is a conflict between styles
- embedded style sheet rule will have lower precedence than an inline style sheet rule
Embedded/Internal Style Sheets

- You can embed an entire CSS document in an XHTML document’s head section inside a style element
  - Attribute type
    - Multipurpose Internet Mail Extensions (MIME) type
      - describes the type of the document’s content
      - text/css is the type for CSS document
  - Style properties are defined for:
    - Existing defined elements, such as p (paragraph), h3 (header), li (list) or any other
    - Style class that can be applied to either:
      - Any existing type of element in the body of the document or
      - One specific element in the document
CSS Syntax for Assigning Style Properties

• The CSS syntax is made up of three parts: a selector, a property, and a value:
  • selector {property: value}

• A selector can be:
  • the HTML element/tag you wish to define. In this example:
    • body {color: black}, element body is the selector
  • The class selector, which can be tied to a specific element, such as:
    • p.right {text-align: right}
  • The class selector applicable to any element, such as:
    • .loud {font-family: fantasy; font-size: xx-large}

• If a class selector is used, it has to be invoked in the body of the XHTML document:
  • <p class="right"> or
  • <table class="loud">
CSS Syntax for Assigning Style Properties: additional issues

- Group selectors are possible for a group of HTML elements. For example:
  - `h1,h2,h3,h4,h5,h6 {color: green}` will make all header elements text green
- When a class selector is defined for a particular element, it cannot be invoked on other elements. Using example from the previous slide which of these uses of class styles in the XHTML document is correct?
  - `<ul class = “loud”>`
  - `<ul class = “right”>`
- Pseudo-class selectors define the style for the parts of a document based on some characteristics other than tag name, attributes or content. They may be defined by a user action such as:
  - Mouseover (hover pseudoclass)
  - Clicking (active pseudoclass)
CSS syntax: continue

- Invoking a style class to a block of text not defined by a particular element
  - span element
  - div element (block level element)
Style Inheritance and Conflict Resolution

• Inheritance
  • An element that is present within another element (child) inherits all style properties from its “parent” element
  • However, if such child (or descendant) element has properties that conflict with defined properties of its parent element, conflict is resolved in favors of properties of a child element
    • Child element properties have greater specificity than ancestor’s properties
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" 
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.2: declared.html -->
<!-- Declaring a style sheet in the header section. -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Style Sheets</title>
    <!-- this begins the style sheet section -->
    <style type = "text/css">
      em { background-color: #8000ff;
           color: white }

      h1 { font-family: arial, sans-serif }

      p { font-size: 14pt }

      .special { color: blue }
    </style>
  </head>
</html>

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<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" 
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig 6.3: advanced.html -->
<!-- More advanced style sheets -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>More Styles</title>
    <style type = "text/css">
      a.nodec { text-decoration: none }
      a:hover { text-decoration: underline; color: red; background-color: #ccffcc }
      li em { color: red; font-weight: bold }
      ul { margin-left: 75px }
    </style>
  </head>
</html>
<h1>Shopping list for <em>Monday</em>:</h1>

<ul>
  <li>Milk</li>
  <li>Bread
      <ul>
        <li>White bread</li>
        <li>Rye bread</li>
        <li>Whole wheat bread</li>
      </ul>
  </li>
  <li>Rice</li>
  <li>Potatoes</li>
  <li>Pizza <em>with mushrooms</em></li>
</ul>
Shopping list for Monday:

- Milk
- Bread
  - White bread
  - Rye bread
  - Whole wheat bread
- Rice
- Potatoes
- Pizza with mushrooms

Go to the Grocery store
External Style Sheets

- External style sheets
  - Applicable to more than document
  - Documents can have more than one source for style specification
    - M:M relationship
- Can provide uniform look and feel to entire site
- Same CSS syntax rules for assigning and invoking style properties apply
External Style Sheets

- Location (href) and type (type) of the external style sheet are specified as attributes of a link element in the head portion of an XHTML document.
- In addition, the rel attribute specifies the nature of the relationship between the stylesheet and the document that is referencing it:
  - Persistent stylesheets must be applied to the document.
  - Preferred style sheet should be applied unless the user has selected a different alternate.
  - Alternate style sheets may be selected by users depending on their preferences.
Linking External Style Sheets

• To make a style sheet persistent, set the rel attribute to "stylesheet".

• To make a style sheet preferred, set the rel attribute to "stylesheet" and name the style sheet with the additional title attribute.

• To specify an alternate style sheet, set the rel attribute to "alternate stylesheet" and name the style sheet with the title attribute.

• Reference: http://alistapart.com/article/alternate/
/* Fig. 6.4: styles.css   */
/* An external stylesheet */

a       { text-decoration: none }

a:hover { text-decoration: underline;
  color: red;
  background-color: #ccffcc }

li em   { color: red;
  font-weight: bold;
  background-color: #ffffff }

ul      { margin-left: 2cm }

ul ul   { text-decoration: underline;
  margin-left: .5cm }
<! -- Fig. 6.5: external.html -->
<! -- Linking external style sheets -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Linking External Style Sheets</title>
    <link rel = "stylesheet" type = "text/css" href = "styles.css" />
  </head>

  <body>
    <h1>Shopping list for <em>Monday</em>:</h1>
    <ul>
      <li>Milk</li>
      <li>Bread</li>
      <ul>
        <li>White bread</li>
        <li>Rye bread</li>
        <li>Whole wheat bread</li>
      </ul>
    </ul>
  </body>
</html>
Shopping list for Monday:

- Milk
- Bread
  - White bread
  - Rye bread
  - Whole wheat bread
- Rice
- Potatoes
- Pizza **with mushrooms**

Go to the Grocery store

Go to the Grocery store
W3C CSS Validation Service

- Validates external CSS documents
- Ensures that style sheets are syntactically correct
- http://jigsaw.w3.org/css-validator/
6.10 Text Flow and the Box Model

- Floating
  - Move an element to one side of the screen
- Box model
  - Margins
  - Padding
  - Border
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.12: floating.html -->
<!-- Floating elements and element boxes -->

<html xmlns = "http://www.w3.org/1999/xhtml">
<head>
	<title>Flowing Text Around Floating Elements</title>

	<style type = "text/css">

		div { background-color: #ffccff;
		margin-bottom: .5em;
		font-size: 1.5em;
	width: 50% }

		p { text-align: justify }

	</style>

</head>

</html>
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Text Flow and the Box Model
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
    "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.14: borders.html -->
<!-- Setting borders of an element -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Borders</title>
    <style type = "text/css">
      body   { background-color: #ccffcc }
      div    { text-align: center;
               margin-bottom: 1em;
               padding: .5em }
      .thick { border-width: thick }
      .medium { border-width: medium }
      .thin  { border-width: thin }
  </style>
</head>
</html>
.groove { border-style: groove }
.inset { border-style: inset }
.outset { border-style: outset }
.red { border-color: red }
.blue { border-color: blue }

</style>
</head>
<body>
<div class = "thick groove">This text has a border</div>
<div class = "medium groove">This text has a border</div>
<div class = "thin groove">This text has a border</div>
<p class = "thin red inset">A thin red line...</p>
<p class = "medium blue outset">
    And a thicker blue line</p>
</body>
</html>
User Style Sheets

- Format pages based on user preferences
- User style sheets are not linked in the document
  - They are set in browser's options
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
  "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.16: user_absolute.html -->
<!-- User styles -->

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>User Styles</title>
    <style type = "text/css">
      .note { font-size: 9pt }
    </style>
  </head>
  <body>
    <p>Thanks for visiting my Web site. I hope you enjoy it. Please Note: This site will be moving soon. Please check periodically for updates.</p>
  </body>
</html>
Thank you for visiting my Web site. I hope you enjoy it.

Please Note: This site will be moving soon. Please check periodically for updates.
/* Fig. 6.17: userstyles.css */
/* A user stylesheet */

body {
  font-size: 20pt;
  color: yellow;
  background-color: #000080
}
User Style Sheets

Fig. 6.18  User style sheet in Internet Explorer 6.
User Style Sheets

Thanks for visiting my Web site. I hope you enjoy it.

Please Note: This site will be moving soon. Please check periodically for updates.
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC 
"-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.20: user_relative.html -->
<!-- User styles -->

<html xmlns = "http://www.w3.org/1999/xhtml">
<head>
    <title>User Styles</title>
    <style type = "text/css">
        .note { font-size: .75em }
    </style>
</head>
<body>
<p>Thanks for visiting my Web site. I hope you enjoy it.</p>
<p class = "note">Please Note: This site will be moving soon. Please check periodically for updates.</p>
</body>
</html>
Thanks for visiting my Web site. I hope you enjoy it.

Please Note: This site will be moving soon. Please check periodically for updates.
User Style Sheets

Thanks for visiting my Web site. I hope you enjoy it.

Please Note: This site will be moving soon. Please check periodically for updates.

Fig. 6.21 User style sheet applied with em measurement.