Cascading Style Sheets™ (CSS)

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Objectives

• In this lesson, you will learn:
  – To control the appearance of a Web site by creating style sheets.
  – To use a style sheet to give all the pages of a Web site the same look and feel.
  – To use the class attribute to apply styles.
  – To specify the precise font, size, color and other properties of displayed text.
  – To specify element backgrounds and colors.
  – To understand the box model and how to control the margins, borders and padding.
  – To use style sheets to separate presentation from content.
3.1 Introduction

- Cascading Style Sheets (CSS)
  - Separation of structure from presentation
3.2 Inline Styles

• Declare an individual element’s format
  – Attribute style
  – CSS property
    • Followed by a colon and a value (font-size; color)
  – Inline styles override any other styles applied in Embedded Style Sheets
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- 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.
3.3 Embedded Style Sheets

• Embed an entire CSS document in an XHTML document’s head section
  – Multipurpose Internet Mail Extensions (MIME) type
    • Describes a file’s content
  – Property background-color
    • Specifies the background color
  – Property font-family
    • Specifies the name of the font to use (different browser have a different implicit font)
  – Property font-size
    • Specifies a 14-point font
<!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>
</head>
<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>
<body>
    <!-- this class attribute applies the .special style -->
    <h1 class = "special">Deitel & Associates, Inc.</h1>
    Deitel & Associates, Inc. is an internationally recognized corporate training and publishing organization specializing in programming languages, Internet/World Wide Web technology and object technology education. Deitel & Associates, Inc. is a member of the World Wide Web Consortium. The company provides courses on Java, C++, Visual Basic, C, Internet and World Wide Web programming, and Object Technology.</p>

    <h1>Clients</h1>
    The company's clients include many Fortune 1000 companies, government agencies, branches of the military and business organizations. Through its publishing partnership with Prentice Hall, Deitel & Associates, Inc. publishes leading-edge programming textbooks, professional books, interactive CD-ROM-based multimedia Cyber Classrooms, satellite courses and World Wide Web courses.</p>
</body>
Deitel & Associates, Inc.


Clients

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3.4 Conflicting Styles

• Inheritance
  – Descendant’s properties have greater specificity than ancestor’s properties
  – styles may be defined by an author, a user, or user agent (Web browser)
<?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>
<p><a class="nodec" href="http://www.food.com">Go to the Grocery store</a></p>

Outline

Shopping list for Monday:

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

Go to the Grocery store
3.5 Linking External Style Sheets

• External style sheets
  – Can provide uniform look and feel to entire site
/* 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
        <ul>
          <li>White bread</li>
          <li>Rye bread</li>
          <li>Whole wheat bread</li>
        </ul>
      </li>
    </ul>
  </body>
</html>
```
<ul>
  <li>Rice</li>
  <li>Potatoes</li>
  <li>Pizza <em>with mushrooms</em></li>
</ul>

<p><a href="http://www.food.com">Go to the Grocery store</a></p>

---

**Shopping list for Monday:**

- Milk
- Bread
  - White bread
  - Rye bread
  - Whole wheat bread
- Rice
- Potatoes
- Pizza <em>with mushrooms</em>

Go to the Grocery store

---

**Shopping list for Monday:**

- Milk
- Bread
  - White bread
  - Rye bread
  - Whole wheat bread
- Rice
- Potatoes
- Pizza <em>with mushrooms</em>

Go to the Grocery store
3.6 W3C CSS Validation Service

- Validates external CSS documents
- Ensures that style sheets are syntactically correct
3.6 W3C CSS Validation Service

Fig. 3.6 Validating a CSS document. (Courtesy of World Wide Web Consortium (W3C).)
3.6 W3C CSS Validation Service

Fig. 3.7 CSS validation results. (Courtesy of World Wide Web Consortium (W3C).)
3.7 Positioning Elements

• Absolute positioning
  – `z-index` attribute
    • Layer overlapping elements properly

• Relative positioning
  – Elements are positioned relative to other elements
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig 6.8: positioning.html -->
<!-- Absolute positioning of elements -->

<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Absolute Positioning</title>
  </head>
  <body>
    <p><img src="i.gif" style="position: absolute; top: 0px; left: 0px; z-index: 1"
      alt="First positioned image" /></p>
    <p style="position: absolute; top: 50px; left: 50px; z-index: 3; font-size: 20pt">Positioned Text</p>
    <p><img src="circle.gif" style="position: absolute; top: 25px; left: 100px; z-index: 2"
      alt="Second positioned image" /></p>
  </body>
</html>
Positioned Text
em a pixel is relative length measurement, varies based on screen resolution, M height of the font (upper case)

ex x-height of the font (lower case)

span element – grouping element apply css rules or id attributes to a block of text inline level element
```html
.shiftright { position: relative;  
right: -1em }

</style>
</head>
<body>
<p>The text at the end of this sentence
<span class = "super">is in superscript</span>.</p>  
<p>The text at the end of this sentence
<span class = "sub">is in subscript</span>.</p>  
<p>The text at the end of this sentence
<span class = "shiftright">is shifted right</span>.</p>  
</body>
</html>
```
The text at the end of this sentence is in superscript.
The text at the end of this sentence is in subscript.
The text at the end of this sentence is shifted left.
The text at the end of this sentence is shifted right.
3.8 Backgrounds

- **background-image**
  - Specifies the image URL

- **background-position**
  - Places the image on the page

- **background-repeat**
  - Controls the tiling of the background image

- **background-attachment**
  - **fixed**
  - **scroll**

- **font-weight**
  - Specify the “boldness” of text
<?xml version = "1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
  "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.10: background.html                Fig. 6.10: background.html                Fig. 6.10: background.html                Fig. 6.10: background.html               -- -- -- -->

<! -- Adding background images and indentation    -- -- -- -->> >>

<html xmlns = "http://www.w3.org/1999/xhtml">
  <head>
    <title>Background Images</title>
    <style type = "text/css">
      body {
        background-image: url(logo.gif);
        background-position: bottom right;
        background-repeat: no-repeat;
        background-attachment: fixed;
      }
      p {
        font-size: 18pt;
        color: #aa5588;
        text-indent: 1em;
        font-family: arial, sans-serif;
      }
      .dark {
        font-weight: bold;
      }
    </style>
  </head>
</html>
This example uses the background-image, background-position and background-attachment styles to place the Deitel & Associates, Inc. logo in the bottom, right corner of the page. Notice how the logo stays in the proper position when you resize the browser window.
This example uses the background-image, background-position and background-attachment styles to place the **Deitel & Associates, Inc.** logo in the bottom, right corner of the page. Notice how the logo stays in the proper position when you resize the browser window.
3.9 Element Dimensions

- CSS rules can specify the actual dimensions of each page element
<html xmlns="http://www.w3.org/1999/xhtml">

  <head>
    <title>Box Dimensions</title>
    <style type="text/css">
      div { background-color: #ffccff;
          margin-bottom: .5em }
    </style>
  </head>

  <body>
    <div style="width: 20%">Here is some text that goes in a box which is set to stretch across twenty percent of the width of the screen.</div>
  </body>
</html>
Here is some CENTERED text that goes in a box which is set to stretch across eighty percent of the width of the screen.

This box is only twenty percent of the width and thirty percent of the height.

What do we do if it overflows? Set the overflow property to scroll!
3.10 Text Flow and the Box Model

- **Floating**
  - Move an element to one side of the screen; other content in the document then flows around the floated element

- **Box model**
  - **Margins**
    - margin-top, margin-right, margin-left, margin-bottom
  - **Padding**
    - padding-top, padding-right, padding-left, and padding-bottom
  - **Border**
    - border-width
      - thin, medium, thick
    - border-color
      - Sets the color
    - border-style
      - none, hidden, dotted, dashed, solid, double, groove, ridge, inset and outset
<?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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Clear – interrupts the flow on both sides of the document
3.10 Text Flow and the Box Model

![Box model for block-level elements.](image)

Fig. 3.10  Box model for block-level elements.
Outline

borders.html
(1 of 2)
Three properties are set:
border-with, border-color, border-style
Outline

borders.html
(2 of 2)

border styles:
none, hidden, dotted, dashed, solid, double, groove, ridge, inset, outset

</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>
This text has a border

This text has a border

This text has a border

A thin red line...

And a thicker blue line
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<!-- Fig. 6.15: borders2.html -->
<!-- Various border-styles -->

<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: .3em;
           width: 50%;
           position: relative;
           left: 25%;
           padding: .3em }
    </style>
  </head>
  <body>
  </body>
</html>
Solid border

Double border

Groove border

Ridge border

Inset border

Outset border
3.11 User Style Sheets

- Format pages based on preferences
- user can define his/her own style sheets
<?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.</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.
/* Fig. 6.17: userstyles.css */
/* A user stylesheet */

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

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

Fig. 6.19 User style sheet applied with pt measurement.
<?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. 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.
3.11 User Style Sheets

Fig. 6.21 User style sheet applied with em measurement.
3.12 Web Resources

- www.w3.org/TR/css3-roadmap
- www.ddj.com/webreview/style
- tech.irt.org/articles/css.htm