

## 5

# Cascading Style Sheets™ (CSS)



*Fashions fade, style is eternal.*

—Yves Saint Laurent

*A style does not go out of style as long as it adapts itself to its period. When there is an incompatibility between the style and a certain state of mind, it is never the style that triumphs.*

—Coco Chanel

*How liberating to work in the margins, outside a central perception.*

—Don DeLillo

*I've gradually risen from lower-class background to lower-class foreground.*

—Marvin Cohen



## OBJECTIVES

In this chapter you will learn:

- To control the appearance of a website by creating style sheets.
- To use a style sheet to give all the pages of a website 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 margins, borders and padding.
- To use style sheets to separate presentation from content.



## Outline

- 5.1 Introduction
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- 5.4 Conflicting Styles
- 5.5 Linking External Style Sheets
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- 5.9 Box Model and Text Flow
- 5.10 Media Types
- 5.11 Building a CSS Drop-Down Menu
- 5.12 User Style Sheets
- 5.13 CSS 3
- 5.14 Wrap-Up
- 5.15 Web Resources



## 5.1 Introduction

- **Cascading Style Sheets (CSS)**
  - Used to specify the presentation of elements separately from the structure of the document
- **CSS validator**  
<http://jigsaw.w3.org/css-validator/>



## 5.2 Inline Styles

- **Inline style**
  - declare a style for an individual element by using the **style** attribute in the element's start tag
- **Each CSS property is followed by a colon and the value of the attribute**
  - Multiple property declarations are separated by a semicolon



## 5.2 Inline Styles (Cont.)

- **col or property sets text color**
  - Color names and hexadecimal codes may be used as the value



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.1: Inline.html -->
6 <!-- Using inline styles -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Inline Styles</title>
10  </head>
11  <body>
12    <p>This text does not have any style applied to it.</p>
13
14    <!-- The style attribute allows you to declare -->
15    <!-- inline styles. Separate multiple style properties -->
16    <!-- with a semicolon. -->
17    <p style = "font-size: 20pt">This text has the
18      <em>font-size</em> style applied to it, making it
19    </p>
20
21    <p style = "font-size: 20pt; color: #add8e6">
22      This text has the <em>font-size</em> and
23      <em>color</em> styles applied to it, making it
24      20pt. and light blue.</p>
25  </body>
26 </html >

```

**Fig. 5.1 | Using inline styles (Part 1 of 2).**

Style attribute

Sets the paragraph's font size

Sets the paragraph's color to light blue



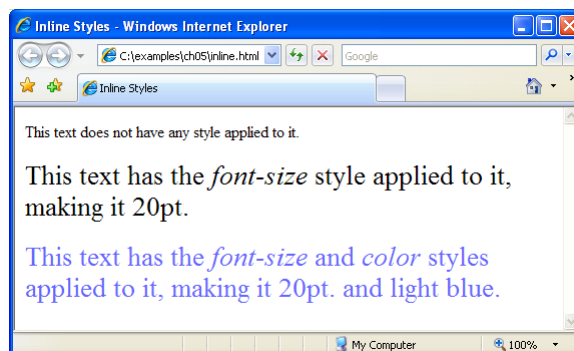


Fig. 5.1 | Using inline styles (Part 2 of 2).



## 5.3 Embedded Style Sheets

- Styles that are placed in a `style` element use selectors to apply style elements throughout the entire document
- `style` element attribute `type` specifies the MIME type (the specific encoding format) of the style sheet. Style sheets use `text/css`
- Each rule body in a style sheet begins and ends with a curly brace (`{` and `}`).



## 5.3 Embedded Style Sheets (Cont.)

- **Style-class declarations are preceded by a period and are applied to elements of the specific class**
  - The class attribute applies a style class to an element
- **CSS rules in a style sheet use the same format as inline styles:**
  - The property is followed by a colon (:) and the value of that property
  - Multiple properties are separated by semicolons (;)



## 5.3 Embedded Style Sheets (Cont.)

- **font-weight property specifies the “boldness” of text. Possible values are:**
  - **bold**
  - **normal** (the default)
  - **bolder** (bolder than bold text)
  - **lighter** (lighter than normal text)
  - **Boldness also can be specified with multiples of 100, from 100 to 900 (e.g., 100, 200, ..., 900). Text specified as normal is equivalent to 400, and bold text is equivalent to 700**



## 5.3 Embedded Style Sheets (Cont.)

- **background-color** attribute specifies the background color of the element
- **font-family** attribute names a specific font that should be displayed
  - Generic font families allow authors to specify a type of font instead of a specific font, in case a browser does not support a specific font
- **font-size** property specifies the size used to render the font



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**Fig. 5.2 |**  
**Embedded style sheets (Part 1 of 2).**

```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
3 <html xmlns = "http://www.w3.org/1999/xhtml" >
4   <head>
5     <!-- Fig. 5.2: embedded.html -->
6     <!-- Embedded style sheets. -->
7     <title>Style Sheets</title>
8     <!-- this begins the style sheet section -->
9     <style type = "text/css">
10      em { font-weight: bold;
11          color: black; }
12      h1 { font-family: helvetica, helvetica, sans-serif; }
13      p { font-size: 12pt;
14          font-family: arial, sans-serif; }
15      .special { color: #6600FF; }
16    </style>
17  </head>
18  <body>
19    <!-- this class attribute applies the .special class -->
20    <h1 class = "special">Del tel & amp; Associates, Inc.</h1>
21
22    <p>Del tel & amp; Associates, Inc. is an Internationally
23    recognized corporate training and publishing organization
24    specializing in programming languages, Internet/World
25    Wide Web technology and object technology education.
26    The company provides courses on Java, C++, Visual Basic,
27    C#, C, Internet and World Wide Web programming, Object
28    Technology, and more.</p>
  
```

Style sheet begins

Sets the MIME type to text/css

Sets the properties for all elements in the document within em tags

Sets the properties for all h1 elements in the document

Sets the properties for all p elements in the document

Creates a special class

Style sheet ends

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```

32
33 <h1>Clients</h1>
34 <p class = "special"> The company's clients include many
35 <em>Fortune 1000 companies</em>, government agencies,
36 branches of the military and business organizations.
37 Through its publishing partnership with Prentice Hall,
38 Deitel & Associates, Inc. publishes leading-edge
39 programming textbooks, professional books, interactive
40 web-based multimedia Cyber Classrooms, satellite
41 courses and World Wide Web courses.</p>
42 </body>
43 </html >

```

**Fig. 5.2 | Embedded sheets (2 of 2).**

The special class is applied to this p element



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## 5.4 Conflicting Styles

- **Styles defined by the user take precedence over styles defined by the user agent**
- **Styles defined by authors take precedence over styles defined by the user**
- **Most styles are inherited from parent elements. Styles defined for children have higher specificity and take precedence over the parent's styles**
- **Conflicts are resolved in favor of properties with a higher specificity**

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## 5.4 Conflicting Styles (Cont.)

- **text-decoration property applies decorations to text in an element**

underline

overline

line-through

blink



## 5.4 Conflicting Styles (Cont.)

- **Pseudoclasses give the author access to content not specifically declared in the document**
- **Pseudoclasses are separated by a colon (with no surrounding spaces) from the name of the element to which they are applied**
- **hover pseudoclass is activated when the user moves the mouse cursor over an element**



## 5.4 Conflicting Styles (Cont.)

- **To apply rules to multiple elements, separate the elements with commas in the style sheet**
- **To apply rules to only a certain type of element that is a child of another type, separate the element names with spaces**



## 5.4 Conflicting Styles (Cont.)

- **Relative length measurements:**
  - px (pixels – size varies depending on screen resolution)
  - em (usually the height of a font's uppercase M)
  - ex (usually the height of a font's lowercase x)
  - Percentages (of the font's default size)
- **Absolute-length measurements (units that do not vary in size):**
  - in (inches)
  - cm (centimeters)
  - mm (millimeters)
  - pt (points; 1 pt = 1/72 in)
  - pc (picas; 1 pc = 12 pt)



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**Fig. 5.3 | Inheritance in style sheets (Part 1 of 3).**

```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.3: advanced.html -->
6 <!-- Inheritance in style sheets. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>More Styles</title>
10    <style type = "text/css">
11      body { font-family: arial, helvetica, sans-serif }
12      a.nodect { text-decoration: none }
13      a:hover { text-decoration: underline }
14      li em { font-weight: bold }
15      h1, em { text-decoration: underline }
16      ul { margin-left: 20px }
17      ul ul { font-size: .8em }
18    </style>
19  </head>
20  <body>
21    <h1>Shopping list for Monday.</h1>
22


```

Defines the class `nodect` that can only be used by anchor elements

Sets the properties for the `hover` pseudoclass for the `a` element, which is activated when the user moves the cursor over an anchor element

All `em` elements that are children of `li` elements set to bold

Applies underline style to all `h1` and `em` elements

  
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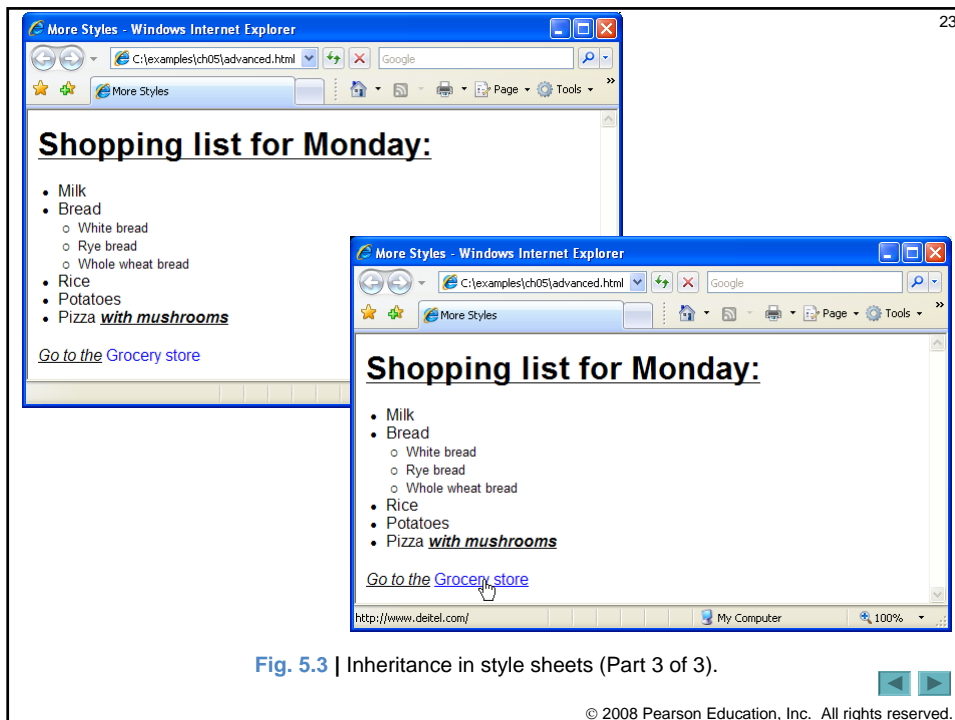
**Fig. 5.3 | Inheritance in style sheets (Part 2 of 3).**

```

23   <ul >
24     <li>Milk</li>
25     <li>Bread
26       <ul >
27         <li>White bread</li>
28         <li>Rye bread</li>
29         <li>Whole wheat bread</li>
30       </ul>
31     </li>
32     <li>Rice</li>
33     <li>Potatoes</li>
34     <li>Pizza <em>with mushrooms</em></li>
35   </ul>
36
37   <p><em>Go to the</em>
38     <a class = "nodect" href = "http://www.deltel.com">
39       Grocery store</a>
40   </p>
41 </body>
42 </html >

```

  
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## Portability Tip 5.1

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**To ensure that your style sheets work in various web browsers, test them on all the client web browsers that will render documents using your styles, as well as using the W3C CSS Validator.**

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## Common Programming Error 5.1

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**Including a space before or after the colon separating a pseudoclass from the name of the element to which it is applied is an error that prevents the pseudoclass from being applied properly.**



## Good Programming Practice 5.2

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**Whenever possible, use relative-length measurements. If you use absolute-length measurements, your document may not be readable on some client browsers (e.g., wireless phones).**



## 5.5 Linking External Style Sheets

- **External style sheets are separate documents that contain only CSS rules**
- **Help create a uniform look for a website**
  - separate pages can all use the same styles
  - **Modifying a single style-sheet file makes changes to styles across an entire website**



## Software Engineering Observation 5.1

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**Always use an external style sheet when developing a website with multiple pages. External style sheets separate content from presentation, allowing for more consistent look-and-feel, more efficient development, and better performance.**

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## 5.5 Linking External Style Sheets (Cont.)

- **link element**

- Uses **rel** attribute to specify a relationship between two documents
- **rel** attribute declares the linked document to be a stylesheet for the document

- **type** attribute specifies the MIME type of the related document

- **href** attribute provides the URL for the document containing the style sheet



```

1 /* Fig. 5.4: styles.css */
2 /* External stylesheet */
3
4 body { font-family: arial, helvetica, sans-serif }
5
6 a.nodect { text-decoration: none }
7
8 a:hover { text-decoration: underline }
9
10 li em { font-weight: bold }
11
12 h1, em { text-decoration: underline }
13
14 ul { margin-left: 20px }
15
16 ul ul { font-size: .8em; }

```

**Fig. 5.4 |**  
**External**  
**style sheet.**



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```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.6: external.html -->
6 <!-- Linking an external style sheet. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Linking External Style Sheets</title>
10    <link rel = "stylesheet" type = "text/css"
11         href = "styles.css" />
12  </head>
13  <body>
14    <h1>Shopping list for <em>Monday</em>:</h1>
15
16    <ul >
17      <li>Milk</li>
18      <li>Bread
19        <ul >
20          <li>White bread</li>
21          <li>Rye bread</li>
22          <li>Whole wheat bread</li>
23        </ul>
24      </li>
25      <li>Rice</li>
26      <li>Potatoes</li>
27      <li>Pizza <em>with mushrooms</em></li>
28    </ul>
29

```

**Fig. 5.5 | Linking an external style sheet (Part 1 of 2).**

The linked document is declared to be the current one's stylesheet

The linked document's MIME type is text/css

The linked document's URL is styles.css

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```

30 <p><em>Go to the</em>
31   <a class = "nodec" href = "http://www.deltel.com">
32     Grocery store</a>
33 </p>
34 </body>
35 </html >

```

**Fig. 5.5 | Linking an external style sheet (Part 2 of 2).**

Shopping list for *Monday*:

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

[Go to the Grocery store](#)

http://www.deltel.com/

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## Software Engineering Observation 5.2

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**External style sheets are reusable. Creating them once and reusing them reduces programming effort.**



## Performance Tip 5.1

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**Reusing external style sheets reduces load time and bandwidth usage on a server, since the style sheet can be downloaded once, stored by the web browser, and applied to all pages on a website.**



## 5.6 Positioning Elements

- **CSS position property**
  - Allows absolute positioning, which provides greater control over where on a page elements reside
  - Normally, elements are positioned on the page in the order that they appear in the XHTML document
  - Specifying an element's position as absolute removes it from the normal flow of elements on the page and positions it according to distance from the top, left, right or bottom margin of its parent element



## 5.6 Positioning Elements (Cont.)

- **The z-index property allows a developer to layer overlapping elements**
- **Elements that have higher z-index values are displayed in front of elements with lower z-index values**



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.6: positioning.html -->
6 <!-- Absolute positioning of elements. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Absolute Positioning</title>
10    <style type = "text/css">
11      .bgimg { position: absolute;
12              top: 0px;
13              left: 0px;
14              z-index: 1 }
15      .fgimg { position: absolute;
16              top: 25px;
17              left: 100px;
18              z-index: 2 }
19      .text { position: absolute;
20             top: 25px;
21             left: 100px;
22             z-index: 3;
23             font-size: 20pt;
24             font-family: tahoma, geneva, sans-serif }
25    </style>
26  </head>
27  <body>
28    <p><img src = "bgimg.gif" class = "bgimg"
29      alt = "First positioned image" /></p>
30

```

Class that sets an element's absolute position at the top left of the containing element

Lowest z-index, so this element is behind all the others

Set element's position 25px from the top and 100 from the left

This element will appear on top of the first one, since it has a higher z-index

This element will appear on top of all others, since it has the highest z-index

**Fig. 5.6 |**  
Absolute  
positioning  
of elements  
(Part 1 of 2).

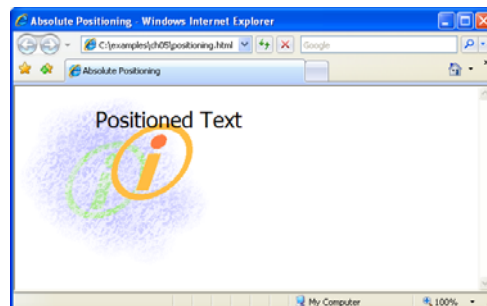
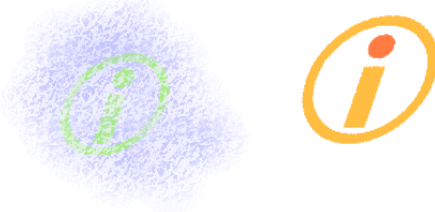
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```

31 <p><img src = "fgimg.gif" class = "fgimg"
32   alt = "Second positioned image" /></p>
33
34 <p class = "text">Posi ti oned Text</p>
35 </body>
36 </html >

```



**Fig. 5.6 |**  
Absolute  
positioning  
of elements  
(Part 2 of 2).

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## 5.6 Positioning Elements (Cont.)

- **Relative positioning keeps elements in the general flow on the page and offsets them by the specified top, left, right or bottom value**



## 5.6 Positioning Elements (Cont.)

- **Inline-level elements**
  - Do not change the flow of the document
  - Examples:
    - `img`
    - `a`
    - `em`
    - `strong`
    - `span`
      - Grouping element
      - Does not apply any formatting to its contents
      - Creates a container for CSS rules or `id` attributes to be applied to a section



## 5.6 Positioning Elements (Cont.)

### • Block-level elements

- Displayed on their own line
- Have virtual boxes around them
- Examples:
  - p
  - all headings (h1 through h6)
  - di v
    - A grouping element like span



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C/DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.7: positioning2.html -->
6 <!-- Relative positioning of elements. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Relative Positioning</title>
10    <style type = "text/css">
11      p      { font-size: 1.3em;
12             font-family: verdana, arial, sans-serif }
13      span   { color: red;
14             font-size: .6em;
15             height: 1em }
16      .super { position: relative;
17             top: -1ex }
18      .sub   { position: relative;
19             bottom: -1ex }
20      .shlftleft { position: relative;
21             left: -1ex }
22      .shltright { position: relative;
23             right: -1ex }
24    </style>
25  </head>
26  <body>
27    <p>The text at the end of this sentence
28    <span class = "super">is in superscript</span>.</p>
29

```

**Fig. 5.7 |**  
Relative  
positioning  
of elements  
(Part 1 of 2).

|  |                                     |
|--|-------------------------------------|
| <pre>16 .super { position: relative;</pre>     | Positions element 5 ex upwards      |
| <pre>17 top: -1ex }</pre>                      |                                     |
| <pre>18 .sub   { position: relative;</pre>     | Positions element 1 ex downwards    |
| <pre>19 bottom: -1ex }</pre>                   |                                     |
| <pre>20 .shlftleft { position: relative;</pre> | Positions element 1 ex to the left  |
| <pre>21 left: -1ex }</pre>                     |                                     |
| <pre>22 .shltright { position: relative;</pre> | Positions element 1 ex to the right |
| <pre>23 right: -1ex }</pre>                    |                                     |

Apply the super class to this span element

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```

30 <p>The text at the end of this sentence
31 <span class = "sub">is in subscript</span>. </p>
32
33 <p>The text at the end of this sentence
34 <span class = "shiftleft">is shifted left</span>. </p>
35
36 <p>The text at the end of this sentence
37 <span class = "shiftright">is shifted right</span>. </p>
38 </body>
39 </html >

```

Apply the sub class to this span element

Apply the shiftleft class to this span element

Apply the shiftright class to this span element

of elements

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## Common Programming Error 5.2

**Because relative positioning keeps elements in the flow of text in your documents, be careful to avoid unintentionally overlapping text.**

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## 5.7 Backgrounds

- **CSS can control the backgrounds of block-level elements by adding:**
  - Colors
  - Images



## 5.7 Backgrounds (Cont.)

- **Property background-image**
  - Specifies the URL of the image, in the format `url(fileLocation)`
- **Property background-position**
  - Places the image on the page using the values `top`, `bottom`, `center`, `left` and `right` individually or in combination for vertical and horizontal positioning. You can also position by using lengths



## 5.7 Backgrounds (Cont.)

- **Property background-image specifies the URL of the image**
  - Use the format url (*fileLocation*)
- **Property background-position places the image on the page**
  - Use the values top, bottom, center, left and right individually or in combination for vertical and horizontal positioning
  - You can also position by specifying horizontal then vertical distances from the top-left corner of the screen



## 5.7 Backgrounds (Cont.)

- **background-repeat property controls the tiling of the background image**
  - Setting the tiling to no-repeat displays one copy of the background image on screen
  - Setting to repeat (the default) tiles the image vertically and horizontally
  - Setting to repeat-x tiles the image only horizontally
  - Setting to repeat-y tile the image only vertically





## 5.7 Backgrounds (Cont.)

- **Property setting**

- background-attachment: fixed

- fixes the image in the position specified by background-position. Scrolling the browser window will not move the image from its set position. The default value, scroll, moves the image as the user scrolls the window



## 5.7 Backgrounds (Cont.)

- **text-indent** property indents the first line of text in the element by the specified amount
- **font-style** property allows you to set text to none, italic or oblique



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```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.8: background.html -->
6 <!-- Adding background Images and Indentation. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Background Images</title>
10    <style type = "text/css">
11      body { background-image: url(logo.gif);
12            background-position: bottom right;
13            background-repeat: no-repeat;
14            background-attachment: fixed;
15            background-color: #e0e0e0;
16            p { font-size: 18pt;
17              color: #1144AA;
18              text-indent: 1em;
19              font-family: arial, sans-serif; }
20            .dark { font-weight: bold; }
21    </style>
22  </head>

```

**Fig. 5.8 | Adding background images and indentation (Part 1 of 2).**

- Inserts the image at logo.gif as the background
- Places the image at the bottom right of the page
- Displays only one copy of the image
- Keeps the image in place when the user scrolls in the browser window
- Fills the remainder of the window with a light gray background
- Indents the first line of text in the element by 1 em

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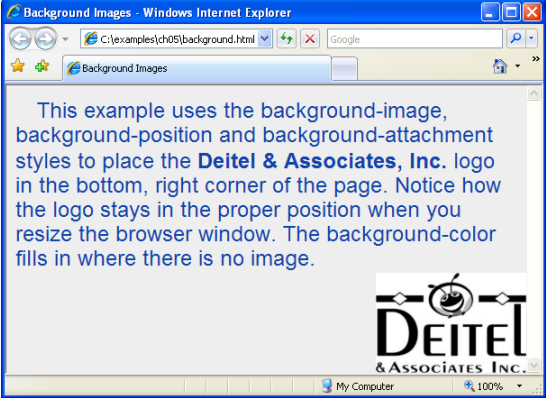
52

```

23 <body>
24 <p>
25   This example uses the background-image,
26   background-position and background-attachment
27   styles to place the <span class = "dark">Deitel
28   & Associates, Inc.</span> logo in the bottom,
29   right corner of the page. Notice how the logo
30   stays in the proper position when you resize the
31   browser window. The background-color fills in where
32   there is no image.
33 </p>
34 </body>
35 </html >

```

**Fig. 5.8 | Adding background images and indentation (Part 2 of 2).**



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## 5.8 Element Dimensions

- **Dimensions of elements on a page can be set with CSS by using properties height and width**
  - Their values can be relative or absolute
- **Text in an element can be centered using text-align: center; other values for the text-align property are left and right**



## 5.8 Element Dimensions (Cont.)

- **Problem with setting both vertical and horizontal dimensions of an element**
  - Content might sometimes exceed the set boundaries, in which case the element must be made large enough for all the content to fit
  - Can set the overflow property to scroll, which adds scroll bars if the text overflows the boundaries set for it



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.9: width.html -->
6 <!-- Element dimensions and text alignment. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Box Dimensions</title>
10    <style type = "text/css">
11      div { background-color: #aaccff;
12            margin-bottom: .5em;
13            font-family: arial, helvetica, sans-serif }
14    </style>
15  </head>
16  <body>
17    <div style = "width: 20%">Here is some
18      text that goes in a box which is
19      set to stretch across twenty percent
20      of the width of the screen.</div>
21
22    <div style = "width: 80% text-align: center">
23      Here is some CENTERED text that goes in a box
24      which is set to stretch across eighty percent of
25      the width of the screen.</div>
26

```

**Fig. 5.9 | Element dimensions and text alignment (Part 1 of 2).**

Sets the width of the element to 20% of the browser's screen's size

Sets the width of the element to 80% of the browser's screen's size and centers it

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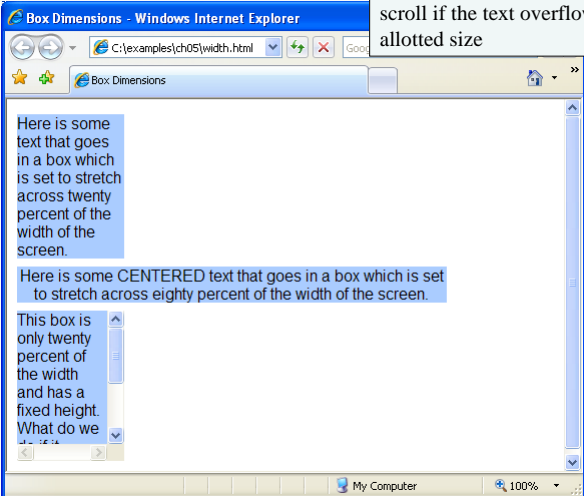
```

27 <div style = "width: 20%; height: 150px; overflow: scroll">
28   This box is only twenty percent of
29   the width and has a fixed height.
30   What do we do if it overflows? Set the
31   overflow property to scroll!</div>
32 </body>
33 </html>

```

**Fig. 5.9 | Element dimensions and text alignment (Part 2 of 2).**

Sets the width of the element to 20% of the browser's screen's size, the height to 150 px, and allows the element to scroll if the text overflows the allotted size



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## 5.9 Box Model and Text Flow

- **Block-level XHTML elements have a virtual box drawn around them based on the box model**
- **When the browser renders using the box model, each element is surrounded by:**
  - **Padding**
    - The padding property determines the distance between the content inside an element and the edge of the element
    - Padding be set for each side of the box by using `padding-top`, `padding-right`, `padding-left` and `padding-bottom`
  - **Margin**
    - Determines the distance between the element's edge and any outside text
    - Margins for individual sides of an element can be specified by using `margin-top`, `margin-right`, `margin-left` and `margin-bottom`
  - **Border**



## 5.9 Box Model and Text Flow (Cont.)

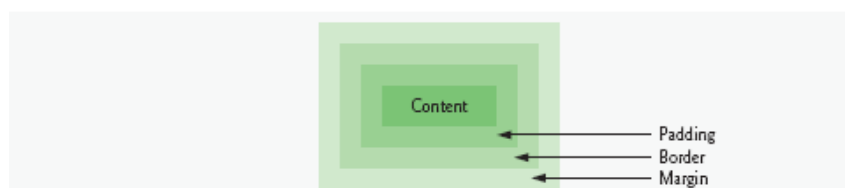
- **The border is controlled using the properties:**
  - **border-width**
    - May be set to any of the CSS lengths or to the predefined value of `thin`, `medium` or `thick`
  - **border-color**
    - Sets the color used for the border
  - **border-style**
    - Options are: `none`, `hidden`, `dotted`, `dashed`, `solid`, `double`, `groove`, `ridge`, `inset` and `outset`



## 5.9 Box Model and Text Flow (Cont.)

- **class attribute**

- allows more than one class to be assigned to an **XHTML** element by separating each class name from the next with a space



**Fig. 5.10** | Box model for block-level elements.



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.11: borders.html -->
6 <!-- Borders of block-level elements. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Borders</title>
10    <style type = "text/css">
11      div { text-align: center;
12            width: 50%;
13            position: relative;
14            left: 25%;
15            border-width: 4px }
16    .medium { border-width: medium }
17    .thin { border-width: thin }
18    .solid { border-style: solid }
19    .double { border-style: double }
20    .groove { border-style: groove }
21    .inset { border-style: inset }
22    .outset { border-style: outset }
23    .dashed { border-style: dashed }
24    .red { border-color: red }
25    .blue { border-color: blue }
26  </style>
27 </head>

```

**Fig. 5.11 |**  
**Borders of**  
**block-level**  
**elements**  
**(Part 1 of 2).**

Defines several border classes

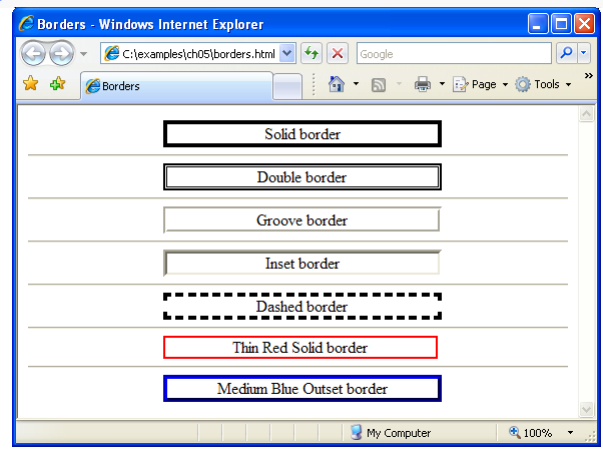
```

28 <body>
29 <div class = "solid">Solid border</div><hr />
30 <div class = "double">Double border</div><hr />
31 <div class = "groove">Groove border</div><hr />
32 <div class = "inset">Inset border</div><hr />
33 <div class = "dashed">Dashed border</div><hr />
34 <div class = "thin red solid">Thin Red Solid border</div><hr />
35 <div class = "medium blue outset">Medium Blue Outset border</div>
36 </body>
37 </html >

```

Applies several classes to the same element

**Fig. 5.11 |**  
**Borders of**  
**block-level**  
**elements**  
**(Part 2 of 2).**



## 5.9 Box Model and Text Flow (Cont.)

- Browsers normally place text and elements on screen in the order in which they appear in the XHTML file.
- Elements can be removed from the normal flow of text.
- Floating allows you to move an element to one side of the screen; other content in the document will then flow around the floated element



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.12: floating.html -->
6 <!-- Floating elements. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Flowing Text Around Floating Elements</title>
10    <style type = "text/css">
11      div.heading { background-color: #bdddff;
12                  text-align: center;
13                  font-family: arial, helvetica, sans-serif;
14                  padding: .2em }
15      p
16      { text-align: justify;
17        font-family: verdana, geneva, sans-serif;
18        margin: .5em }
19      div.floated { background-color: #eeeeee;
20                  font-size: 1.5em;
21                  font-family: arial, helvetica, sans-serif;
22                  padding: .2em;
23                  margin-left: .5em;
24                  margin-bottom: .5em;
25                  float: right;
26                  text-align: right;
27                  width: 50% }
28      div.section { border: 1px solid #bdddff; }
29    </style>
30  </head>

```

**Fig. 5.12 |**  
**Floating**  
**elements**  
**(Part 1 of 3).**


Sets a spacing of .5 em from the outside of the border to all other content

Sets a spacing of .2 em from the inside of the border to the element's content

Define left and right margins

Moves element to the right, and lets other content flow around it

Defines the border for this div class



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```

30 <body>
31 <div class = "header"><img src = "deitel.png" alt = "Deitel" />
32 </div>
33 <div class = "section">
34 <div class = "floated">Corporate Training and Publishing</div>
35 <p>Deitel & Associates, Inc. is an internationally
36 recognized corporate training and publishing organization
37 specializing in programming languages, Internet/World
38 Wide Web technology and object technology education.
39 The company provides courses on Java, C++, Visual Basic, C#,
40 C, Internet and web programming, Object
41 Technology, and more.</p>
42 </div>
43 <div class = "section">
44 <div class = "floated">Leading-Edge Programming Textbooks</div>
45 <p>Through its publishing
46 partnership with Prentice Hall, Deitel & Associates,
47 Inc. publishes leading-edge programming textbooks,
48 professional books, interactive CD-ROM-based multimedia
49 Cyber Classrooms, satellite courses and DVD and web-based
50 video courses.</p>
51 </div>
52 </body>
53 </html>


```

**Fig. 5.12 |**  
**Floating**  
**elements**  
**(Part 2 of 3).**




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**Fig. 5.12 |** Floating elements (Part 3 of 3).



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## 5.10 Media Types

- **CSS media types**
  - allow a programmer to decide what a page should look like depending on the kind of media being used to display the page
  - Most common media type for a web page is the **screen** media type, which is a standard computer screen



## 5.10 Media Types (Cont.)

- A block of styles that applies to all media types is declared by **@media all** and enclosed in curly braces
- To create a block of styles that apply to a single media type such as **print**, use **@media print** and enclose the style rules in curly braces



## 5.10 Media Types (Cont.)

- **Other media types in CSS 2 include:**
  - **handheld**
    - Designed for mobile Internet devices
  - **braille**
    - For machines that can read or print web pages in braille
  - **aural**
    - Allow the programmer to give a speech-synthesizing web browser more information about the content of the web page
  - **print**
    - Affects a web page's appearance when it is printed



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.13: mediatypes.html -->
6 <!-- CSS media types. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>Media Types</title>
10    <style type = "text/css">
11      @media all
12      {
13        body { background-color: #4488aa }
14        h1 { font-family: verdana, helvetica, sans-serif;
15            color: #aaffcc }
16        p { font-size: 12pt;
17           color: white;
18           font-family: arial, sans-serif }
19      } /* end @media all declaration. */
20      @media print
21      {
22        body { background-color: white }
23        h1 { color: #008844 }
24        p { font-size: 14pt;
25           color: #4488aa;
26           font-family: "times new roman", times, serif }
27      } /* end @media print declaration. */
28    </style>
29  </head>
30  <body>
31    <h1>CSS Media Types Example</h1>

```

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**Fig. 5.13 |  
CSS media  
types (Part 1)**

Sets properties for all media types

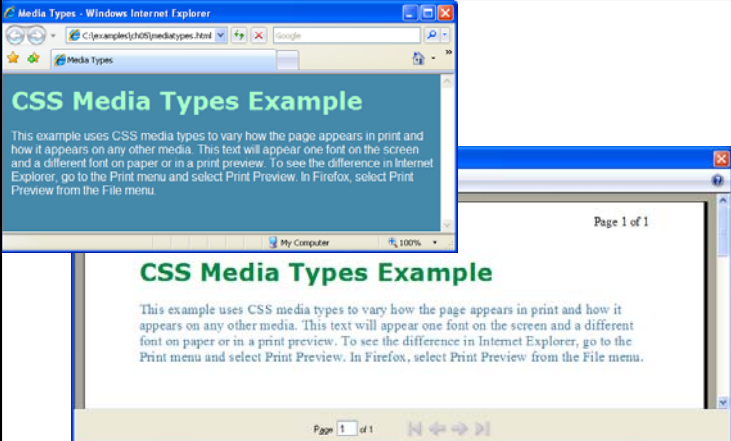
Sets properties for a page if it is being printed

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```

32
33 <p>
34 This example uses CSS media types to vary how the page
35 appears in print and how it appears on any other media.
36 This text will appear one font on the screen and a
37 different font on paper or in a print preview. To see
38 the difference in Internet Explorer, go to the Print
39 menu and select Print Preview. In Firefox, select Print
40 Preview from the File menu.
41 </p>
42 </body>
43 </html >

```



**Fig. 5.13 | CSS media types (Part 2 of 2).**

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## Look-and-Feel Observation 5.1

**Pages with dark background colors and light text use a lot of ink and may be difficult to read when printed, especially on a black-and-white-printer. Use the print media type to avoid this.**

## Look-and-Feel Observation 5.2

---

**In general, sans-serif fonts look better on a screen, while serif fonts look better on paper. The print media type allows your web page to display sans-serif font on a screen and change to a serif font when it is printed.**

---



## 5.11 Building a CSS Drop-Down Menu

- **: hover pseudoclass**
  - used to apply styles to an element when the mouse cursor is over it
- **display property**
  - allows a programmer to decide if an element is displayed as a block element, inline element, or is not rendered at all (none)



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.14: dropdown.html -->
6 <!-- CSS drop-down menu. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>
10      Drop-Down Menu
11    </title>
12    <style type = "text/css">
13      body      { font-family: arial, sans-serif }
14      div.menu  { font-weight: bold;
15                color: white;
16                border: 2px solid #225599;
17                text-align: center;
18                width: 10em;
19                background-color: #225599 }
20      div.menu:hover a { display: none; }
21      div.menu a { display: none;
22                  border-top: 2px solid #225599;
23                  background-color: white;
24                  width: 10em;
25                  text-decoration: none;
26                  color: black }
27      div.menu a:hover { background-color: #d7e9ff }
28    </style>
29  </head>
30  <body>

```

**Fig. 5.14 |**  
CSS drop-  
down menu  
(Part 1 of 2).

Sets anchor elements in a menu div to be displayed as block-level when the menu is moused over.

Prevents the browser from rendering the links inside the menu div

Sets anchor elements in a menu div to have a light-blue background when they are moused-over

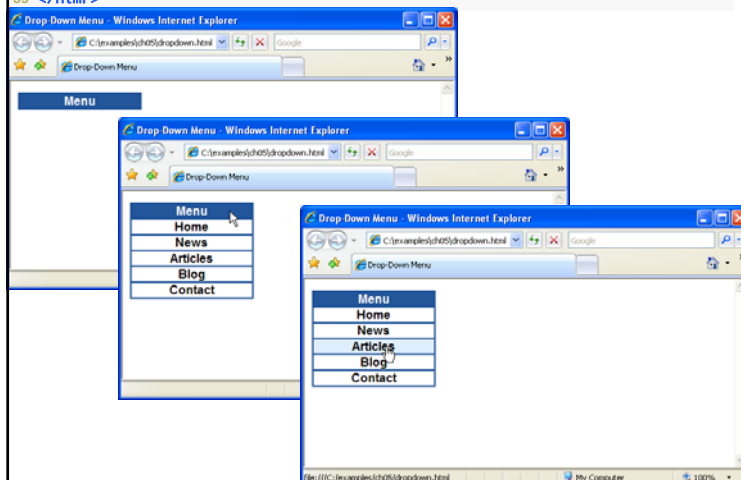
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```

31 <div class = "menu">Menu
32 <a href = "#">Home</a>
33 <a href = "#">News</a>
34 <a href = "#">Articles</a>
35 <a href = "#">Blog</a>
36 <a href = "#">Contact</a>
37 </div>
38 </body>
39 </html >

```

**Fig. 5.14 |**  
CSS drop-  
down menu  
(Part 2 of 2).



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## 5.12 User Style Sheets

- Users can define their own user style sheets to format pages based on their preferences
- Absolute font size measurements override user style sheets, while relative font sizes will yield to a user-defined style
- User style sheets are not linked to a document; rather, they are set in the browser's options



```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.15: user_absolute.html -->
6 <!-- pt measurement for text size. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>User Styles</title>
10    <style type = "text/css">
11      .note { font-size: 9pt }
12    </style>
13  </head>
14  <body>
15    <p>Thanks for visiting my website. I hope you enjoy it.
16    </p><p class = "note">Please Note: This site will be
17    moving soon. Please check periodically for updates.</p>
18  </body>
19 </html >

```

**Fig. 5.15 | pt measurement for text size.**

A class defined by the author with absolute measurements: a font-size of 9 pt

The screenshot shows a browser window titled "User Styles - Windows Internet Explorer". The address bar shows "C:\examples\ch05\user\_absolute.html". The page content displays "Thanks for visiting my website. I hope you enjoy it." followed by a note in a smaller font: "Please Note: This site will be moving soon. Please check periodically for updates." The status bar at the bottom shows "My Computer" and "100%".

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```
1 /* Fig. 5.16: userstyles.css */
2 /* A user stylesheet */
3 body { font-size: 20pt;
4       color: yellow;
5       background-color: #000080 }
```

A different font-size of 20 pt is defined by the user for all body elements

**Fig. 5.16 | User style sheet.**

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**Fig. 5.17 | User style sheet in Internet Explorer 7.**

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The author's style has higher precedence than the user's, so the font is 9 pt

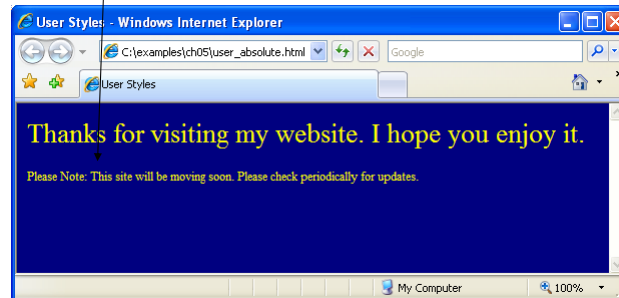


Fig. 5.18 | User style sheet applied with pt measurement.



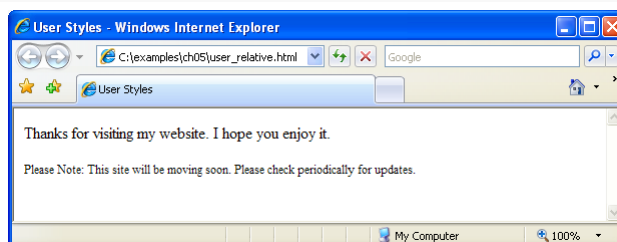
```

1 <?xml version = "1.0" encoding = "utf-8"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4
5 <!-- Fig. 5.19: user_relative.html -->
6 <!-- em measurement for text size. -->
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8   <head>
9     <title>User Styles</title>
10    <style type = "text/css">
11      .note { font-size: .75em }
12    </style>
13  </head>
14  <body>
15    <p>Thanks for visiting my website. I hope you enjoy it.
16    </p><p class = "note">Please Note: This site will be
17    moving soon. Please check periodically for updates.</p>
18  </body>
19 </html >

```

Fig. 5.19 | em measurement for text size.

A relative measurement of .75 em is used by the author for the font size



The user style sheet is considered, so the font-size is 15 pt (.75 em for 20 pt)

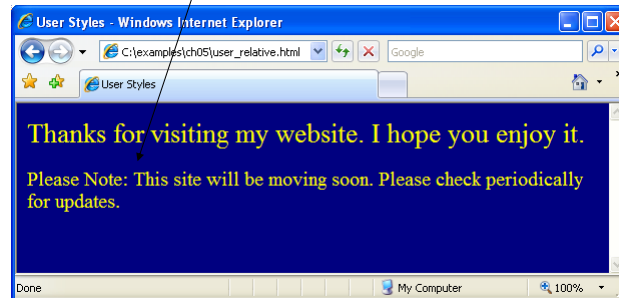


Fig. 5.20 | User style sheet applied with em measurement.



## 5.13 CSS 3

- **While CSS 2 is the current W3C Recommendation, CSS 3 is in development, and some browsers are beginning to implement some of the new features that will be in the CSS 3 specification**
- **CSS 3 will introduce new features related to borders, backgrounds, text effects, layout, and more**

