Outline

CSS: Cascading Style Sheets

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 page

Multiple Levels of Style Definition

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

Inline Styles

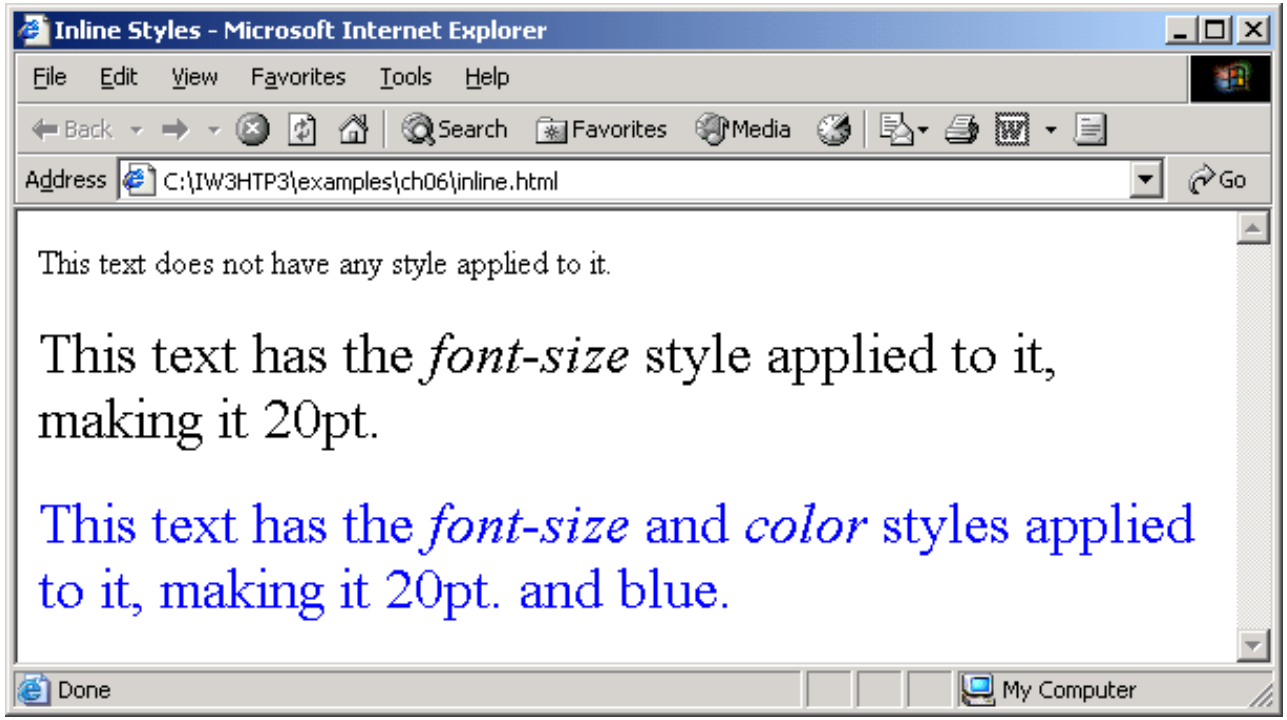
- style information is directly attached to the HTML elements they affect
- higher cascade precedence than the other specification methods
- declaring an individual element's format:
  - Attribute `style`
  - CSS (style) property
    - Followed by a colon and a value

Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.1: inline.html -->
6  <!-- Using inline styles   -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>Inline Styles</title>
11    </head>
12
13    <body>
14
15       <p>This text does not have any style applied to it.</p>
16
17       <!-- The style attribute allows you to declare -->
18       <!-- inline styles. Separate multiple styles   -->
19       <!-- with a semicolon.                         -->
20       <p style = "font-size: 20pt">This text has the
21       <em>font-size</em> style applied to it, making it 20pt.
22       </p>
23
```

Outline

```
24        <p style = "font-size: 20pt; color: #0000ff">
25        This text has the <em>font-size</em> and
26        <em>color</em> styles applied to it, making it
27        20pt. and blue.</p>
28
29     </body>
30  </html>
```



Embedded 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 Style Sheets

- 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 can not 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

Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.2: declared.html                          -->
6  <!-- Declaring a style sheet in the header section. -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>Style Sheets</title>
11
12       <!-- this begins the style sheet section -->
13       <style type = "text/css">
14
15          em       { background-color: #8000ff;
16                     color: white }
17
18          h1       { font-family: arial, sans-serif }
19
20          p        { font-size: 14pt }
21
22          .special { color: blue }
23
24       </style>
25    </head>
```

← Style Class selector: applicable to any element in this document

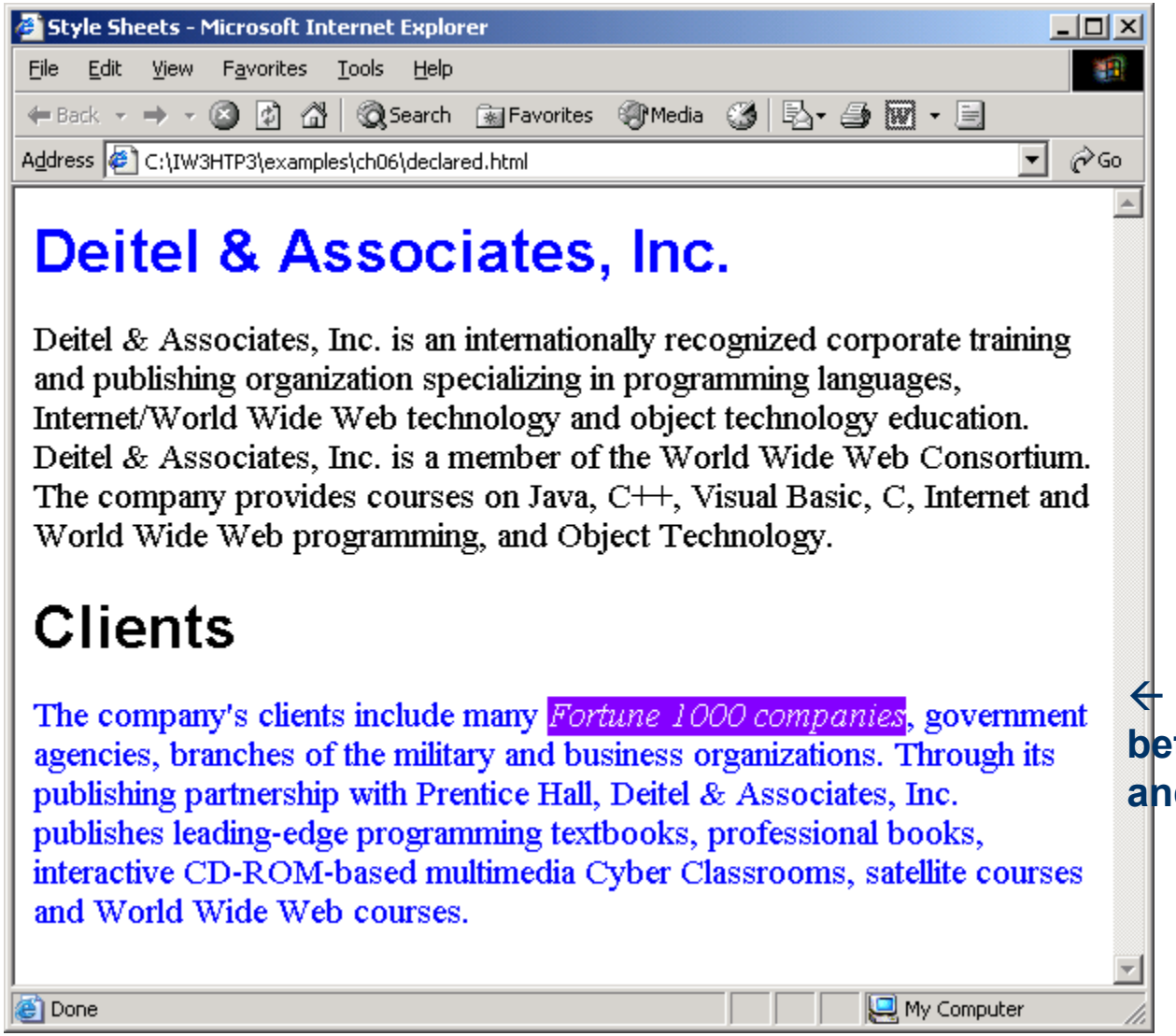
Outline

```
26
27    <body>
28
29       <!-- this class attribute applies the .special style -->
30       <h1 class = "special">Deitel & Associates, Inc.</h1>
31
32       <p>Deitel &amp; Associates, Inc. is an internationally
33       recognized corporate training and publishing organization
34       specializing in programming languages, Internet/World
35       Wide Web technology and object technology education.
36       Deitel &amp; Associates, Inc. is a member of the World Wide
37       Web Consortium. The company provides courses on Java,
38       C++, Visual Basic, C, Internet and World Wide Web
39       programming, and Object Technology.</p>
40
41       <h1>Clients</h1>
42       <p class = "special"> The company's clients include many
43       <em>Fortune 1000 companies</em>, government agencies,
44       branches of the military and business organizations.
45       Through its publishing partnership with Prentice Hall,
46       Deitel &amp; Associates, Inc. publishes leading-edge
47       programming textbooks, professional books, interactive
48       CD-ROM-based multimedia Cyber Classrooms, satellite
49       courses and World Wide Web courses.</p>
50
```

← Style Class "special" invoked for h1 element

← Style Class "special" invoked for p element

```
51    </body>
52 </html>
```



← `color` Conflict resolution between parent element `p` and child element `em`

Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig 6.3: advanced.html     -->
6  <!-- More advanced style sheets -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>More Styles</title>
11
12       <style type = "text/css">
13
14          a.nodec  { text-decoration: none }
15
16          a:hover  { text-decoration: underline;
17                     color: red;
18                     background-color: #ccffcc }
19
20          li em    { color: red;
21                     font-weight: bold }
22
23          ul       { margin-left: 75px }
24
```

← Style Class: applicable only to element a in this document

← Pseudoclass: applicable only to element a in this document. (note different syntax)

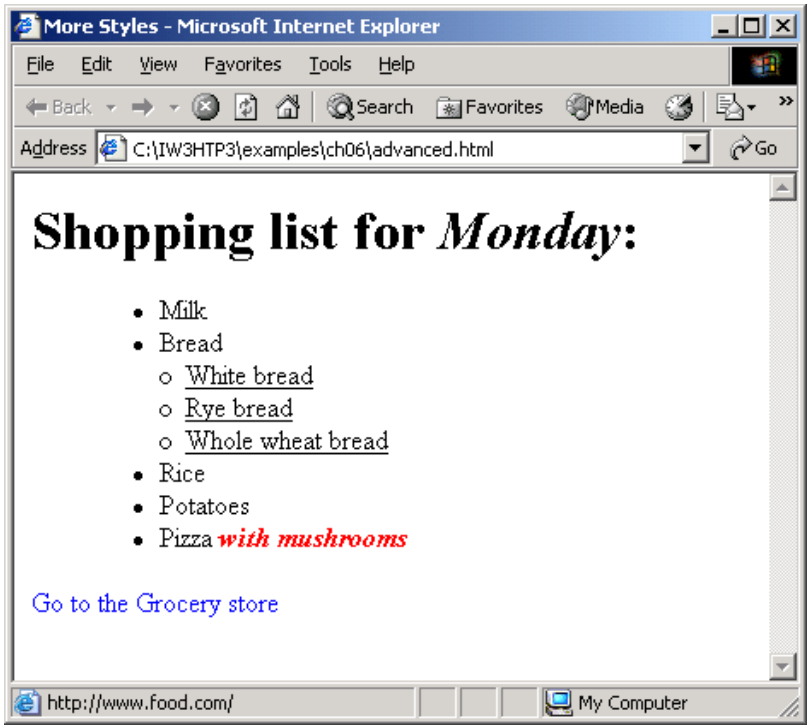
← This is NOT a group selector. It declares that this specific style is applicable to em elements inside an `li` element

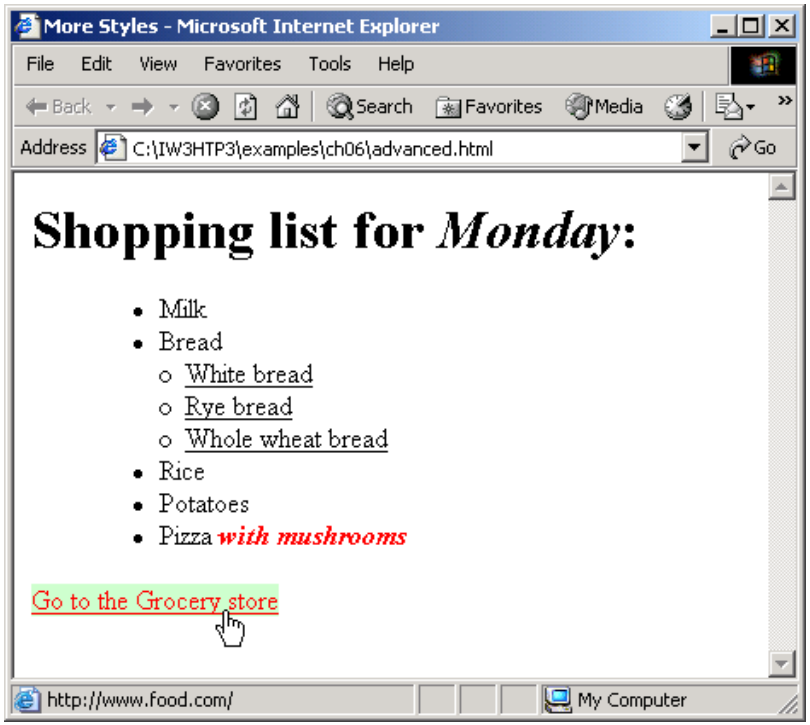
Outline

```
25          ul ul    { text-decoration: underline;
26                       margin-left: 15px }
27
28       </style>
29    </head>
30
31    <body>
32
33       <h1>Shopping list for <em>Monday</em>:</h1>
34
35       <ul>
36          <li>Milk</li>
37          <li>Bread
38             <ul>
39                <li>White bread</li>
40                <li>Rye bread</li>
41                <li>Whole wheat bread</li>
42             </ul>
43          </li>
44          <li>Rice</li>
45          <li>Potatoes</li>
46          <li>Pizza <em>with mushrooms</em></li>
47       </ul>
48
```

Outline

```
49        <p><a class = "nodec" href = "http://www.food.com">
50        Go to the Grocery store</a></p>
51
52     </body>
53  </html>
```





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 the 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.

Outline

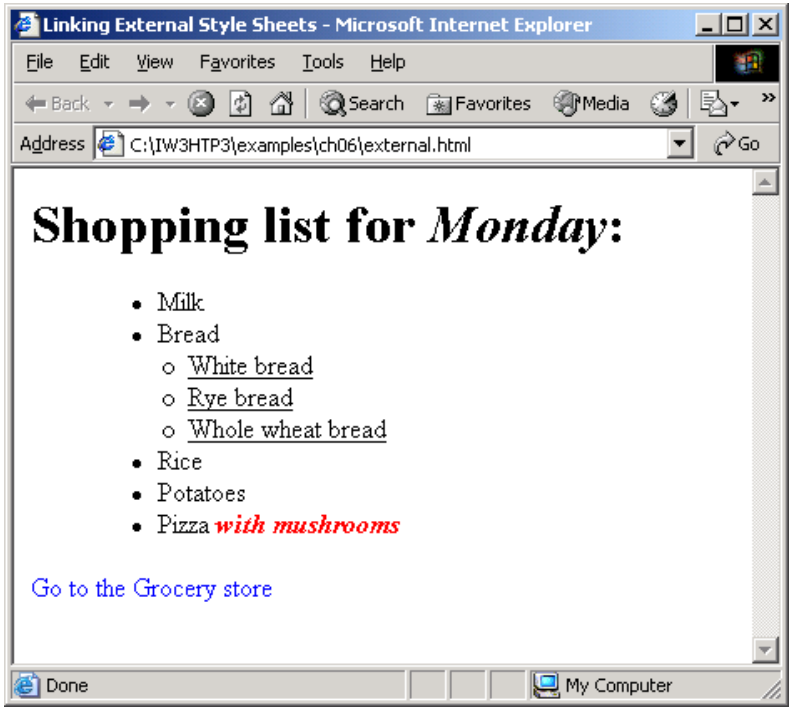
```
1  /* Fig. 6.4: styles.css   */
2  /* An external stylesheet */
3
4  a       { text-decoration: none }
5
6  a:hover { text-decoration: underline;
7            color: red;
8            background-color: #ccffcc }
9
10 li em   { color: red;
11           font-weight: bold;
12           background-color: #ffffff }
13
14 ul      { margin-left: 2cm }
15
16 ul ul   { text-decoration: underline;
17           margin-left: .5cm }
```

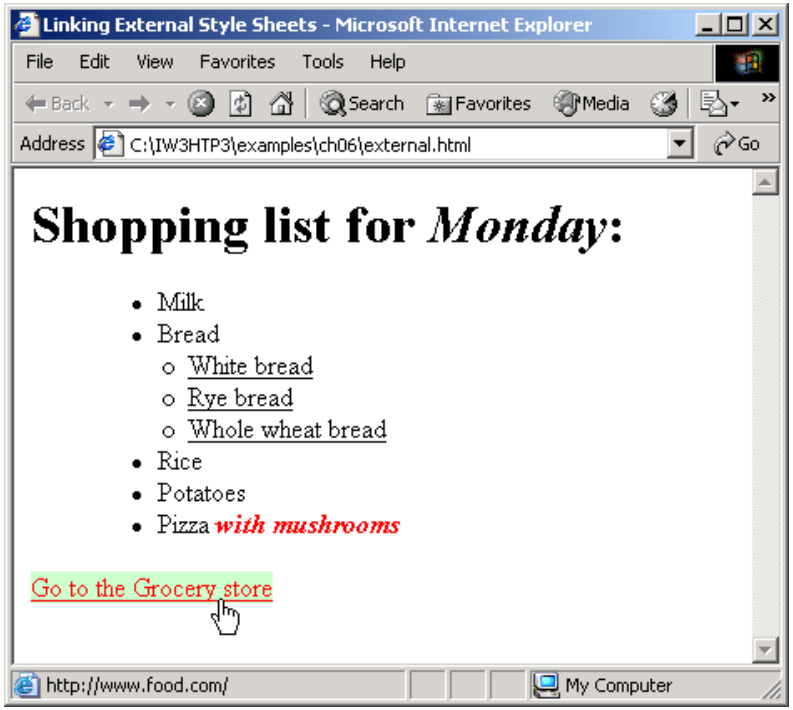
Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.5: external.html        -->
6  <!-- Linking external style sheets  -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>Linking External Style Sheets</title>
11       <link rel = "stylesheet" type = "text/css"
12          href = "styles.css" />
13    </head>
14
15    <body>
16
17       <h1>Shopping list for <em>Monday</em>:</h1>
18       <ul>
19          <li>Milk</li>
20          <li>Bread
21             <ul>
22                <li>White bread</li>
23                <li>Rye bread</li>
24                <li>Whole wheat bread</li>
25             </ul>
```

Outline

```
26          </li>
27          <li>Rice</li>
28          <li>Potatoes</li>
29          <li>Pizza <em>with mushrooms</em></li>
30        </ul>
31
32        <p>
33        <a href = "http://www.food.com">Go to the Grocery store</a>
34        </p>
35
36      </body>
37  </html>
```





W3C CSS Validation Service

- Validates external CSS documents
- Ensures that style sheets are syntactically correct
- http://jigsaw.w3.org/css-validator/

Text Flow and the Box Model

- Floating
  - Move an element to one side of the screen
- Box model
  - Margins
  - Padding
  - Border

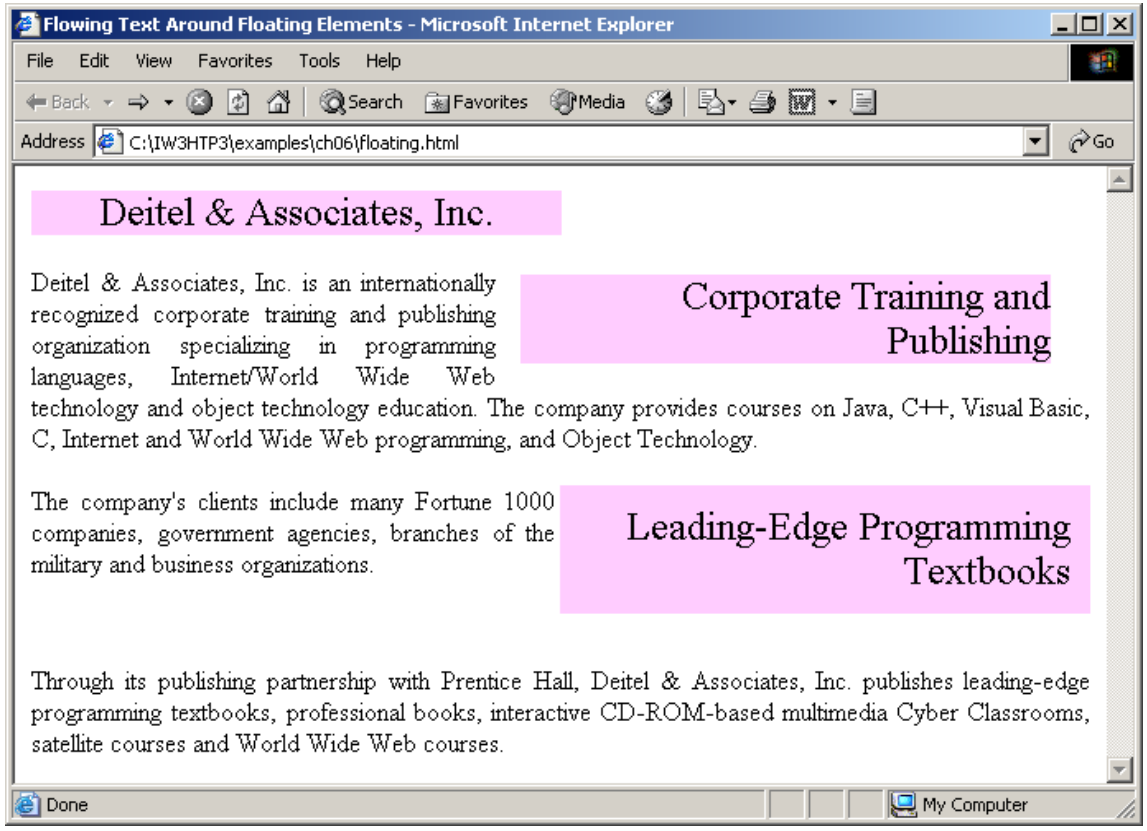
Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.12: floating.html            -->
6  <!-- Floating elements and element boxes -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>Flowing Text Around Floating Elements</title>
11
12       <style type = "text/css">
13
14          div { background-color: #ffccff;
15                margin-bottom: .5em;
16                font-size: 1.5em;
17                width: 50% }
18
19          p   { text-align: justify }
20
21       </style>
22
23    </head>
24
```

Outline

```
25    <body>
26
27       <div style = "text-align: center">
28          Deitel &amp;amp; Associates, Inc.</div>
29
30       <div style = "float: right; margin: .5em;
31          text-align: right">
32          Corporate Training and Publishing</div>
33
34       <p>Deitel &amp;amp; Associates, Inc. is an internationally
35       recognized corporate training and publishing organization
36       specializing in programming languages, Internet/World
37       Wide Web technology and object technology education.
38       The company provides courses on Java, C++, Visual Basic, C,
39       Internet and World Wide Web programming, and Object Technology.</p>
40
41       <div style = "float: right; padding: .5em;
42          text-align: right">
43          Leading-Edge Programming Textbooks</div>
44
45       <p>The company's clients include many Fortune 1000
46       companies, government agencies, branches of the military
47       and business organizations.</p>
48
```

```
49       <p style = "clear: right">Through its publishing
50       partnership with Prentice Hall, Deitel &amp;amp; Associates,
51       Inc. publishes leading-edge programming textbooks,
52       professional books, interactive CD-ROM-based multimedia
53       Cyber Classrooms, satellite courses and World Wide Web
54       courses.</p>
55
56    </body>
57 </html>
```



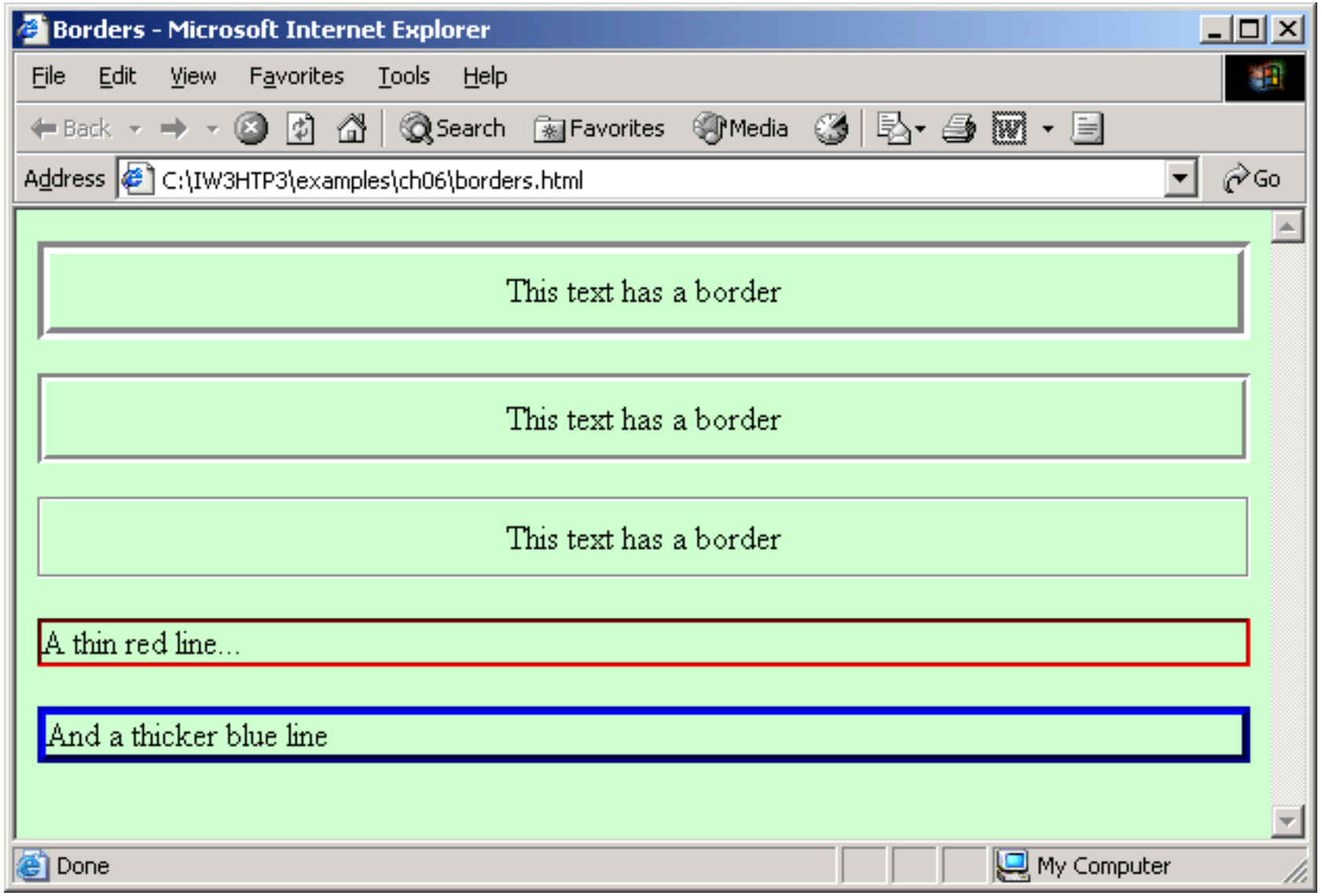
Text Flow and the Box Model

Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.14: borders.html       -->
6  <!-- Setting borders of an element -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>Borders</title>
11
12       <style type = "text/css">
13
14          body    { background-color: #ccffcc }
15
16          div     { text-align: center;
17                    margin-bottom: 1em;
18                    padding: .5em }
19
20          .thick  { border-width: thick }
21
22          .medium { border-width: medium }
23
24          .thin   { border-width: thin }
25
```

Outline

```
26          .groove { border-style: groove }
27
28          .inset  { border-style: inset }
29
30          .outset { border-style: outset }
31
32          .red    { border-color: red }
33
34          .blue   { border-color: blue }
35
36       </style>
37    </head>
38
39    <body>
40
41       <div class = "thick groove">This text has a border</div>
42       <div class = "medium groove">This text has a border</div>
43       <div class = "thin groove">This text has a border</div>
44
45       <p class = "thin red inset">A thin red line...</p>
46       <p class = "medium blue outset">
47          And a thicker blue line</p>
48
49    </body>
50 </html>
```


Borders - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address C:\IW3HTP3\examples\ch06\borders.html
Go
This text has a border
This text has a border
This text has a border
A thin red line...
And a thicker blue line
Done
My Computer

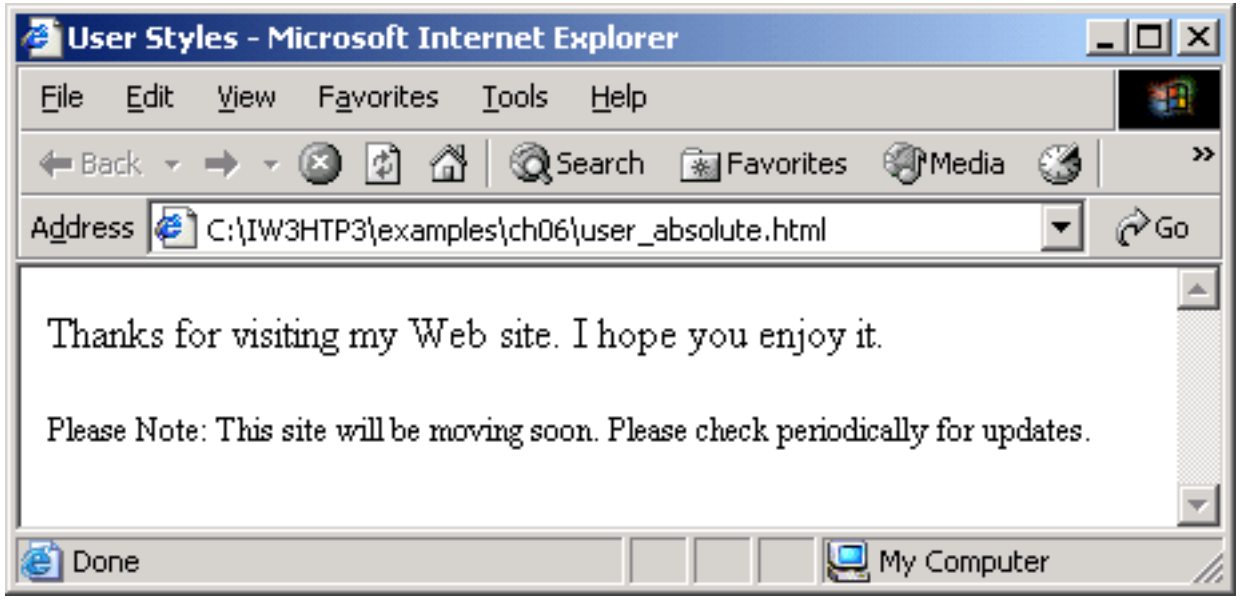
User Style Sheets

- Format pages based on user preferences
- User style sheets are not linked in the document
  - They are set in browser's options

Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.16: user_absolute.html   -->
6  <!-- User styles                     -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>User Styles</title>
11
12       <style type = "text/css">
13
14          .note { font-size: 9pt }
15
16       </style>
17    </head>
18
19    <body>
20
21       <p>Thanks for visiting my Web site. I hope you enjoy it.
22       </p><p class = "note">Please Note: This site will be
23       moving soon. Please check periodically for updates.</p>
```

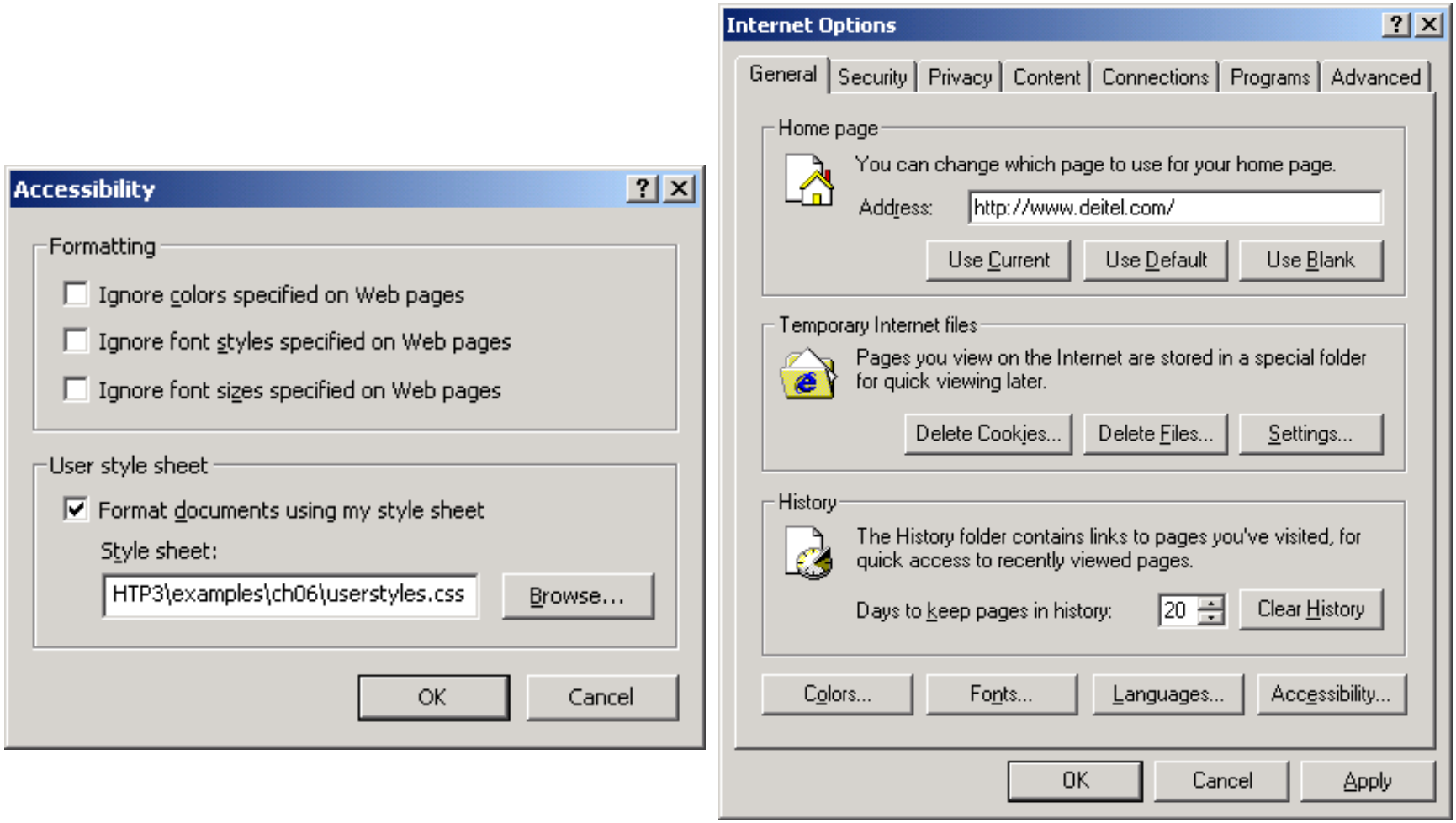
```
24
25     </body>
26 </html>
```



Outline

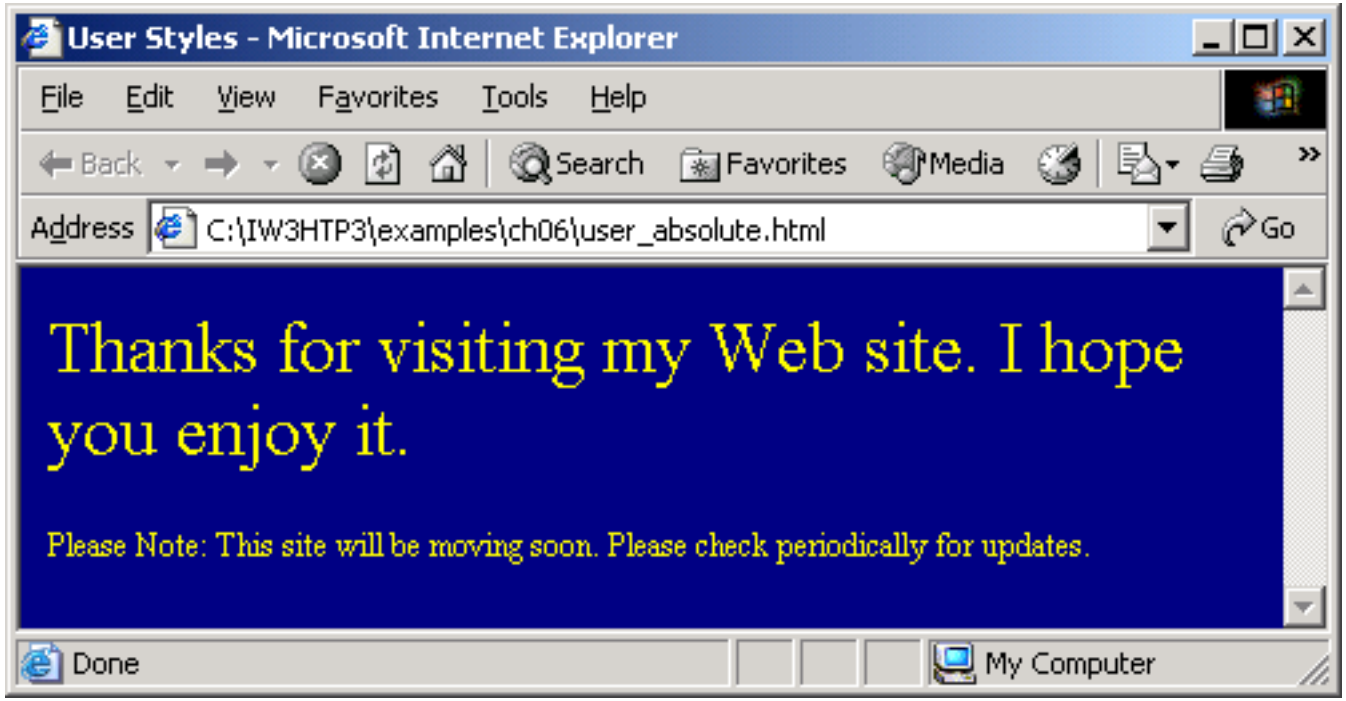
```
1  /* Fig. 6.17: userstyles.css */
2  /* A user stylesheet         */
3
4  body     { font-size: 20pt;
5             color: yellow;
6             background-color: #000080 }
```

User Style Sheets



User style sheet in Internet Explorer 6.

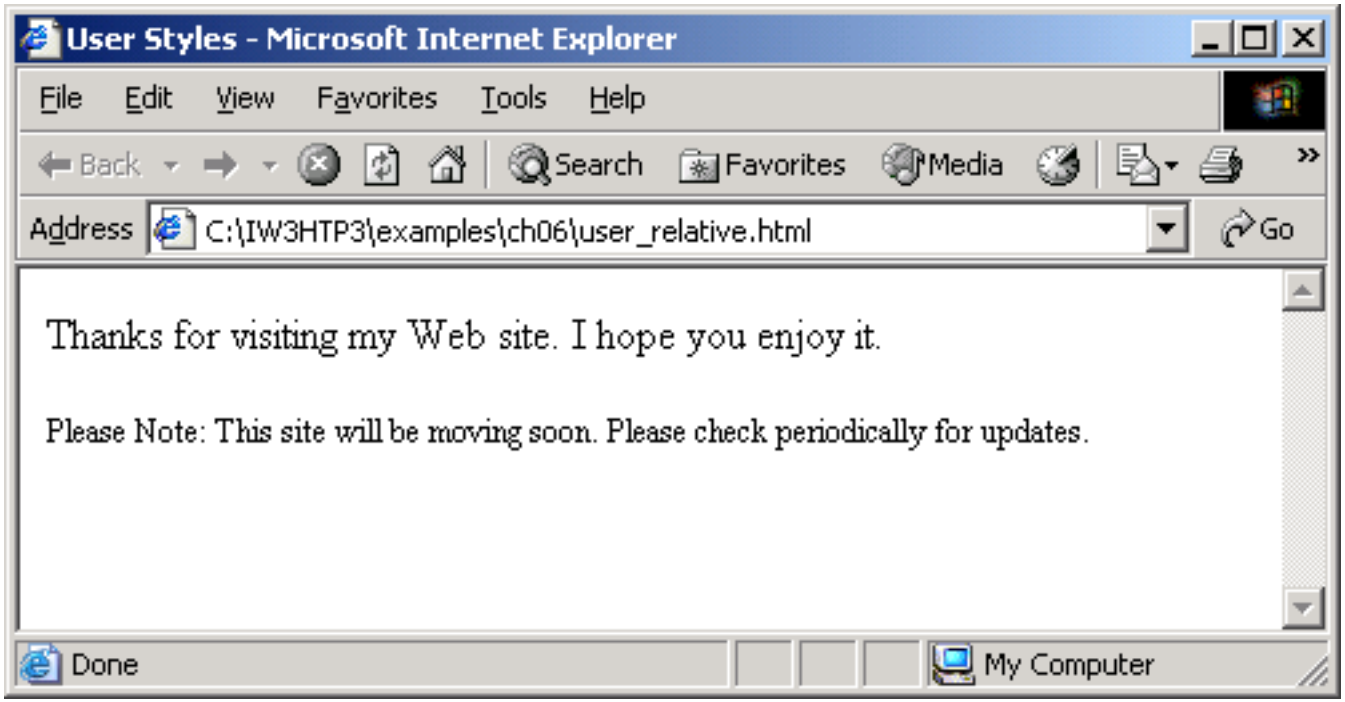
User Style Sheets



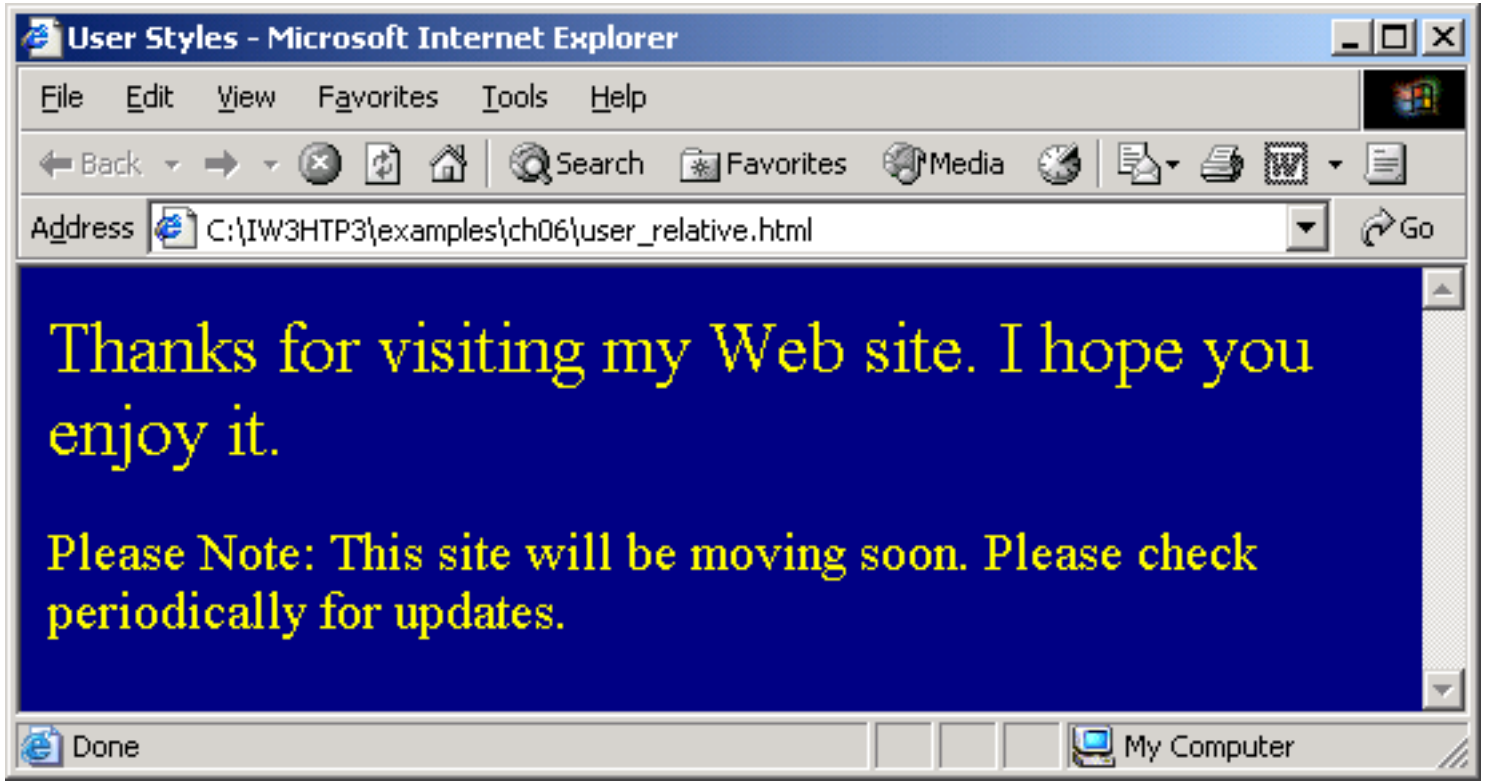
Outline

```
1  <?xml version = "1.0"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5  <!-- Fig. 6.20: user_relative.html   -->
6  <!-- User styles                     -->
7
8  <html xmlns = "http://www.w3.org/1999/xhtml">
9     <head>
10       <title>User Styles</title>
11
12       <style type = "text/css">
13
14          .note { font-size: .75em }
15
16       </style>
17    </head>
18
19    <body>
20
21       <p>Thanks for visiting my Web site. I hope you enjoy it.
22       </p><p class = "note">Please Note: This site will be
23       moving soon. Please check periodically for updates.</p>
```

```
24
25     </body>
26 </html>
```



User Style Sheets



User style sheet applied with em measurement.