

CSS: Cascading Style Sheets

Source: refer from the lecture of Dr. Boris Jukic
IS400: Development of Business Applications on the Internet

Objectives

- **Topics covered:**
 - Using a style sheet to give all the pages of a website 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

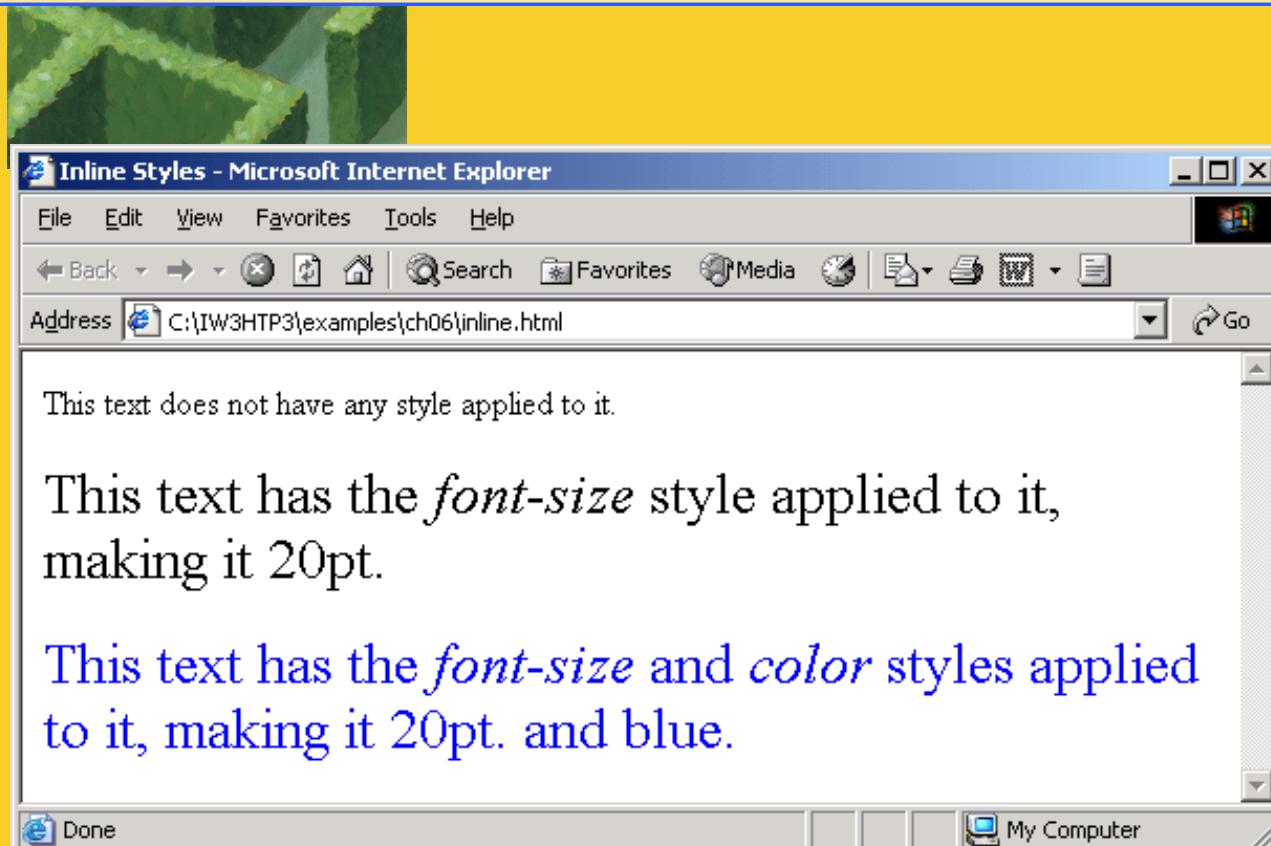
- **Cascade Precedence: resolves conflicting style rules**
 - Inline style sheets
 - Embedded sheets
 - External style sheets
 - Author vs. User

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

```
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
```

```
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

```
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

```
26
27 <body>
28
29     <!-- this class attribute applies the .special style -->
30     <h1 class = "special">Deitel & Associates, Inc.</h1> ← Style Class “special”
31                                         invoked for h1 element
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 ← Style Class “special”
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 </body>
51 </html>
```

Style Sheets - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media Go

Address C:\IW3HTP3\examples\ch06\declared.html

Deitel & Associates, Inc.

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.

Clients

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.

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

```
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 }
```

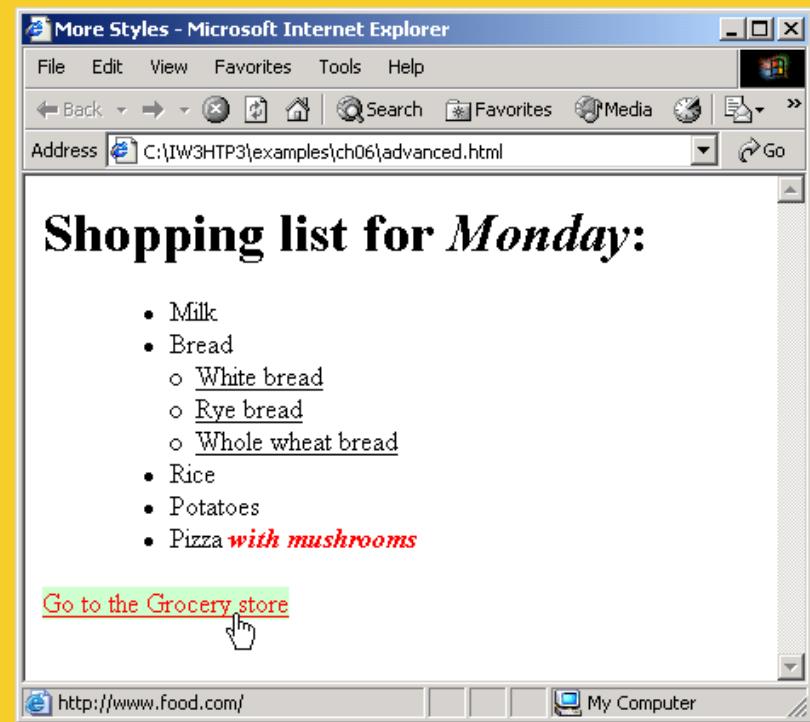
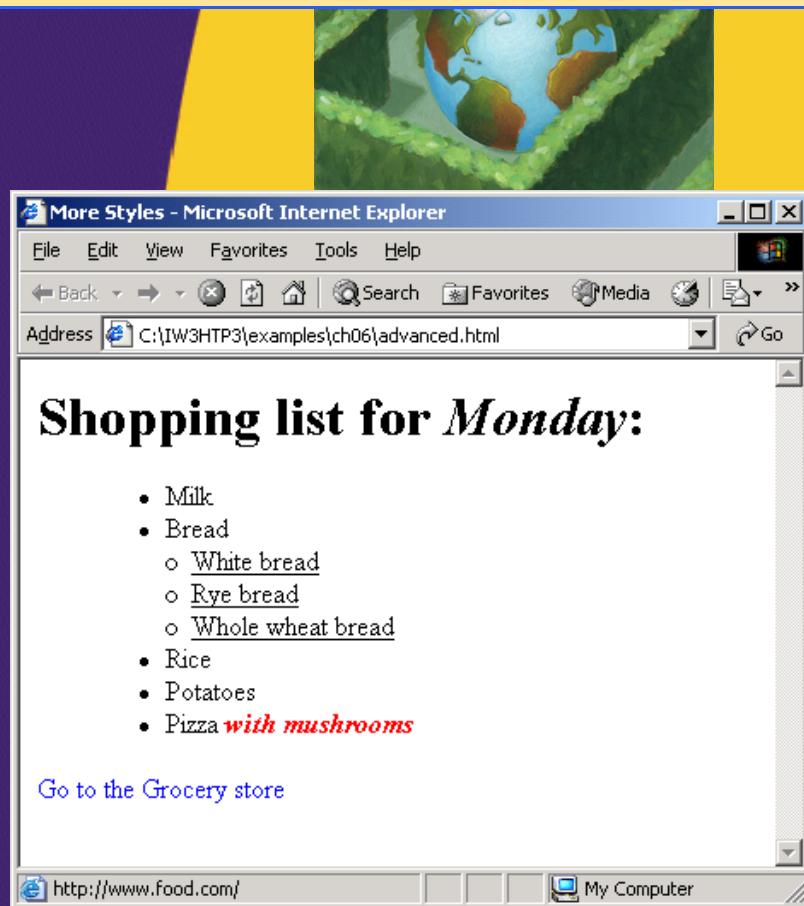
← Style Class: applicable only to element a in this document

← 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

```
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
```

```
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 unless the user has selected a different alternate
 - Alternate style sheets may be selected by users depending on their preferences

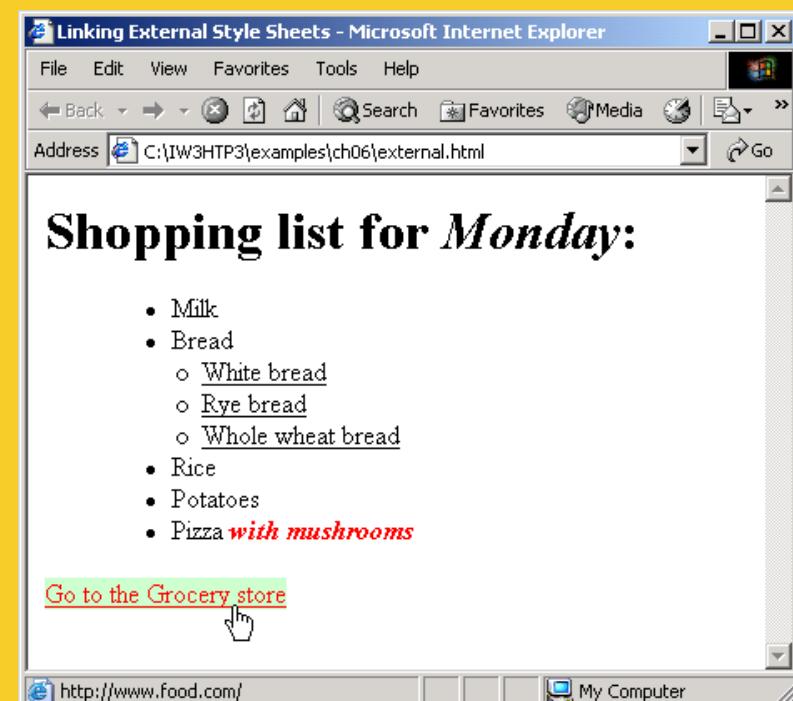
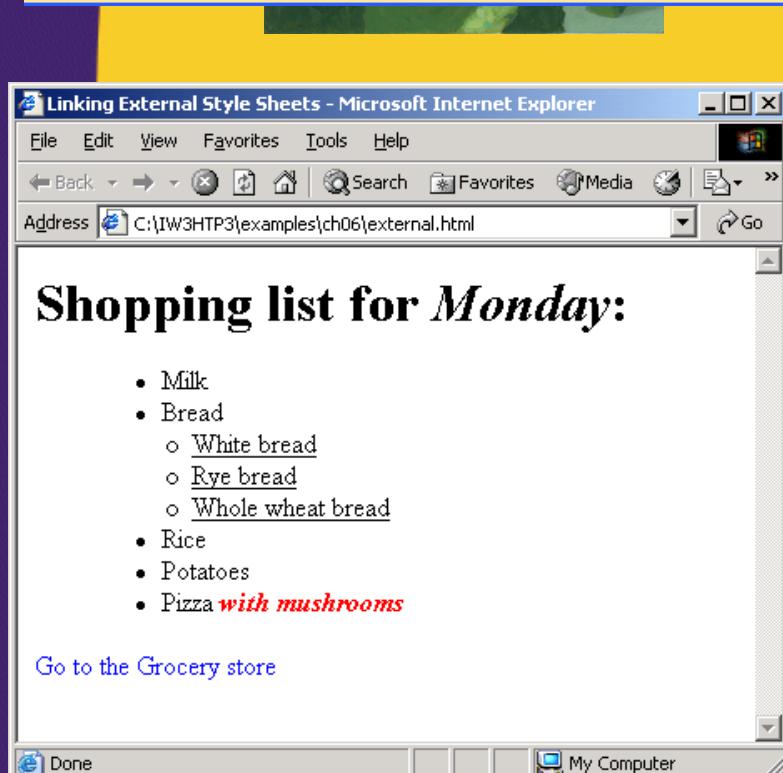
Linking External Style Sheets

- 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.

```
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 }
```

```
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>
```

```
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/>**

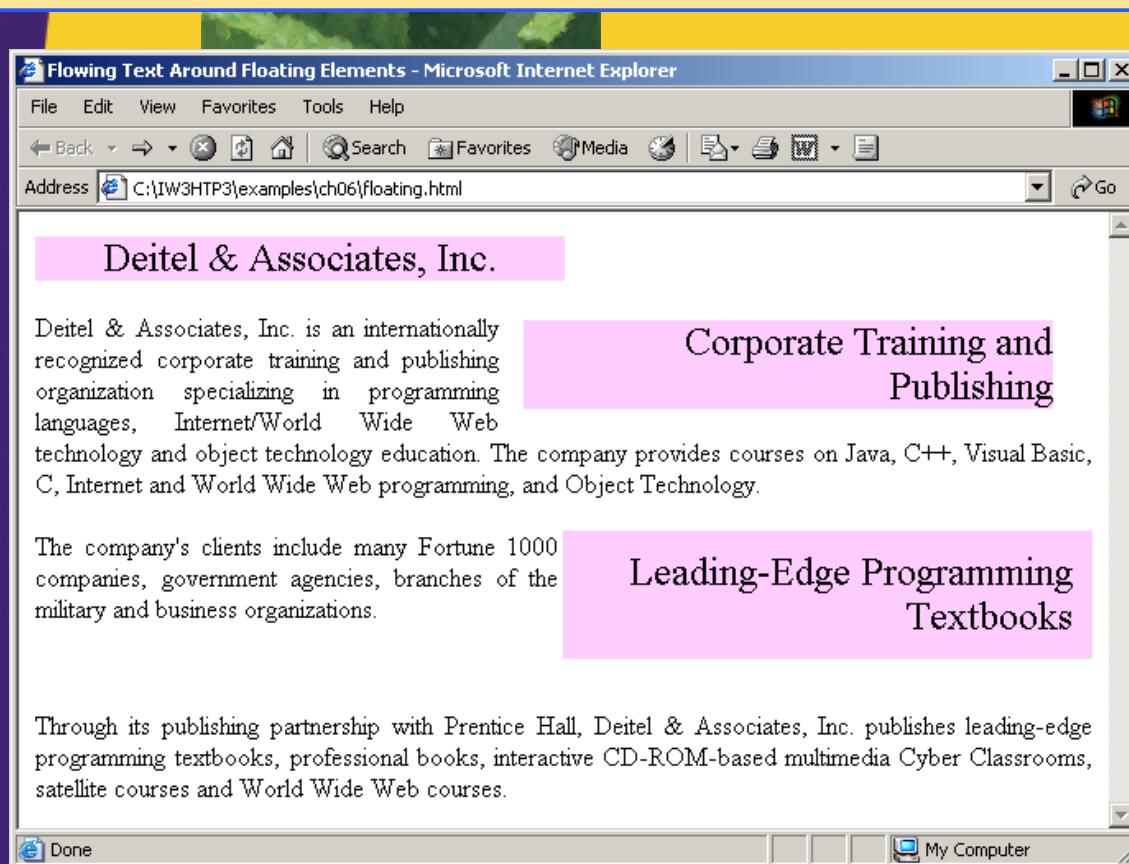
6.10 Text Flow and the Box Model

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

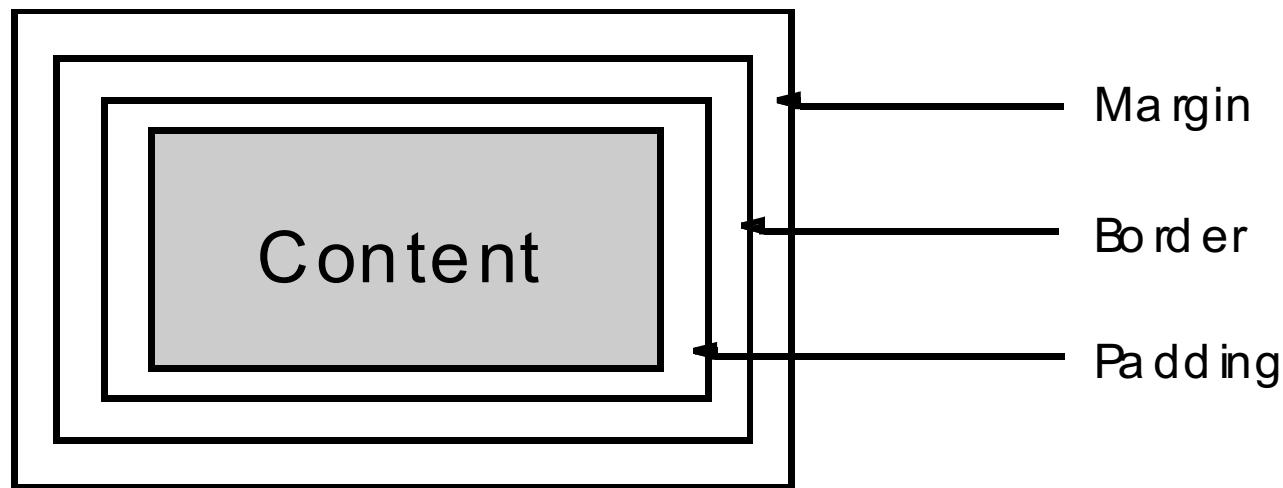
```
1 <?xml version = "1.0"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3   "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5 <!-- Fig. 6.12: floating.html -->
6 <!-- Floating elements and element boxes -->
7
8 <html xmlns = "http://www.w3.org/1999/xhtml">
9   <head>
10    <title>Flowing 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
```

```
25 <body>
26
27     <div style = "text-align: center">
28         Deitel & 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 & 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 & 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>
```

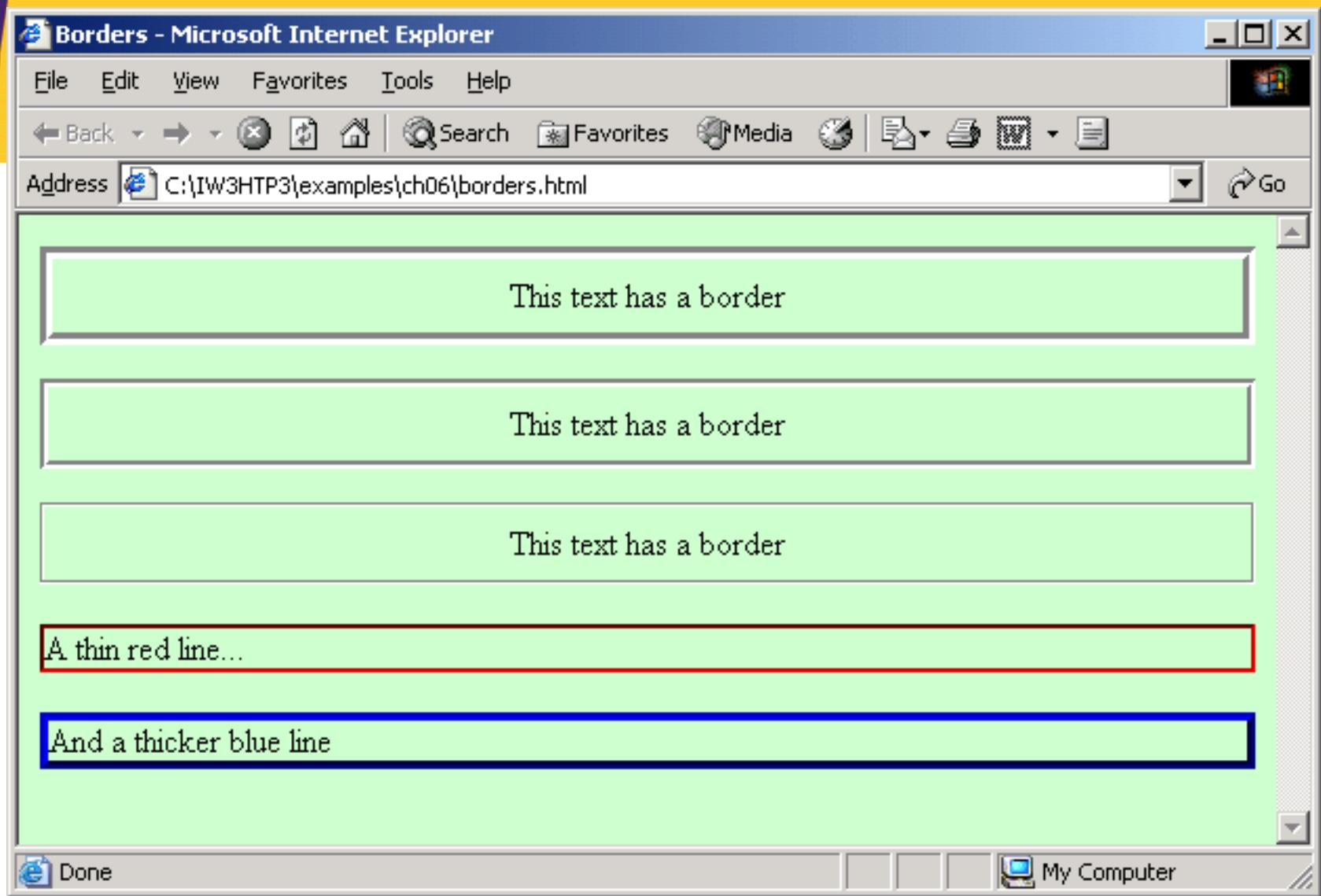


Text Flow and the Box Model



```
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 }
```

```
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>
```



User Style Sheets

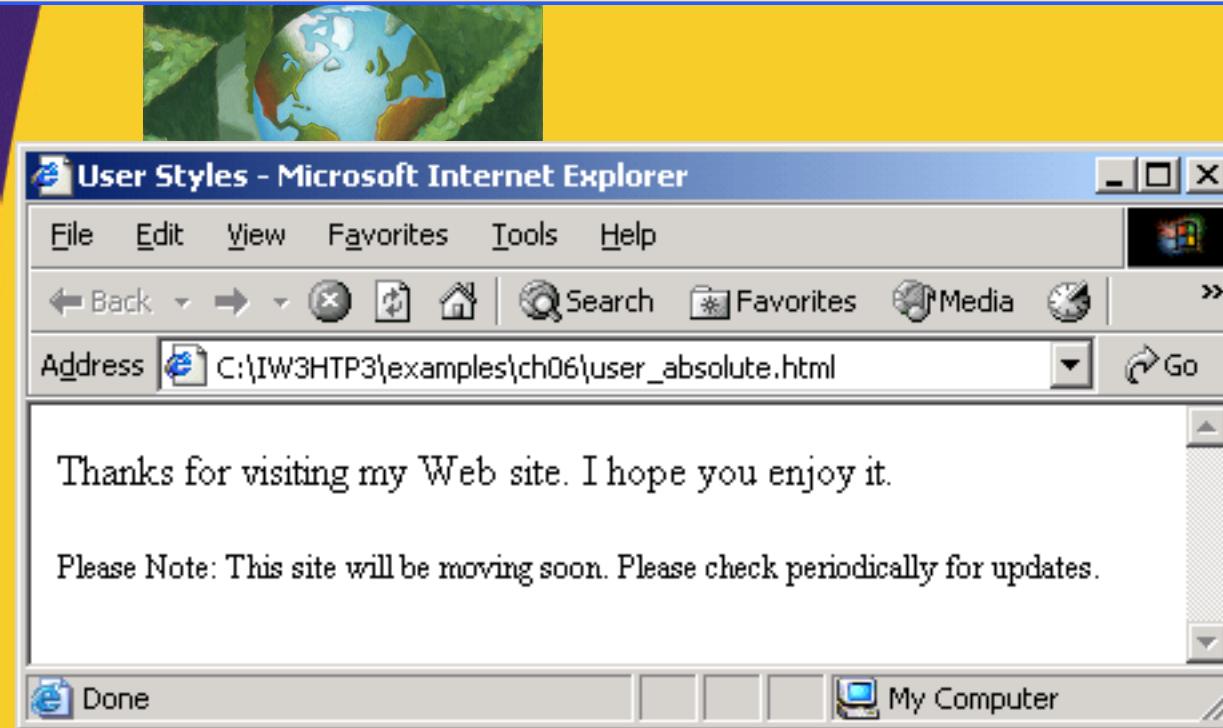
- Format pages based on user preferences
- User style sheets are not linked in the document
 - They are set in browser's options

```
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>

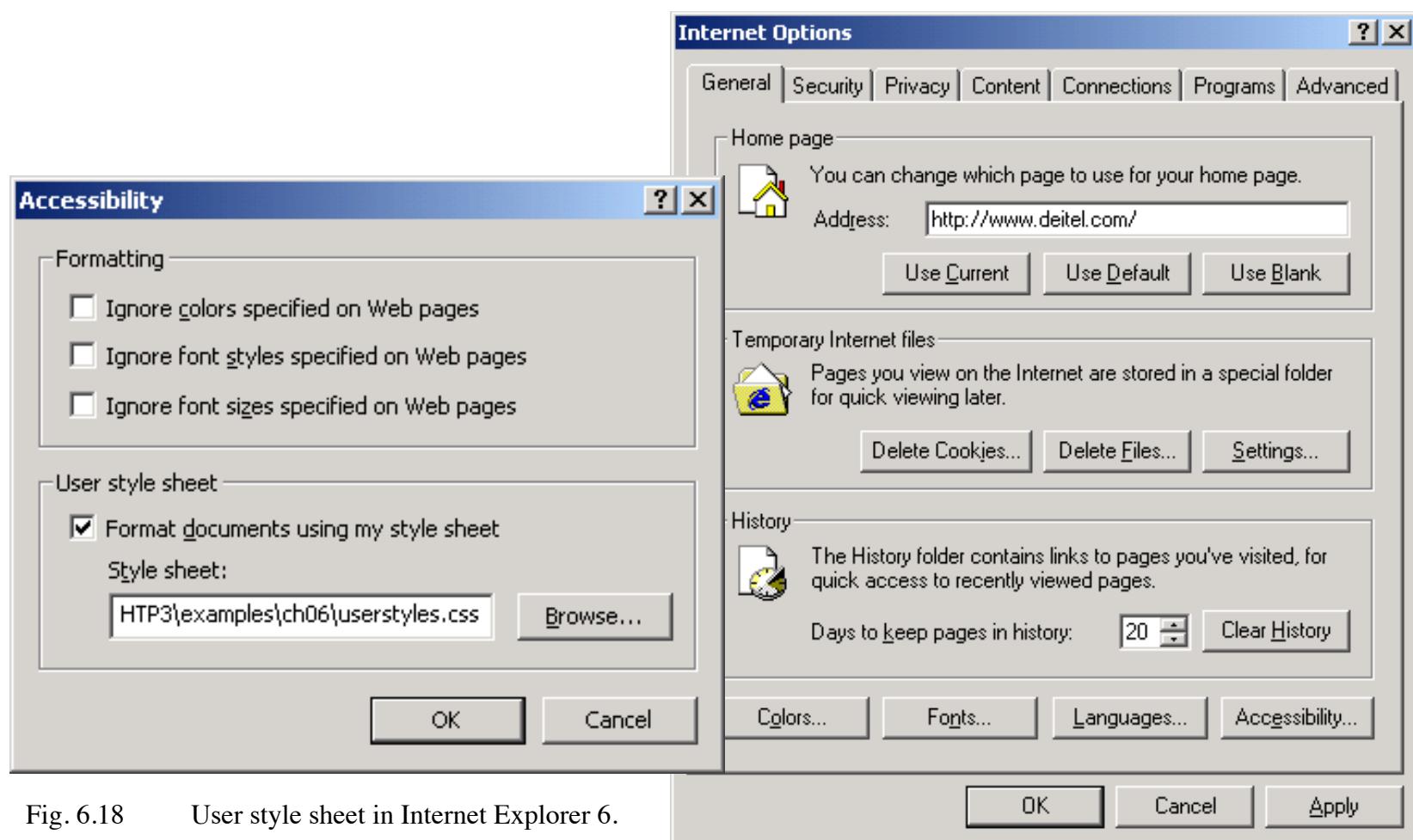
26 </html>



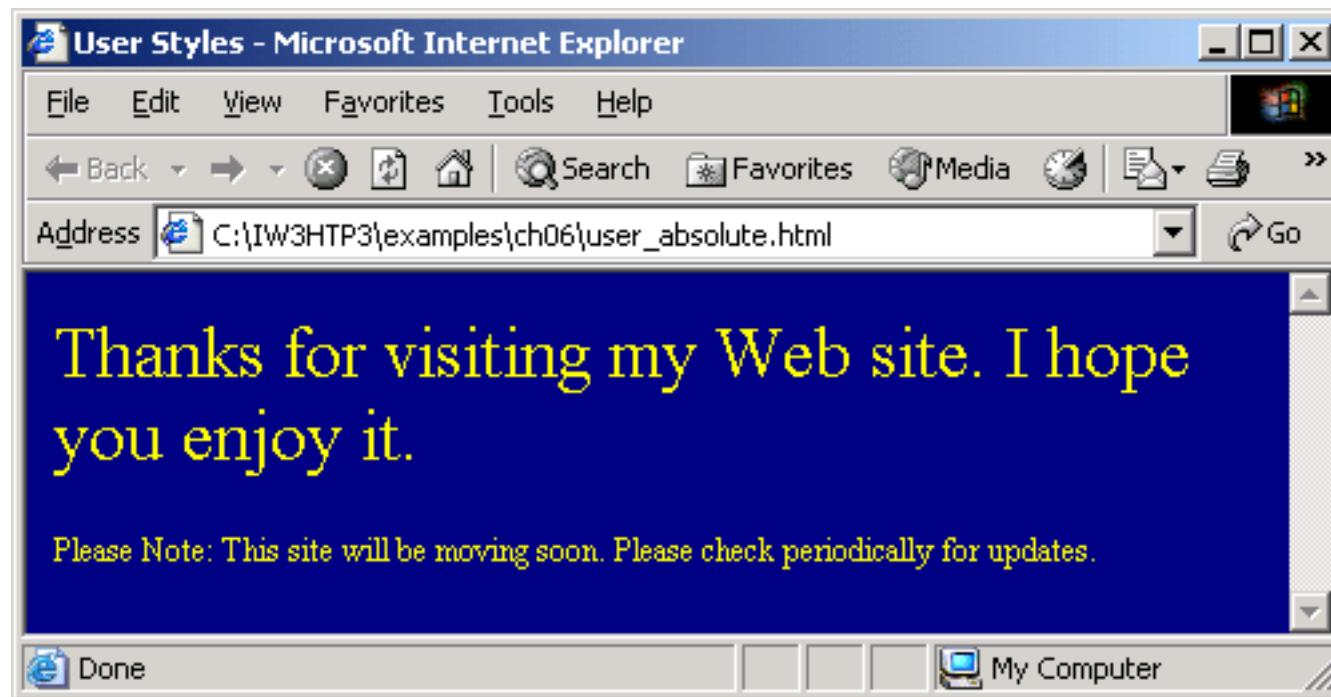
```
1 /* Fig. 6.17: userstyles.css */
2 /* A user stylesheet           */
3
4 body      { font-size: 20pt;
5             color: yellow;
6             background-color: #000080 }
```



User Style Sheets



User Style Sheets

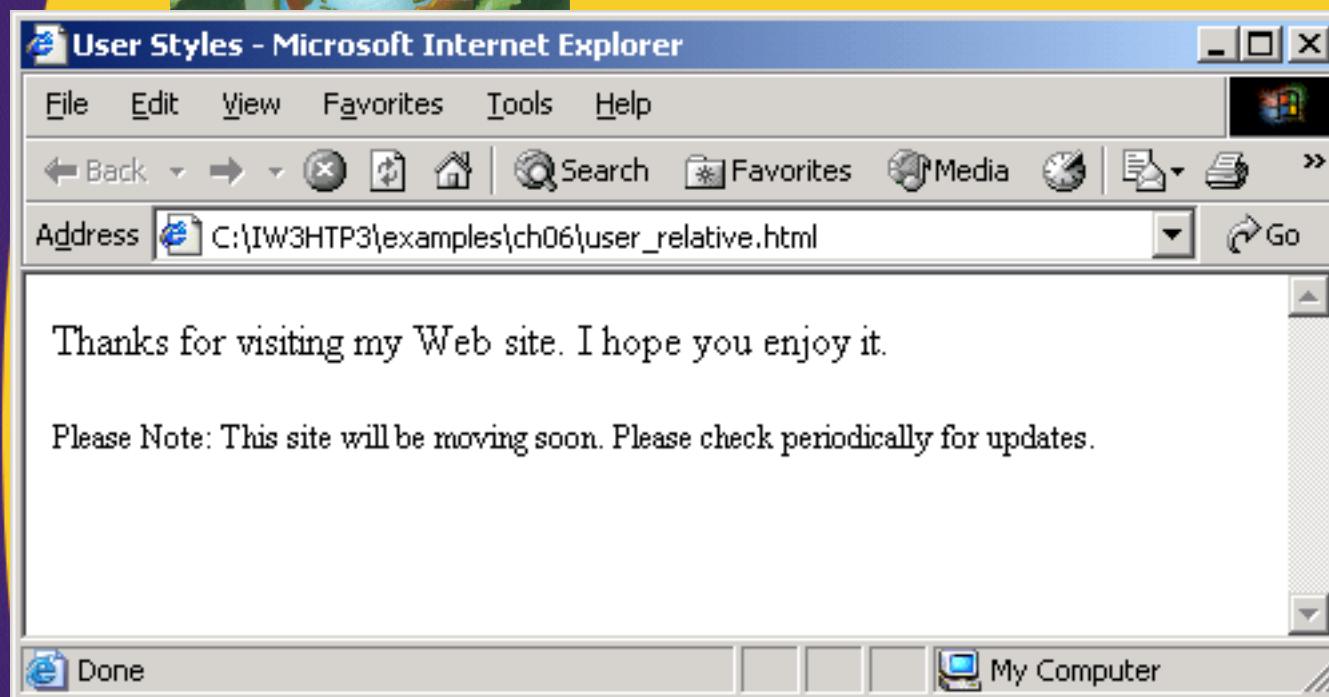


```
1 <?xml version = "1.0"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3   "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5 <!-- Fig. 6.20: user_relative.html -->
6 <!-- User styles -->
7
8 <html xmlns = "http://www.w3.org/1999/xhtml">
9   <head>
10    <title>User Styles</title>
11
12    <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

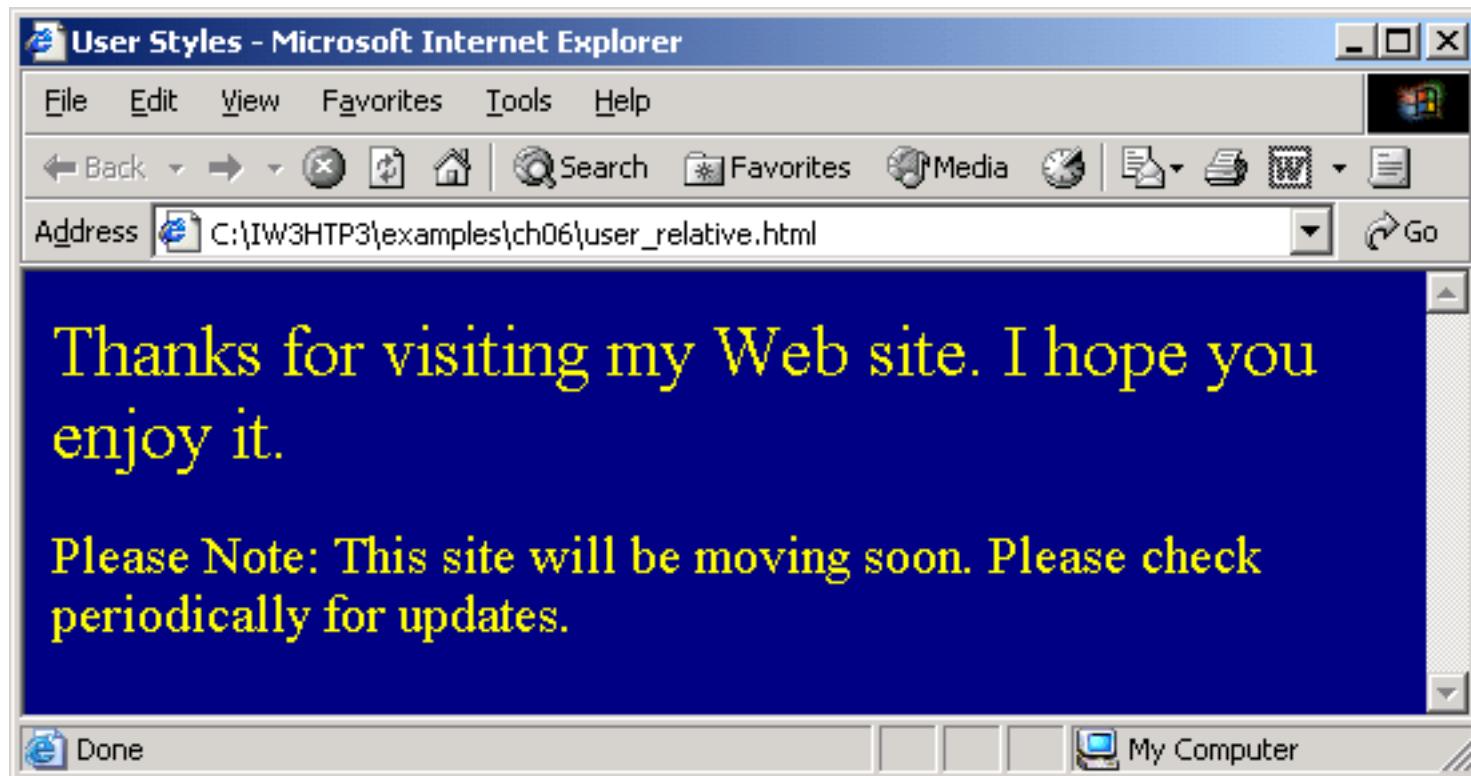


Fig. 6.21 User style sheet applied with em measurement.

Homework

1. Read and test all examples in chapter 5 of the book: “Core web programing”
2. Refer chapter 3 in VN-book!
3. refer:

https://www.w3schools.com/css/css_howto.asp