



Vietnam National University of HCMC
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Web Application Development (IT093IU)

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(Semester 2, 2023-2024)

CSS (Cascading Style Sheets) 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.

→ <https://www.w3schools.com/css/default.asp>

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

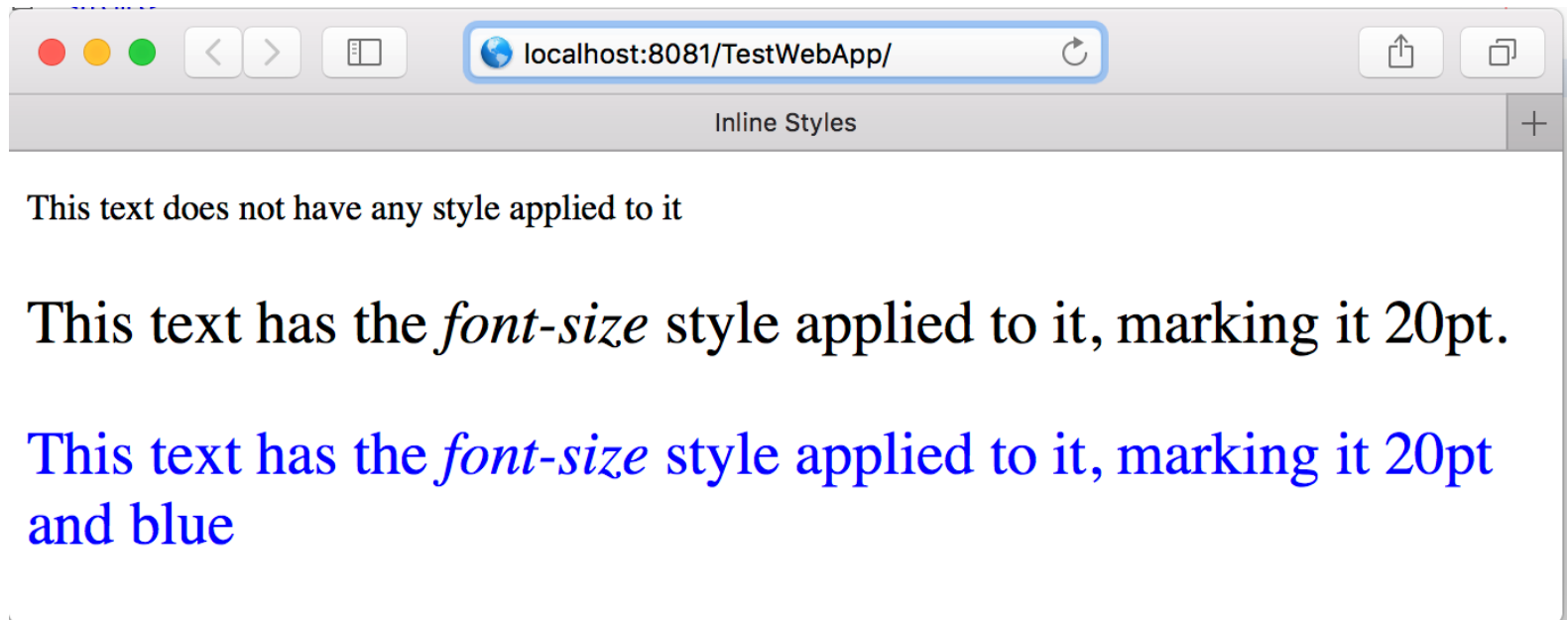
Inline Styles

- 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

Inline Styles

```
<html>
  <head>
    <title>Inline Styles</title>
  </head>
  <body>
    <p>This text does not have any style applied to it</p>
    <p style ="font-size: 20pt"> This text has the
      <em>font-size</em> style applied to it, marking it 20pt.
    </p>
    <p style ="font-size: 20pt; color: #0000ff"> This text has the
      <em>font-size</em> style applied to it, marking it 20pt and blue
    </p>
  </body>
</html>
```

Inline Styles



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”
invoked for h1 element

```
31
32 <p>Deitel & 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 & 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>
```

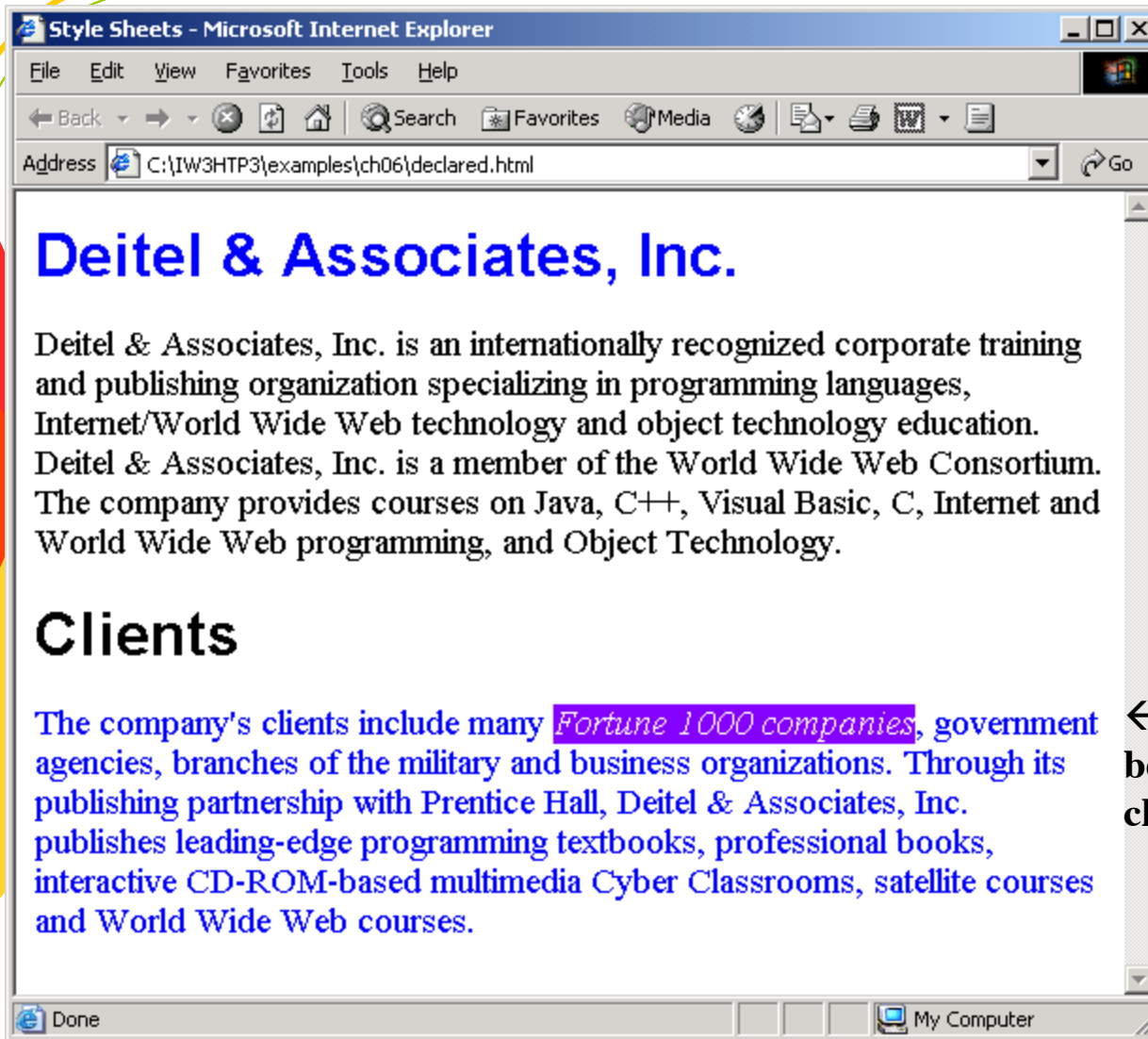
```
40
41 <h1>Clients</h1>
```

```
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 & 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>
```

← Style Class “special”
invoked for p element

```
50 </body>
```

```
51 </html>
```



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

https://www.w3schools.com/css/tryit.asp?filename=trycss_default


```

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.nodect { 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

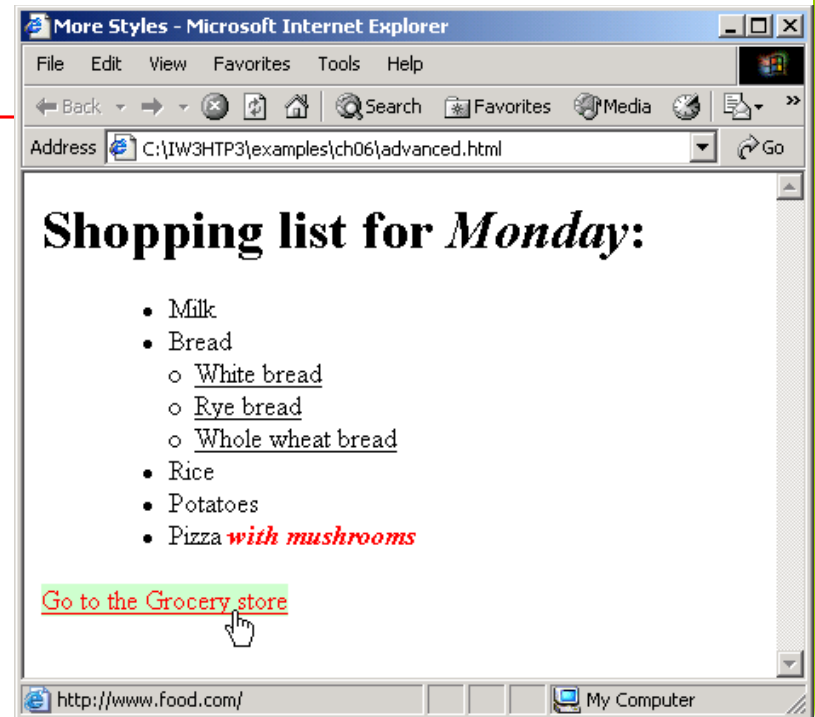
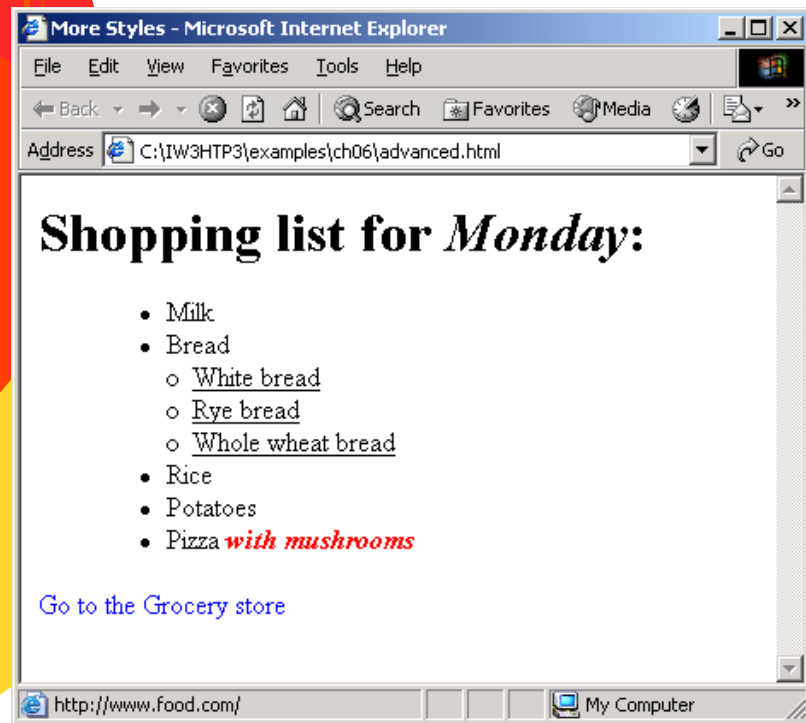
```

← 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

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

Link: 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 }
```

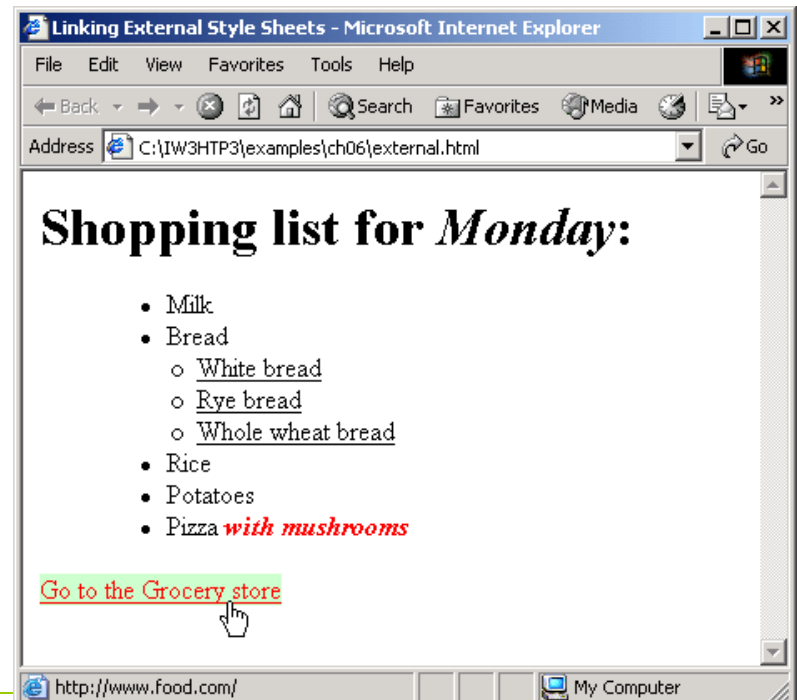
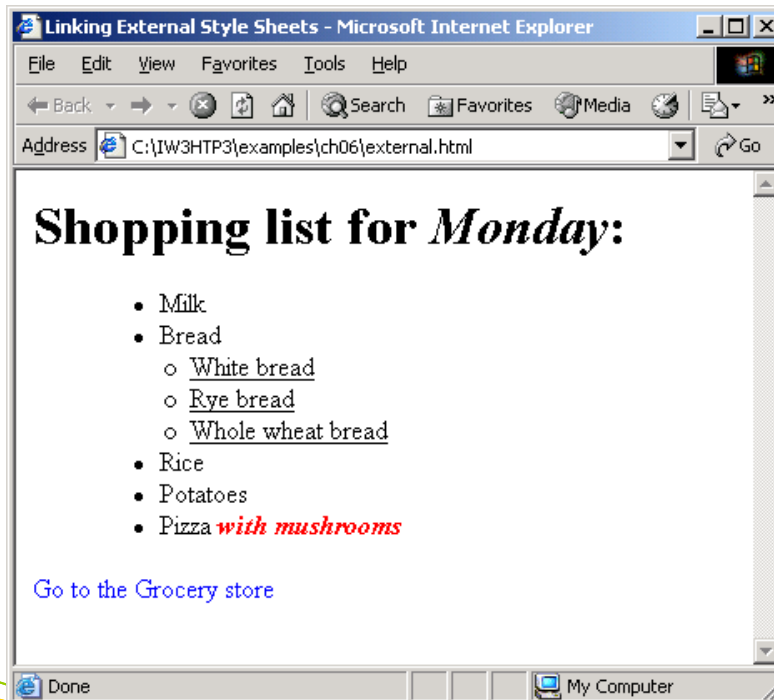
```
1 <?xml version = "1.0"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3   "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5 <!-- Fig. 6.5: external.html      -->
6 <!-- Linking external style sheets -->
7
8 <html xmlns = "http://www.w3.org/1999/xhtml">
9   <head>
10     <title>Linking External 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

references:

https://www.w3schools.com/w3css/w3css_validation.asp

<https://codebeautify.org/cssvalidate>

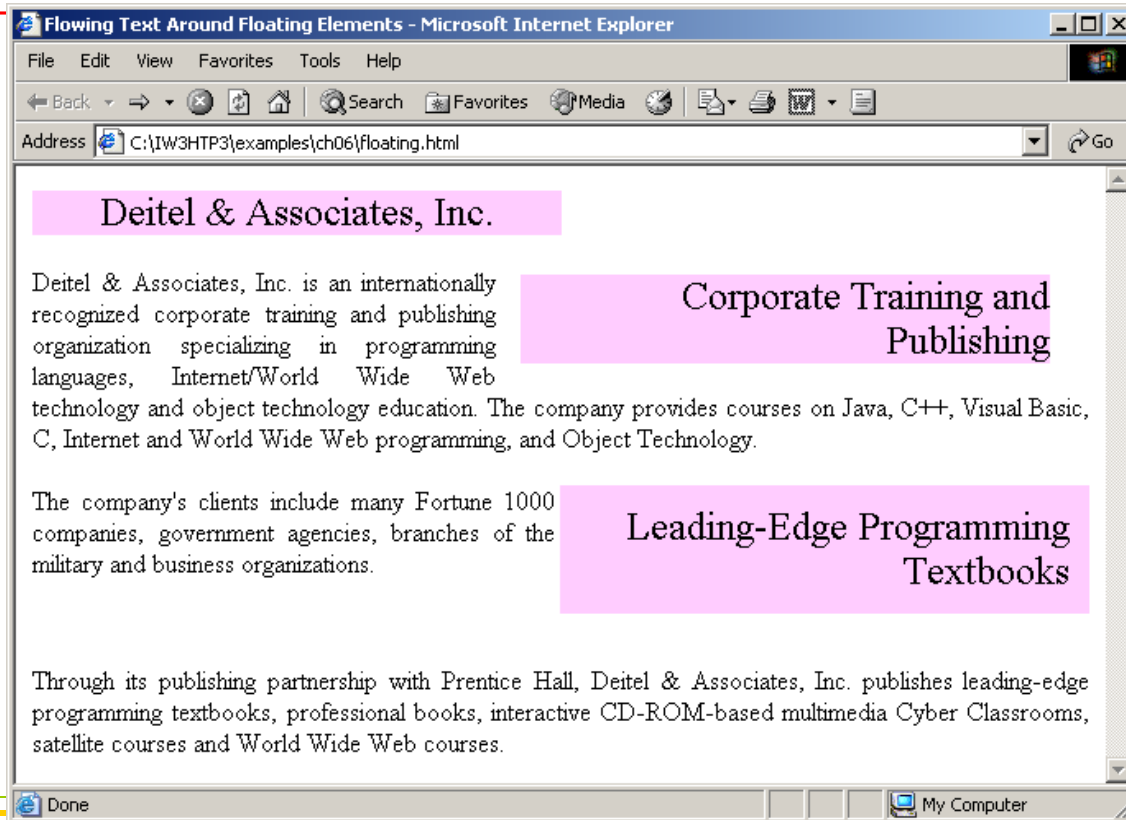
Text Flow and the Box Model

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

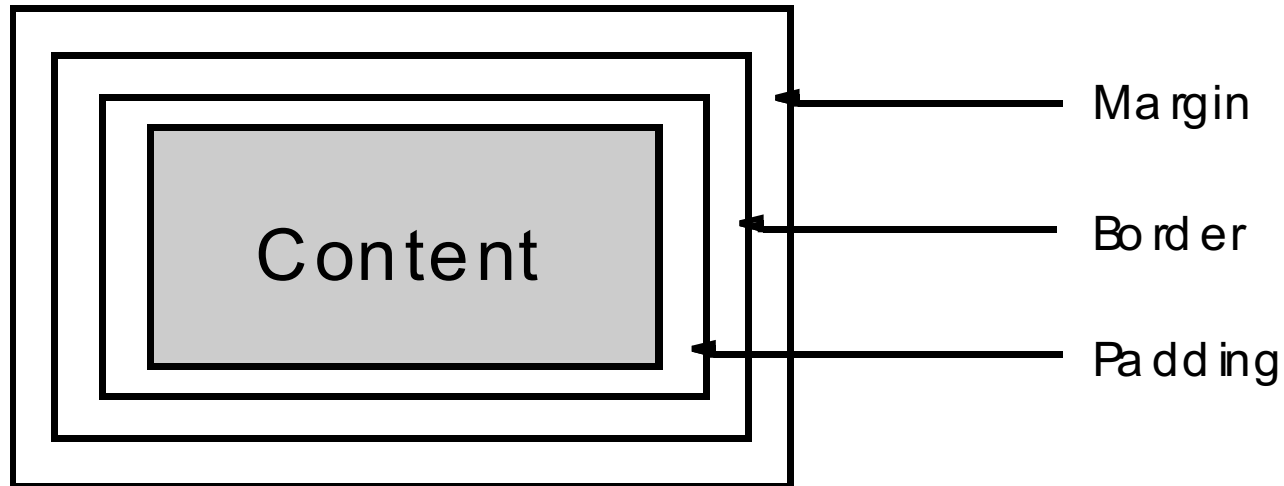
```
1 <?xml version = "1.0"?>
2 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
3   "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
4
5 <!-- Fig. 6.12: floating.html          -->
6 <!-- Floating elements and element boxes -->
7
8 <html xmlns = "http://www.w3.org/1999/xhtml">
9   <head>
10     <title>Flowing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



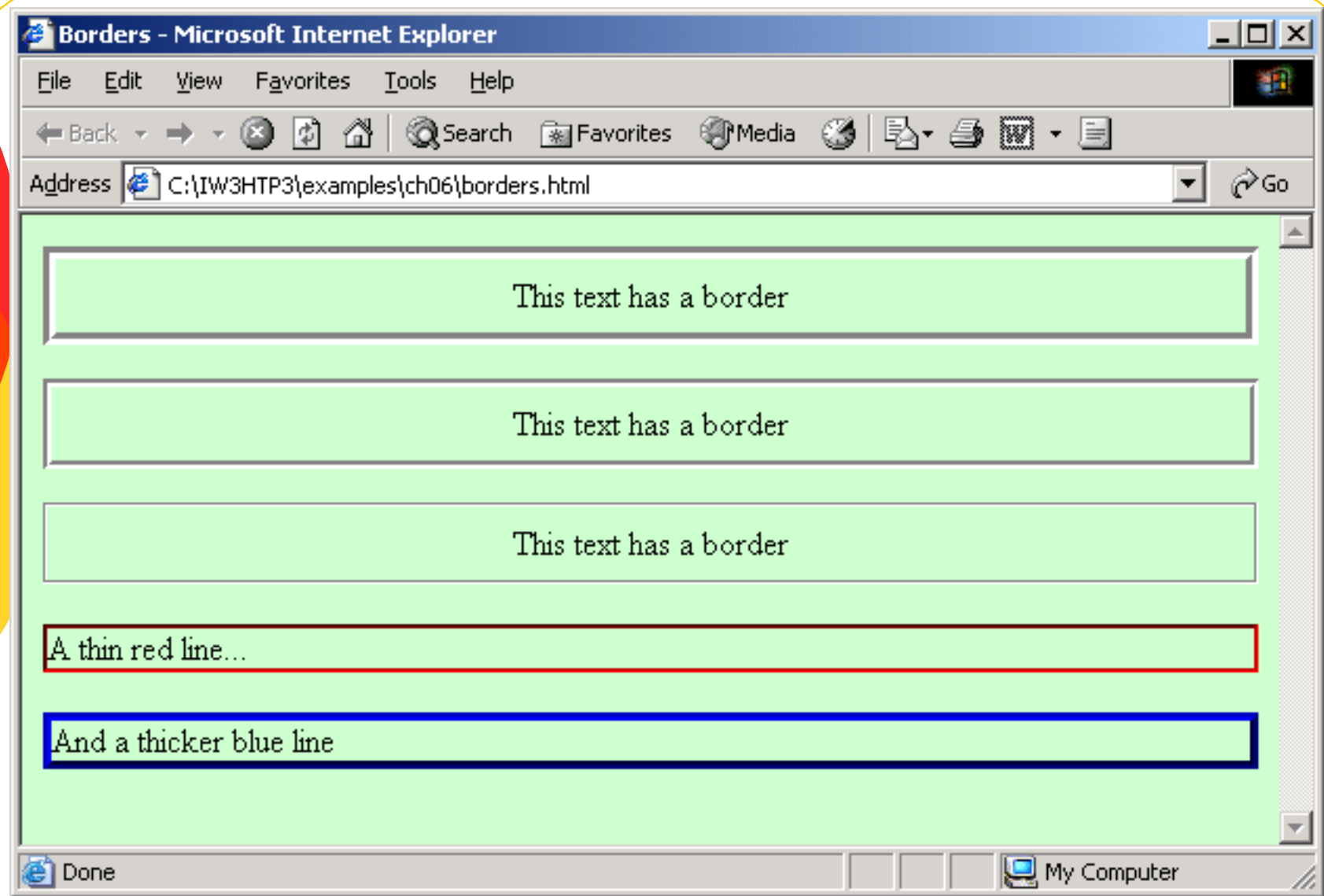
Text Flow and the Box Model



```
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 }
25
```



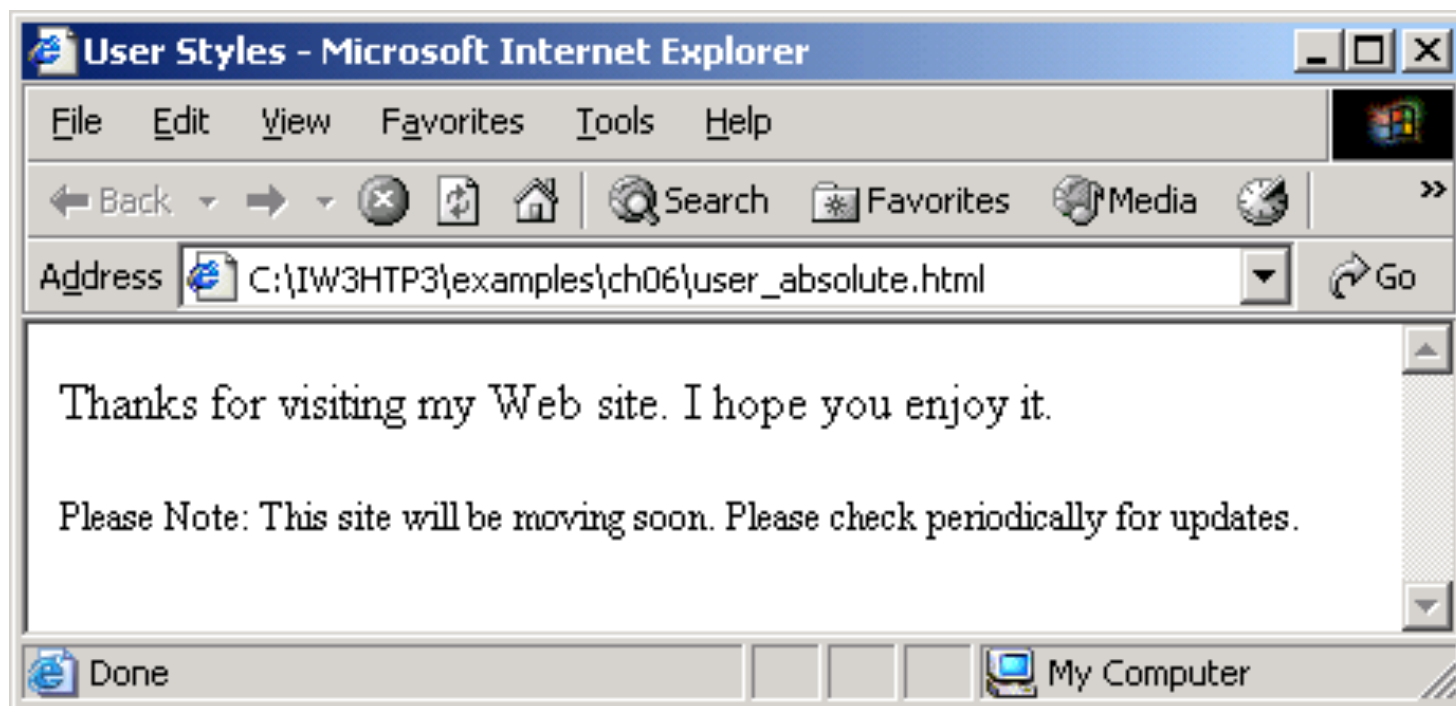
```
26     .groove { border-style: groove }
27
28     .inset { border-style: inset }
29
30     .outset { border-style: outset }
31
32     .red { border-color: red }
33
34     .blue { border-color: blue }
35
36 </style>
37 </head>
38
39 <body>
40
41     <div class = "thick groove">This text has a border</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

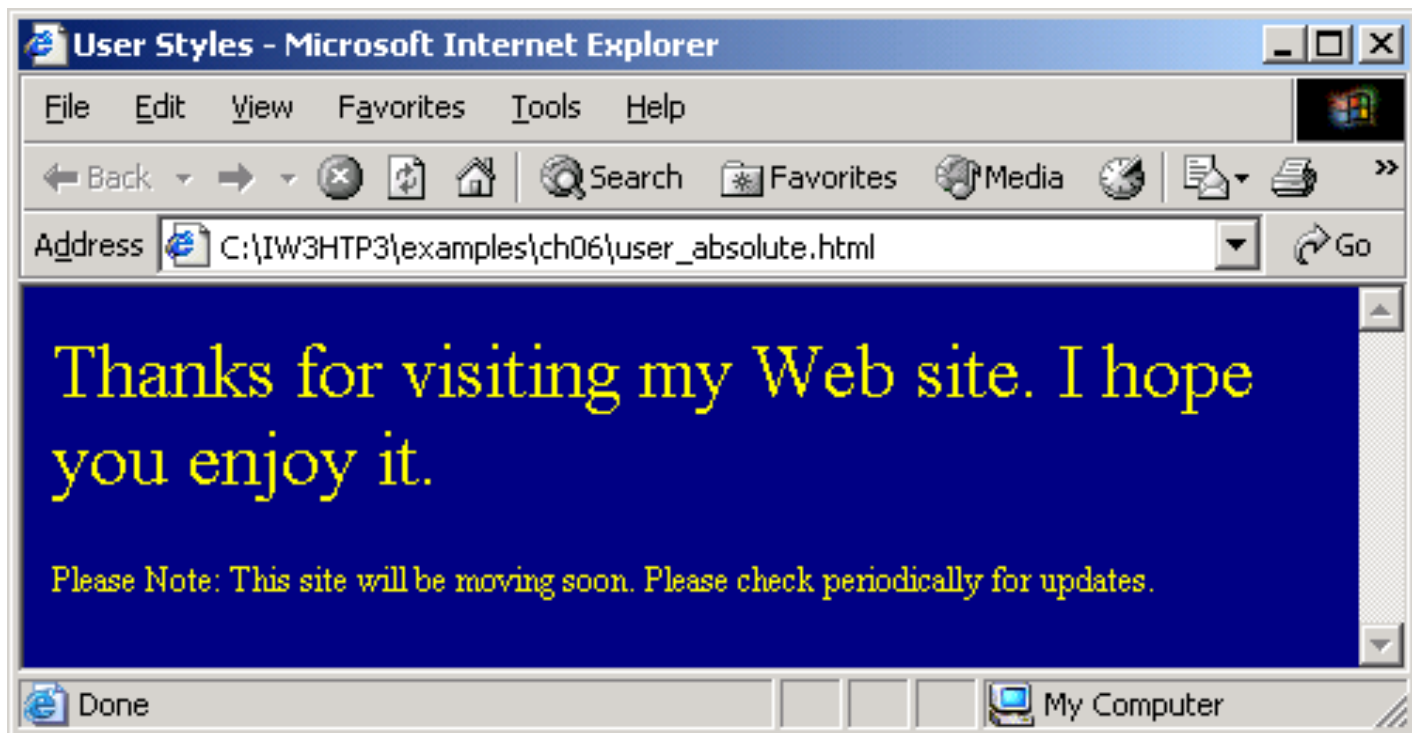
- Format pages based on user preferences
- User style sheets are not linked in the document
 - They are set in browser's options

```
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>
```

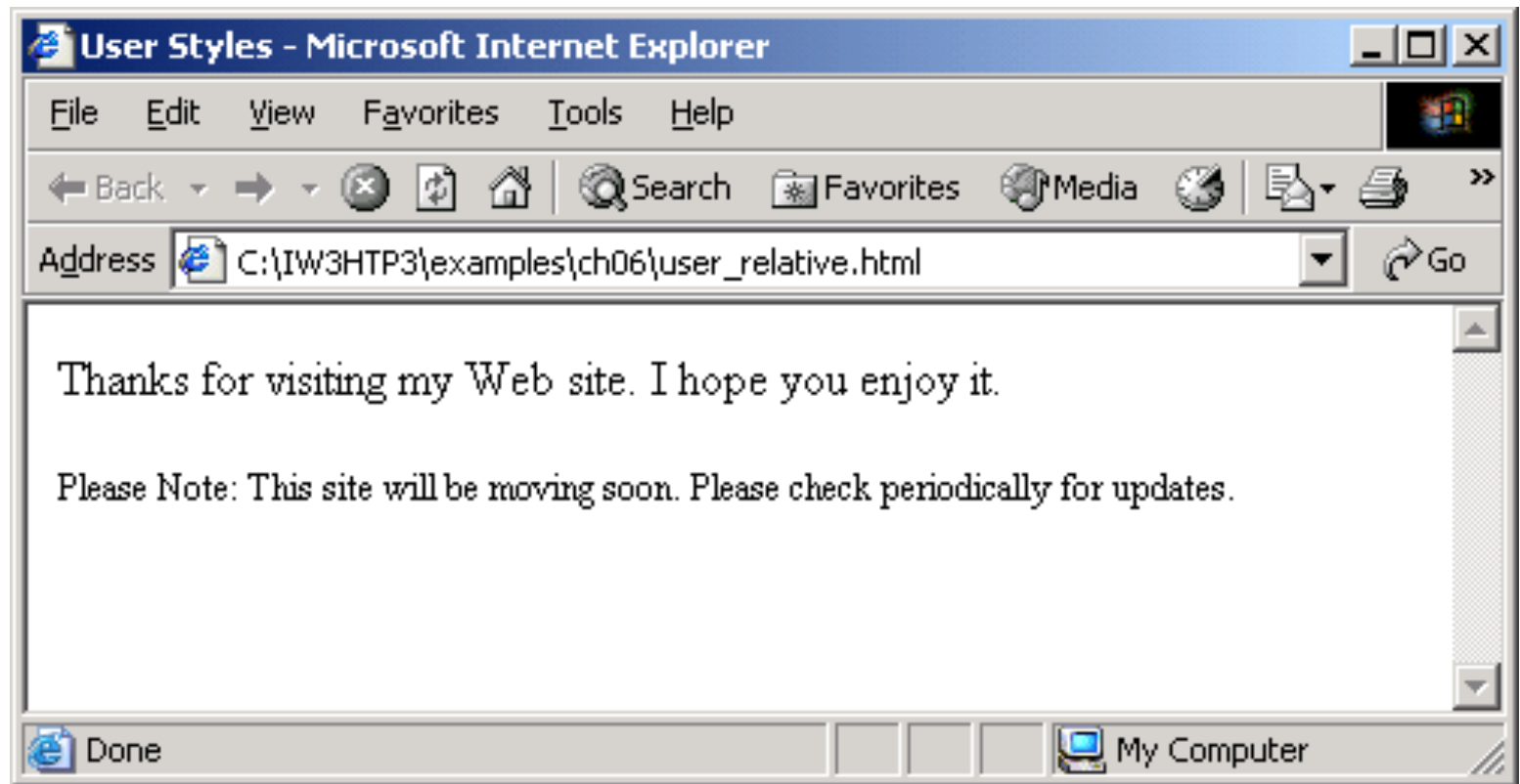


User style sheets

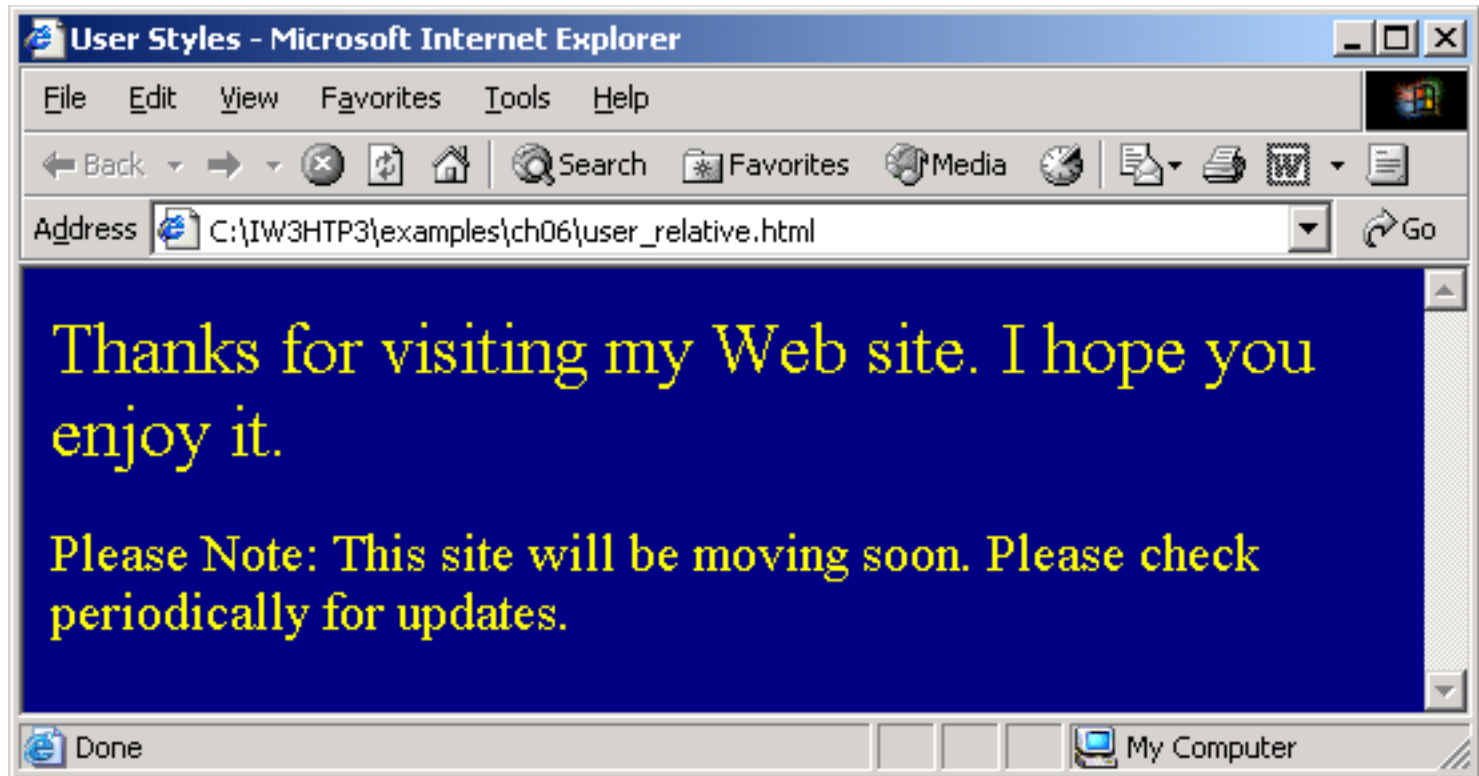
```
1  /* Fig. 6.17: userstyles.css */
2  /* A user stylesheet          */
3
4  body      { font-size: 20pt;
5              color: yellow;
6              background-color: #000080 }
```



```
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>
```



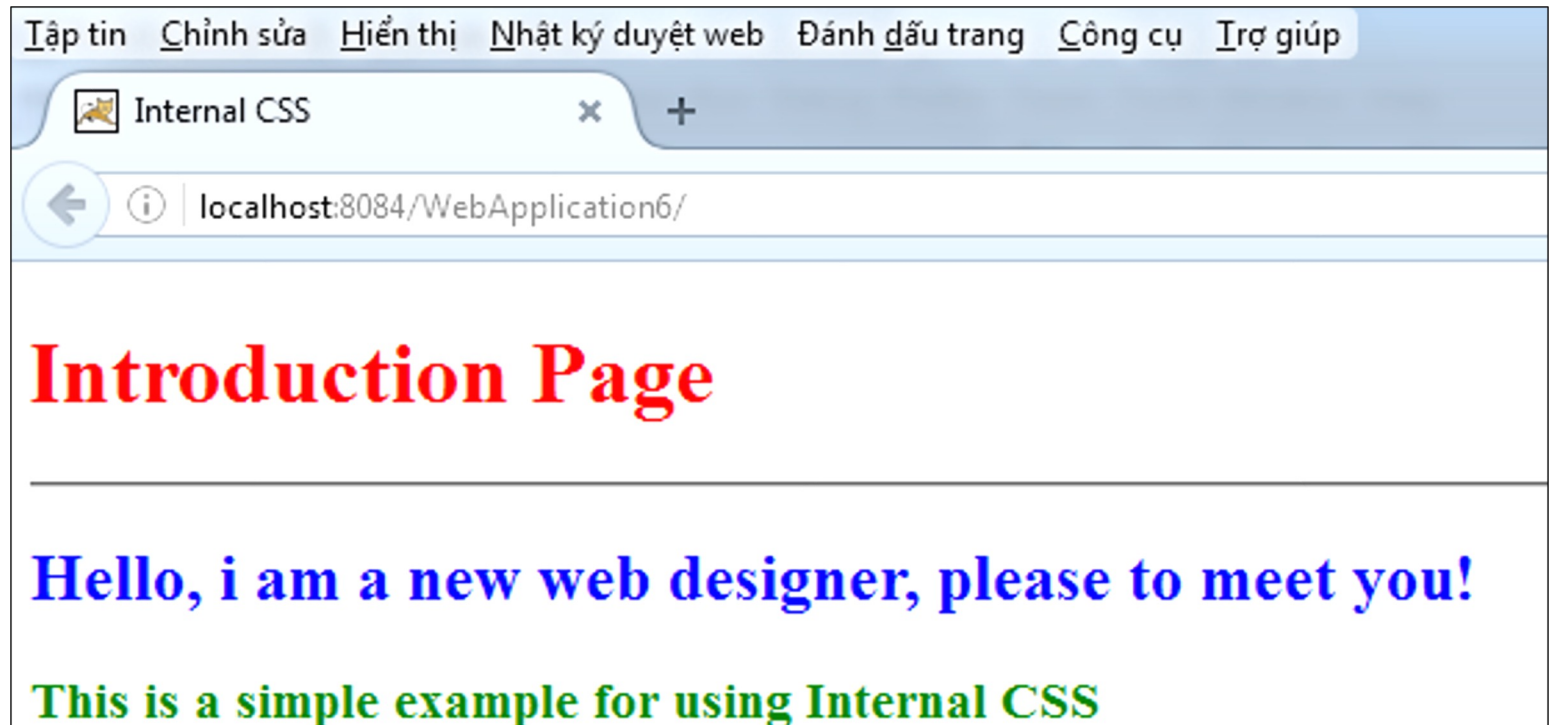
User style sheets



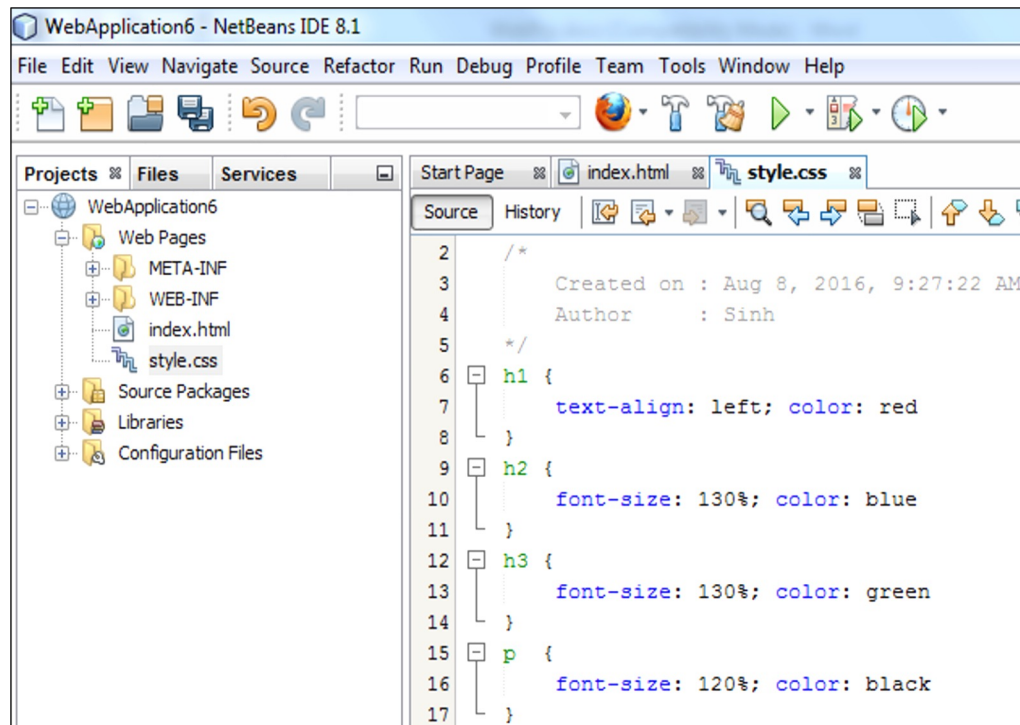
Example: Internal CSS

```
<html>
  <head>
<title>Internal CSS</title>
<STYLE TYPE="text/css">
  h1.titlepage {text-align: left; color: red}
  h2 {color: blue}
  h3 {color: green}
</style>
  </head>
  <body>
    <h1 class=titlepage>Introduction Page</H1><hr>
    <h2>Hello, i am a new web designer, please to meet
you!</h2>
    <h3>This is a simple example for using Internal CSS
</h3>
  </body>
</html>
```

Example: Internal CSS



Example: External CSS



```
<head>
    <title> External CSS </title>
    <link rel="stylesheet" type="text/css"
href="style.css" />
</head>
```

Bates.html

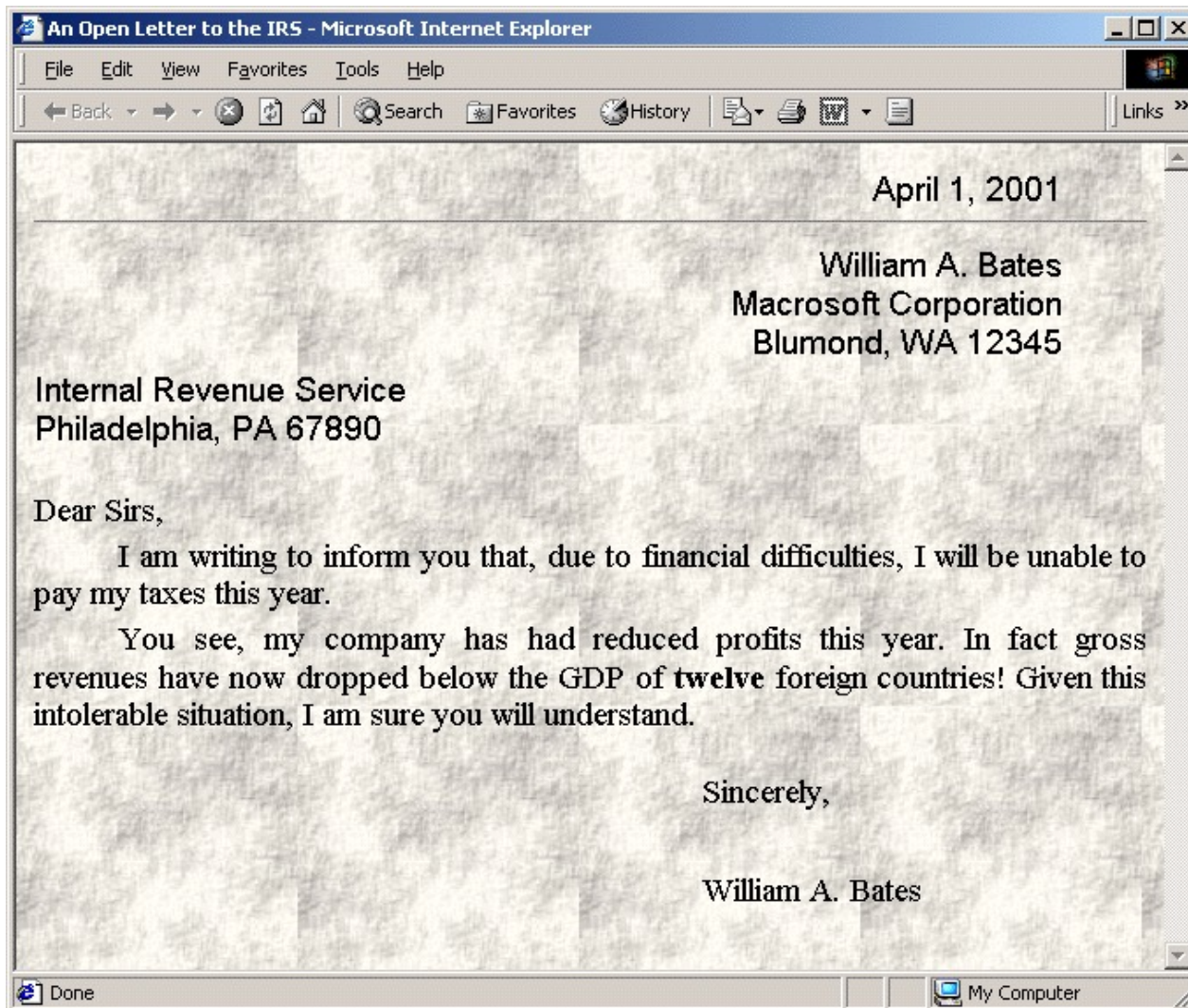
```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0
    Transitional//EN">
<HTML>
<HEAD>
    <TITLE>An Open Letter to the IRS</TITLE>
    <LINK REL=STYLESHEET HREF="Bates.css" TYPE="text/css">
</HEAD>
<BODY BACKGROUND="images/bond-paper.jpg">
<P CLASS="rhead">
April 1, 2001
<HR>
<P CLASS="rhead">
William A. Bates<BR>
Macrosoft Corporation<BR>
Blumond, WA 12345
<P CLASS="lhead">
Internal Revenue Service<BR>
Philadelphia, PA 67890
<P>
<BR>
Dear Sirs,
<P CLASS="body">
I am writing to inform you that, due to financial
    difficulties,
...

```

Bates.css

```
P { margin-top: 5px }
P.rhead { text-align: right;
           margin-right: 0.5in;
           font-family: sans-serif }
P.lhead { font-family: sans-serif }
P.body { text-align: justify;
          text-indent: 0.5in }
P.foot { margin-left: 60%;
          line-height: 300% }
```

Bates.html



Homework

1. Doing all exercises in chapter 3 of the book: “Developing Business Applications for the Web With HTML, CSS, JSP, PHP, ASP.NET, and JavaScript 2017”.

2. refer:

<https://www.w3schools.com/css/default.asp>

...