‘Advanced’ CSS

Abridged version of slides to accompany *Internet & WWW: How To Program* (1st ed.)

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Dynamic HTML: Cascading Style Sheets (CSS)

Outline

1 Introduction
2 Inline Styles
3 Creating Style Sheets with the STYLE Element
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6 Positioning Elements
7 Backgrounds
8 Element Dimensions
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1 Introduction

- *Cascading Style Sheets* (CSS)
  - Specify the style of your page elements
  - Spacing, margins, etc.
- Separate from the structure of your document
  - Section headers, body text, links, etc.
- Separation of structure from content
  - Greater manageability
  - Easier to change style of document

2 Inline Styles

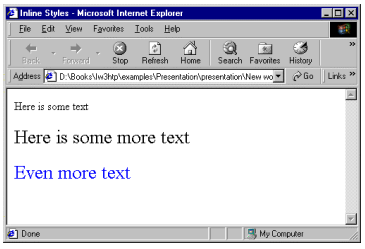
- *Inline styles*
  - Individual element's style declared using the **STYLE** attribute
  - Each CSS property followed by a colon and the value of that attribute
  - Multiple properties separated by semicolons
    ```
    <P STYLE = "font-size: 20 pt; color: #0000FF">
    ```
  - Inline styles override any other styles

```
1  <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2  <HTML>
3
4  <!-- Fig. 14.1: inline.html -->
5  <!-- Using inline styles    -->
6
7  <HEAD><TITLE>Inline Styles</TITLE></HEAD>
8
9  <BODY>
10
11 <P>Here is some text</P>
12
13 <!-- The STYLE attribute allows you to declare inline   -->
14 <!-- styles. Separate multiple styles with a semicolon. -->
15 <P STYLE = "font-size: 20pt">Here is some more text</P>
16 <P STYLE = "font-size: 20pt; color: #0000FF">Even more text</P>
17
18 </BODY>
19 </HTML>
```

Outline

1. STYLE attribute
1.1 Separate multiple styles with a semicolon

Inline styles



3 Creating Style Sheets with the STYLE Element

- Style sheet in header section
  - Begins with **<STYLE TYPE = "text/css">**
    - Styles placed here apply to the whole document
    - **TYPE** attribute specifies the MIME type
      - MIME is a standard for specifying the format of content
        - » Other MIME types include **text/html**, **image/gif** and **text/javascript**
- Without style sheets
  - Browser completely controls the look and feel of Web pages
- With style sheets
  - Designer can specify the look and feel of Web pages

3 Creating Style Sheets with the STYLE Element (II)

- Declare CSS rules within **STYLE** element
  - Each rule body begins and ends with a curly brace (**{** and **}**)
  - Class declarations are preceded with a period and applied to elements only of that specific class
  - Each property is followed by a colon and the value of the property
  - Multiple properties are separated by semicolons

3 Creating Style Sheets with the STYLE Element (III)

- *Generic font families*
  - Allow you to specify a type of font instead of a specific font
- Font-size property
  - Relative sizes: **xx-small**, **x-small**, **small**, **smaller**, **medium**, **large**, **larger**, **x-large** and **xx-large**
- Styles applied to an element (the *parent element*)
  - Also apply to the elements inside that element (*child elements*)

```
1<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2<HTML>
3
4<!-- Fig. 14.2: declared.html                    -->
5<!-- Declaring a style sheet in the header section. -->
6
7<HEAD>
8<TITLE>Style Sheets</TITLE>
9
10<!-- This begins the style sheet section. -->
11<STYLE TYPE = "text/css">
12
13   EM    { background-color: #8000FF;
14           color: white }
15
16   H1    { font-family: Arial, sans-serif }
17
18   P     { font-size: 18pt }
19
20   .blue { color: blue }
21
22</STYLE>
23</HEAD>
24
25<BODY>
26
27<!-- This CLASS attribute applies the .blue style -->
28<H1 CLASS = "blue">A Heading</H1>
29<P>Here is some text. Here is some text. Here is some text.
30Here is some text. Here is some text.</P>
31
32<H1>Another Heading</H1>
33<P CLASS = "blue">Here is some more text. Here is some more text.
```

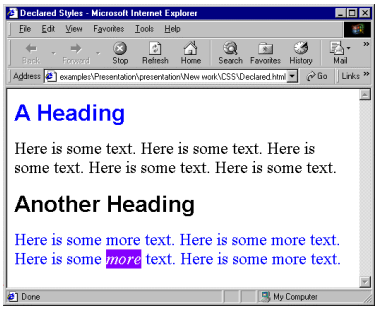
Outline

1. Begin style sheet section
   1.1 CSS rules inside curly braces
   1.2 Property name followed by colon and property value
   1.3 Properties separated by semicolon
   1.4 `background-color` specifies the background color of the element
   1.5 `font-family` property: `Arial` specifies the name of the font `sans-serif` is a generic font family
2. Applying styles
   2.1 `CLASS` attribute

```
34 Here is some <EM>more</EM> text. Here is some more text.</P>
35
36 </BODY>
37 </HTML>
```

Outline

3. Page rendered by browser



4 Conflicting Styles

- *Inheritance* and *specificity*
- **`text-decoration property`**
  - Applies decorations to text within an element
  - **`none`**
  - **`overline`**
  - **`line-through`**
  - **`blink`**
    - Browsers are not required to support **`blink`**
- *Pseudo-classes*
  - Give the author access to content not specifically declared in the document
  - Ex. **`:hover`** pseudo-class

4 Conflicting Styles (II)

- **px**: pixel is a relative-length measurement
  - Varies in size based on screen resolution
- Other relative-lengths
  - **em**: the size of the font
  - **ex**: the "x-height" of the font, usually set to the height of a lowercase x
  - Percentages
    - E.g. **margin-left: 10%**
- Absolute-length measurements
  - **in**: inches
  - **cm**: centimeters
  - **mm**: millimeters
  - **pt**: points (1 **pt** = 1/72 **in**)
  - **pc**: picas (1 **pc** = 12 **pt**)
- Use relative length over absolute

4 Conflicting Styles (III)

- Three possible sources for style sheets
  - Browser defaults
  - Preset user styles
  - Author styles
- Author styles have a greater precedence than preset user styles
  - But **!important** rules can change priority
  - User's **!important** rules have priority

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML>

<!-- Fig 14.3: advanced.html    -->
<!-- More advanced style sheets -->

<HEAD>
<TITLE>More Styles</TITLE>
<STYLE TYPE = "text/css">

   A.nodec  { text-decoration: none }

   A:hover  { text-decoration: underline;
              color: red;
              background-color: #CCFFCC }

   LI EM    { color: red;
              font-weight: bold }

   UL       { margin-left: 75px }

   UL UL    { text-decoration: underline;
              margin-left: 15px }

</STYLE>
</HEAD>

<BODY>

<H1>Shopping list for <EM>Monday</EM>:</H1>
<UL>
<LI>Milk</LI>
<LI>Bread
```

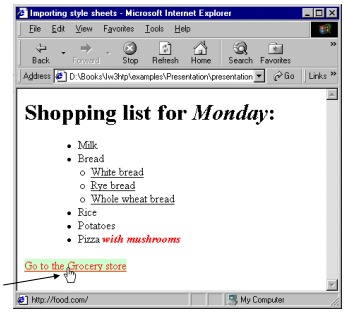
Outline

1.1 text-decoration property
1.2 hover pseudo-class
1.3 Declare style for EM elements that are children of LI elements
1.4 Declare a style for all nested lists

```
34    <UL>
35    <LI>White bread</LI>
36    <LI>Rye bread</LI>
37    <LI>Whole wheat bread</LI>
38    </UL></LI>
39 <LI>Rice</LI>
40 <LI>Potatoes</LI>
41 <LI>Pizza <EM>with mushrooms</EM></LI>
42 </UL>
43
44 <P><A CLASS = "nodec" HREF = "http://food.com">Go to the Grocery
45    store</A></P>
46
47 </BODY>
48 </HTML>
```

Outline

Inheritance in style sheets



Hovering over a link

5 Linking External Style Sheets

- External linking
  - Separate pages can all use same style sheet
  - Only modify a single file to change styles across your site
- **`LINK`** element
  - Specifies a relationship (**`REL`** attribute) between current document and another document

```
<LINK REL = "stylesheet" TYPE = "text/css"
  HREF = "styles.css">
```

  - **`LINK`** element can only be placed in header
  - Other **`REL`** values
    - **`next`**, **`previous`** allow you to link a series of documents
      - **Print all linked documents** option
- Style sheets are reusable

```
A       { text-decoration: none }

A:hover { text-decoration: underline;
          color: red;
          background-color: #CCFFCC }

LI EM   { color: red;
          font-weight: bold}

UL      { margin-left: 2cm }

UL UL   { text-decoration: underline;
          margin-left: .5cm }
```

Outline

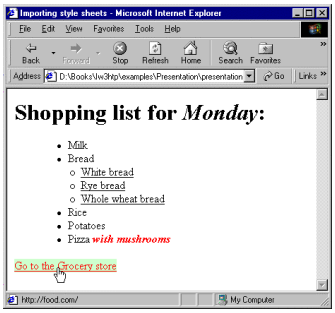
1. External style sheet (styles.css)

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML>

<!-- Fig. 14.5: imported.html       -->
<!-- Linking external style sheets  -->

<HEAD>
<TITLE>Importing style sheets</TITLE>
<LINK REL = "stylesheet" TYPE = "text/css" HREF = "styles.css">
</HEAD>

<BODY>

<H1>Shopping list for <EM>Monday</EM>:</H1>
<UL>
<LI>Milk</LI>
<LI>Bread
   <UL>
   <LI>White bread</LI>
   <LI>Rye bread</LI>
   <LI>Whole wheat bread</LI>
   </UL></LI>
<LI>Rice</LI>
<LI>Potatoes</LI>
<LI>Pizza <EM>with mushrooms</EM></LI>
</UL>

<A HREF = "http://food.com">Go to the Grocery store</A>

</BODY>
</HTML>
```

Outline

2. LINK element
2.1 REL attribute

Linking an external style sheet



6 Positioning Elements

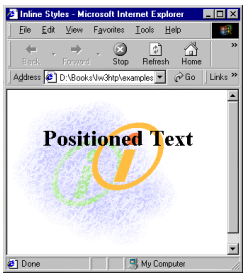
- CSS **`position`** property
  - *Absolute positioning*
    - Specifying an element's **`position`** as **`absolute`** removes it from the normal flow of elements on the page
    - Position the element according to distance from **`top`**, **`left`**, **`right`** or **`bottom`** margins of parent element
  - **`z-index`** attribute
    - Allows you to properly layer overlapping elements
    - Elements with higher **`z-index`** are displayed in front of elements with lower **`z-index`**

```
1<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2<HTML>
3
4<!-- Fig 14.6: positioning.html       -->
5<!-- Absolute positioning of elements -->
6
7<HEAD>
8<TITLE>Absolute Positioning</TITLE>
9</HEAD>
10
11<BODY>
12
13<IMG SRC = "i.gif" STYLE = "position: absolute; top: 0px;
14   left: 0px; z-index: 1">
15<H1 STYLE = "position: absolute; top: 50px; left: 50px;
16   z-index: 3">Positioned Text</H1>
17<IMG SRC = "circle.gif" STYLE = "position: absolute; top: 25px;
18   left: 100px; z-index: 2">
19
20</BODY>
21</HTML>
```

Outline

1. `position` property
   1.1 `absolute` positioning
   1.2 `z-index`

Positioning elements with CSS



6 Positioning Elements (II)

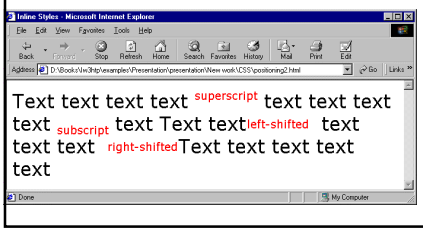
- CSS **`position`** property (cont.)
  - *Relative positioning*
    - Browser lays out the element on the page
    - Then offsets the element by specified **`top`**, **`bottom`**, **`left`** or **`right`** values
    - Keeps elements in the general flow of elements on the page
    - Be careful to avoid unintentionally overlapping text

```
1<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2<HTML>
3
4<!-- Fig 14.7: positioning2.html      -->
5<!-- Relative positioning of elements -->
6
7<HEAD>
8<TITLE>Relative Positioning</TITLE>
9
10<STYLE TYPE = "text/css">
11
12   P       { font-size: 2em;
13             font-family: Verdana, Arial, sans-serif }
14
15   SPAN    { color: red;
16             font-size: .6em;
17             height: 1em }
18
19   .super  { position: relative;
20             top: -1ex }
21
22   .sub    { position: relative;
23             bottom: -1ex }
24
25   .shiftl { position: relative;
26             left: -1ex }
27
28   .shiftr { position: relative;
29             right: -1ex }
30</STYLE>
31</HEAD>
32
33<BODY>
```

Outline

1. **`relative`** positioning

```
34
35<P>
36Text text text text <SPAN CLASS = "super">superscript</SPAN>
37text text text text <SPAN CLASS = "sub">subscript</SPAN>
38text Text text <SPAN CLASS = "shiftl">left-shifted</SPAN>
39text text text <SPAN CLASS = "shiftr">right-shifted</SPAN>
40Text text text text text
41</P>
42
43</BODY>
44</HTML>
```



Outline

2. Page rendered by browser

7 Backgrounds

- **`background-image`** property
  - Specifies the URL
- **`background-position`** property
  - Positions the image on the page
  - **`Top`**, **`bottom`**, **`center`**, **`left`** or **`right`**
  - Ex. **`background-position: 50% 30px;`**
    - Position image centered vertically (50% of the distance across the screen) and 30 pixels from the top
- **`background-repeat`** property controls tiling
  - **`no-repeat`**, **`repeat`**, **`x-repeat`**, **`y-repeat`**
- **`background-attachment`** property
  - **`fixed`**: scrolling the browser window will not move the image
  - **`scroll`**: moves the image as the user scrolls the window (default)
- **`text-indent`** property
  - Indents first line of text by specified amount

7 Backgrounds (II)

- **`font-weight`** property
  - specifies the "boldness" of affected text
  - **`bold`**
  - **`normal`**
  - **`bolder`**
  - **`lighter`**
  - Multiples of 100 from 100 to 900
- **`font-style`** property
  - **`none`**
  - **`italic`**
  - **`oblique`**
    - Will default to **`italic`** if system does not have separate font file for **`oblique`**

7 Backgrounds (III)

- **`SPAN`** element: generic grouping element
  - Does not apply any inherent formatting
  - Main use is to apply styles or **`ID`** attributes to block of text
  - *Inline element*
- **`DIV`** element
  - Similar to **`SPAN`**, but *block-level element*
    - Displayed on own line with margins above and below

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML>

<!-- Fig. 14.8: background.html               -->
<!-- Adding background images and indentation -->

<HEAD>
<TITLE>Background Images</TITLE>

<STYLE TYPE = "text/css">

   BODY  { background-image: url(watermark.gif);
           background-position: bottom right;
           background-repeat: no-repeat;
           background-attachment: fixed }

   P     { font-size: 2em;
           color: #AA5588;
           text-indent: 1em;
           font-family: Arial, sans-serif }

   .dark { font-weight: bold }

</STYLE>
</HEAD>

<BODY>

<P>
This is some sample text to fill in the page.
<SPAN CLASS = "dark">This is some sample
```

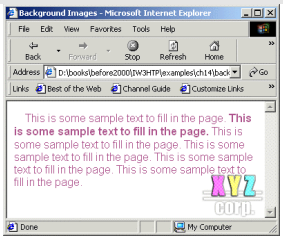
Outline

1. Use CSS to add a background image
   - 1.1 `background-image` property
   - 1.2 `background-position` property
   - 1.3 `background-repeat` property
   - 1.4 `background-attachment` property
   - 1.5 `text-indent` property
   - 1.6 `font-weight` property

```
text to fill in the page.</SPAN>
This is some sample text to fill in the page.
This is some sample text to fill in the page.
This is some sample text to fill in the page.
This is some sample text to fill in the page.
</P>

</BODY>
</HTML>
```

Outline

2. Page rendered by browser



8 Element Dimensions

- **`width`** property
  - Ex. **`<DIV STYLE = "width: 20%">`**
- **`height`** property
  - Relative and absolute lengths for **`width`** and **`height`** properties
- **`text-align`** property
  - **`center`**, **`left`** or **`right`**
- **`overflow`** property
  - **`scroll`** adds scrollbars if the text overflows the boundaries

```
1<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2<HTML>
3
4<!-- Fig. 14.9: width.html                    -->
5<!-- Setting box dimensions and aligning text -->
6
7<HEAD>
8<TITLE>Box Dimensions</TITLE>
9<STYLE TYPE = "text/css">
10
11   DIV { background-color: #FFCCFF;
12         margin-bottom: .5em }
13
14</STYLE>
15</HEAD>
16
17<BODY>
18
19<DIV STYLE = "width: 20%">Here is some
20text that goes in a box which is
21set to stretch across twenty precent
22of the width of the screen.</DIV>
23
24<DIV STYLE = "width: 80%; text-align: center">
25Here is some CENTERED text that goes in a box
26which is set to stretch across eighty precent of
27the width of the screen.</DIV>
28
29<DIV STYLE = "width: 20%; height: 30%; overflow: scroll">
30This box is only twenty percent of
31the width and thirty percent of the height.
32What do we do if it overflows? Set the
33overflow property to scroll!</DIV>
```

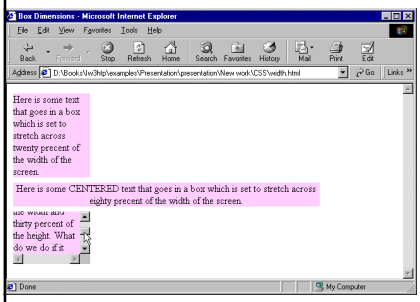
Outline

1. Dimensions in `DIV` element
   - 1.1 `width` property
   - 1.2 `height` property
   - 1.3 `text-align` property

```
34
35 </BODY>
36 </HTML>
```

Outline

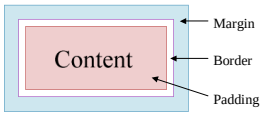
2. Page rendered by browser



9 Text Flow and the Box Model

- *Floating*
  - Allows you to move an element to one side of the screen
  - Other content in the document flows around the floated element
  - Float to the left or right of a document
- Each block-level element is “boxed”
  - *Box model* allows properties of box to be easily adjusted
    - Padding
    - Border
    - Margins

Box model for block-level elements




```
1<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2<HTML>
3
4<!-- Fig. 14.10: floating.html          -->
5<!-- Floating elements and element boxes -->
6
7<HEAD>
8<TITLE>Flowing Text Around Floating Elements</TITLE>
9<STYLE TYPE = "text/css">
10
11    DIV { background-color: #FFCCFF;
12          margin-bottom: .5em;
13          font-size: 1.5em;
14          width: 50% }
15
16</STYLE>
17</HEAD>
18
19<BODY>
20
21<DIV STYLE = "text-align: center">Centered text</DIV>
22<DIV STYLE = "text-align: right">Right-aligned text</DIV>
23
24<DIV STYLE = "float: right; margin: .5em">This is some floated
25text, floated text, floated text, floated text.</DIV>
26<P>
27Here is some flowing text, flowing text, flowing text.
28Here is some flowing text, flowing text, flowing text.
29Here is some flowing text, flowing text, flowing text.
30Here is some flowing text, flowing text, flowing text.
31Here is some flowing text, flowing text, flowing text.
32Here is some flowing text, flowing text, flowing text.
33Here is some flowing text, flowing text, flowing text.
```

Outline

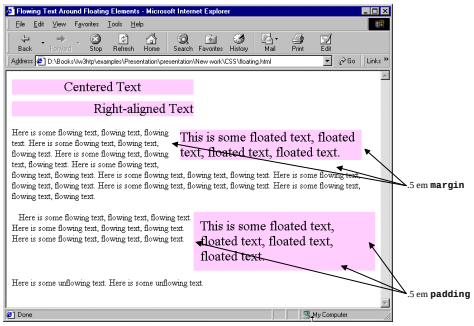
1. Floating elements
2. Setting box dimensions

```
34Here is some flowing text, flowing text, flowing text.
35</P>
36
37<P><DIV STYLE ="float: right; padding: .5em">This is some floated
38text, floated text, floated text, floated text.</DIV>
39Here is some flowing text, flowing text, flowing text.
40Here is some flowing text, flowing text, flowing text.
41Here is some flowing text, flowing text, flowing text.
42<SPAN STYLE = "clear: right">Here is some unflowing text.
43Here is some unflowing text.</SPAN>
44</P>
45
46</BODY>
47</HTML>
```

Outline

Interrupt flow of text around a floated element by setting the clear property to the same direction the element is floated

Floating elements, aligning text and setting box dimensions



9 Text Flow and the Box Model (II)

- Box model border
  - **border-width**
  - **border-style**
    - E.g. **border-top-style**
    - **none**
    - **hidden**
    - **dotted**
    - **dashed**
    - **solid**
    - **double**
    - **groove**
    - **ridge**
    - **inset**
    - **outset**
  - **border-color**
    - E.g. **border-left-color**

```
1<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2<HTML>
3
4<!-- Fig. 14.12: borders.html      -->
5<!-- Setting borders of an element -->
6
7<HEAD>
8<TITLE>Borders</TITLE>
9<STYLE TYPE = "text/css">
10
11   BODY    { background-color: #CCFFCC }
12
13   DIV     { text-align: center;
14             margin-bottom: 1em;
15             padding: .5em }
16
17   .thick  { border-width: thick }
18
19   .medium { border-width: medium }
20
21   .thin   { border-width: thin }
22
23   .groove { border-style: groove }
24
25   .inset  { border-style: inset }
26
27   .outset { border-style: outset }
28
29   .red    { border-color: red }
30
31   .blue   { border-color: blue }
32
33</STYLE>
```

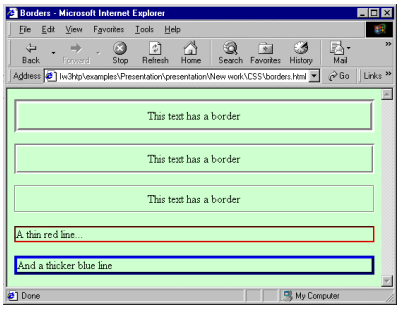
Outline

1. **Box model border properties**

```
</HEAD>

<BODY>

<DIV CLASS = "thick groove">This text has a border</DIV>
<DIV CLASS = "medium groove">This text has a border</DIV>
<DIV CLASS = "thin groove">This text has a border</DIV>

<P CLASS = "thin red inset">A thin red line...</P>
<P CLASS = "medium blue outset">And a thicker blue line</P>

</BODY>
</HTML>
```

Outline

Applying borders to elements

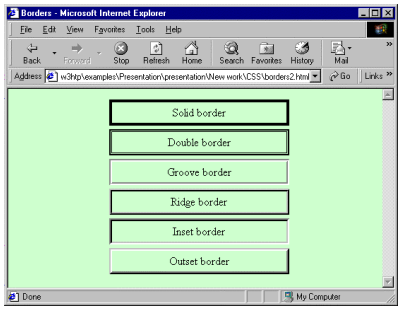



```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML>

<!-- Fig. 14.13: borders2.html  -->
<!-- Various border-styles      -->

<HEAD>
<TITLE>Borders</TITLE>

<STYLE TYPE = "text/css">

   BODY    { background-color: #CCFFCC }

   DIV     { text-align: center;
             margin-bottom: .3em;
             width: 50%;
             position: relative;
             left: 25%;
             padding: .3em }

</STYLE>
</HEAD>

<BODY>

<DIV STYLE = "border-style: solid">Solid border</DIV>
<DIV STYLE = "border-style: double">Double border</DIV>
<DIV STYLE = "border-style: groove">Groove border</DIV>
<DIV STYLE = "border-style: ridge">Ridge border</DIV>
<DIV STYLE = "border-style: inset">Inset border</DIV>
<DIV STYLE = "border-style: outset">Outset border</DIV>
</BODY>
</HTML>
```

Outline

1. **Creating borders with `border-style` property**

Various `border-styles`



10 User Style Sheets

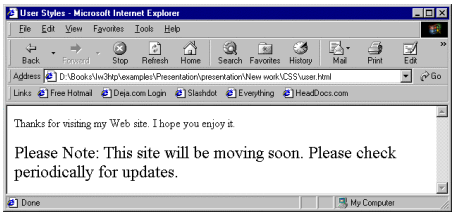
- Important issue when adding style sheets:
  - What kind of users will be using your site?
- Users can define their own user style sheets
- CSS specification gives precedence to author styles over user styles
- Use relative measurements
- Add a user style sheet in IE5
  - **Tools** menu → **Internet Options…**
    - **Accessibility…**
      - **Check Format documents using my style sheet**

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML>

<!-- Fig. 14.14: user.html  -->
<!-- User styles            -->

<HEAD>
<TITLE>User Styles</TITLE>

<STYLE TYPE = "text/css">

   .note { font-size: 1.5em }

</STYLE>
</HEAD>

<BODY>

<P>Thanks for visiting my Web site. I hope you enjoy it.</P>
<P CLASS = "note">Please Note: This site will be moving soon.
Please check periodically for updates.</P>

</BODY>
</HTML>
```

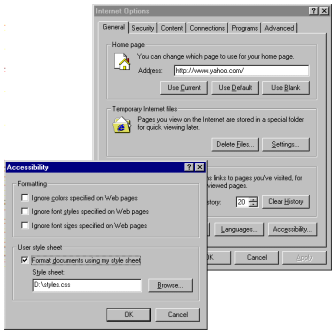
Outline

1.1 Use em measurement to modify text size

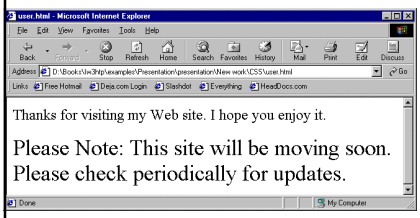
Modifying text size with the em measurement



Adding a user style sheet in Internet Explorer 5




```
BODY    { font-size: 20pt;
          background-color: #CCFFCC }
A       { color: red }
```

Outline

1. A sample user style sheet
2. A Web page with user styles enabled