



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ  
ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ

# Εισαγωγή στην Επιστήμη και Τεχνολογία των Υπηρεσιών

## Ενότητα 9: Cascading Style Sheet for HTML - 1

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Ευρωπαϊκή Ένωση  
Ευρωπαϊκό Κοινωνικό Ταμείο



ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ  
ΕΚΠΑΙΔΕΥΣΗ ΚΑΙ ΔΙΑ ΒΙΟΥ ΜΑΘΗΣΗ  
*επένδυση στην κοινωνία της γνώσης*  
ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ & ΘΡΗΣΚΕΥΜΑΤΩΝ, ΠΟΛΙΤΙΣΜΟΥ & ΑΘΛΗΤΙΣΜΟΥ  
ΕΙΔΙΚΗ ΥΠΗΡΕΣΙΑ ΔΙΑΧΕΙΡΙΣΗΣ

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης



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---

# XML

## Cascading Style Sheets for HTML - 1

605.444 / 635.444

David Silberberg  
Lecture 9

# Style Sheet Background

---

- HTML describes document components
  - Leaves presentation up to each browser
  - Simple HTML does not provide a way to standardize the display of each tag
- Style sheets provide a mechanism for separating the data from the display
  - Can mark up components of document without specifying display
  - Can define multiple style sheets for each document

# Style Syntax

---

- Styles can be defined in multiple locations
  - `style` attribute of element
  - `<STYLE>` element itself
  - External style sheet
- Setting style in elements
  - `STYLE` is an attribute of many elements
  - Must set a style for each tag
  - Of limited use because you will most likely want a standard for the same tag throughout the document
  - This is not very different from using a `<FONT>` tag

# Style Attribute Example

---

```
<HTML>
```

```
<HEAD>
```

```
  <TITLE>Style Document</TITLE>
```

```
</HEAD>
```

```
<BODY>
```

```
<H1 STYLE="font-family:Courier;font-size:10pt;color:red;"
```

```
  ALIGN="CENTER">H1 Style (Courier, 10pt, red)</H1>
```

```
<P STYLE="background-color:silver;color:green;font-size:12pt;
```

```
  text-decoration:line-through;">
```

Text that has a line through it.

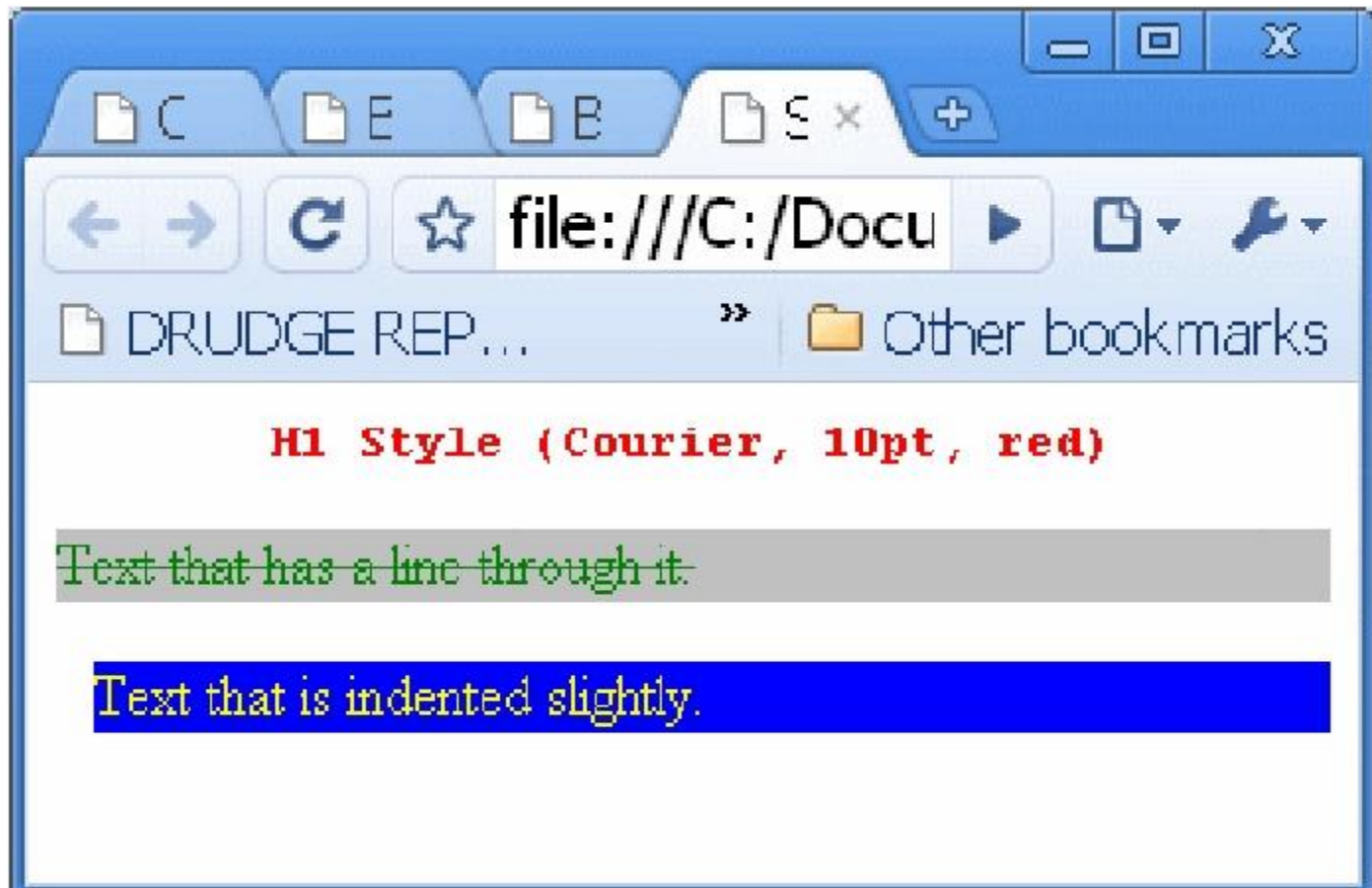
```
<P STYLE="background-color:blue;color:yellow;margin-left:10px;">
```

Text that is indented slightly.

```
</BODY>
```

```
</HTML>
```

# Style Attribute Output





# Style Element

---

- Style elements let you set styles for all tags of the same type
  - Styles can be set for <H1> or <P> and they apply to all of these tags
  - Tags that do not have styles set are displayed according to the default set by the browser

- Syntax:

```
<STYLE>
```

```
  H1 {font-family:Courier;font-size:10pt;color:red;}
```

```
  P  {background-color:silver;color:green;font-size:12pt;  
      text-decoration:line-through;}
```

```
</STYLE>
```

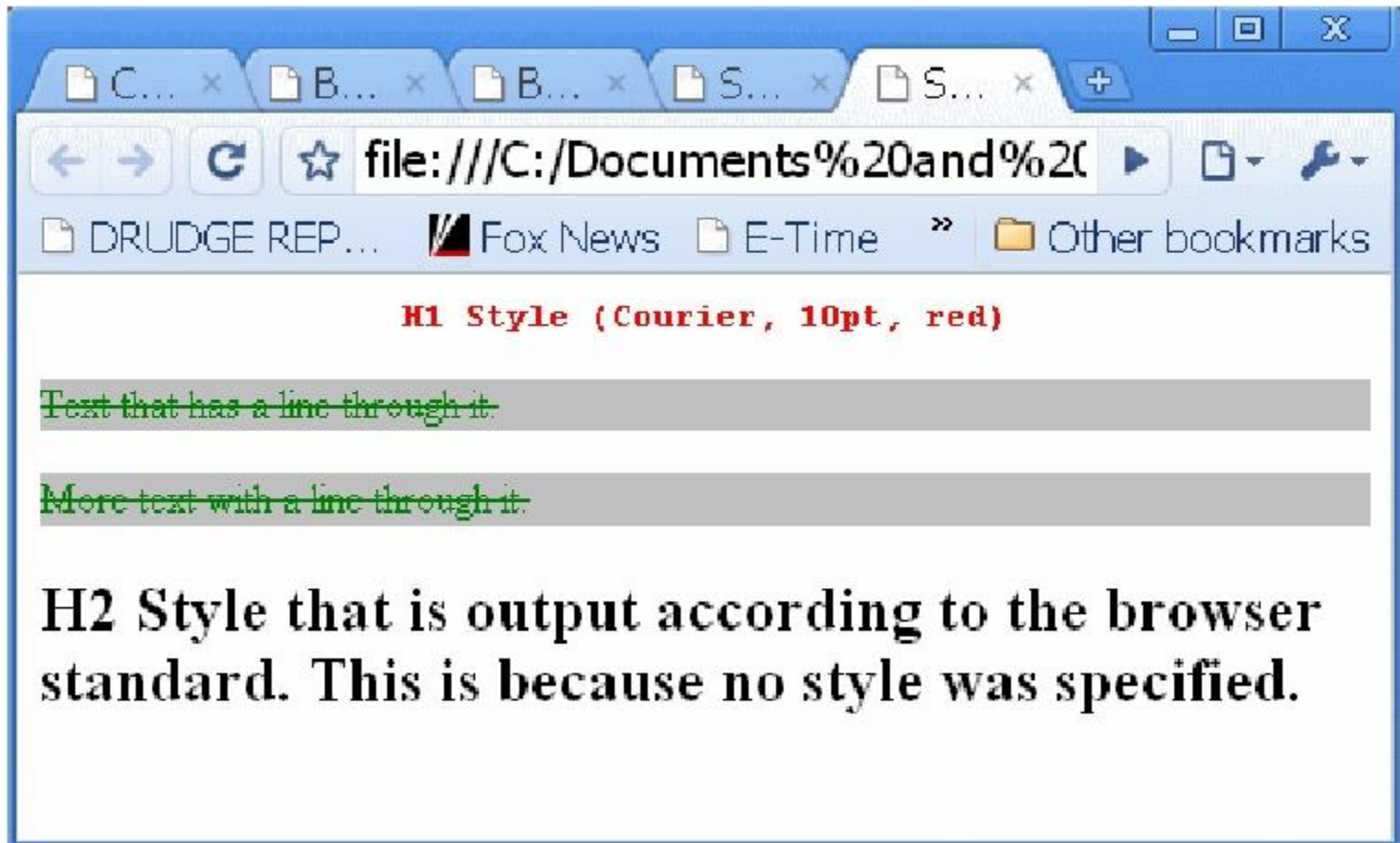
# Style Element Example

```
<HTML>
<HEAD><TITLE>Style Document</TITLE></HEAD>

<STYLE>
  H1 {font-family:Courier;font-size:10pt;color:red;}
  P {background-color:silver;color:green;font-size:12pt;
    text-decoration:line-through;}
</STYLE>

<BODY>
<H1 ALIGN="CENTER">H1 Style (Courier, 10pt, red)</H1>
<P>
Text that has a line through it.
<P>
More text with a line through it.
<H2>
H2 Style that is output according to the browser standard.
This is because no style was specified.
</BODY>
</HTML>
```

# Style Element Output



# Font Properties

---

- Provide information about how to display fonts
  - <http://www.w3.org/TR/REC-CSS1#font-properties>
  - bold, italic, normal
  - Font size
  - Font family
- font-weight (CSS2)
  - 100 - 900 (weights are in increments of 100)
  - normal (400)
  - bold (700)
  - bolder (100 more than inherited)
  - lighter (100 less than inherited)

# Font Weight Example

```
<HTML>
<HEAD><TITLE>Font Weight Example</TITLE></HEAD>
<STYLE>
  P { font-weight: normal } /* 400 */
  H1 { font-weight: 700 } /* bold */
  BODY { font-weight: 400 }
  STRONG { font-weight: bolder } /* 500 if available */
</STYLE>

<BODY>
<H1 ALIGN="CENTER">H1 Style (should be bold)</H1>
Regular body text should be normal font weight.
<P> Paragraph text should be normal font weight.</P>
Text with a <STRONG>&lt;STRONG&gt;</STRONG> tag should
be a bit bolder than the regular text.
</BODY>
</HTML>
```

# Font Weight Output



# Font Family and Style

- font-family
  - Programmer provides a list of fonts – and fall back fonts – to use
  - If none are available, programmer provide a generic font
  - family-name: “Times New Roman”, Symbol, Arial, etc.
  - generic-name: serif, sans-serif, cursive, fantasy, monospace
  - P {font-family: “Times New Roman”, Symbol, Arial, serif}
- font-style
  - normal
  - italic
  - oblique
  - H1, H2, H3 { font-style: italic } /\* H1, H2, H3 are italic \*/
  - H1 EM { font-style: normal } /\* EM within H1 is normal \*/

# Font Variant and Stretch

---

- font-variant
  - normal
  - small-caps
  - H3 {font-variant: small-caps;}
- font-stretch
  - normal
  - wider
  - narrower
  - ultra-condensed
  - extra-condensed
  - condensed
  - semi-condensed
  - semi-expanded
  - expanded
  - extra-expanded
  - ultra-expanded
  - H2 {font-stretch:expanded;}



# Font Size

---

- font-size
  - absolute size
    - xx-small
    - x-small
    - small
    - medium
    - large
    - x-large
    - xx-large
    - EM {font-size: x-large;}
    - scaling factor
      - Suggested to be 1.2
      - If medium is 12pt, then large is 14.4

# Font Size (continued)

---

- font-size
  - relative-size
    - larger
    - smaller
    - P {font-size:larger;}
    - Scales up or down one absolute size relative to parent
  - length
    - absolute size of font
    - P {font-size: 12pt;}
  - percentage
    - percentage relative to parent size
    - P {font-size: 125% }

# Font

---

- font
  - The keyword font can substitute for all of the font attributes
  - Therefore, font can generally be used as a substitute
- Examples
  - P { font: 12pt sans-serif }
  - P { font: 80% sans-serif }
  - P { font: x-large "new century schoolbook", serif }
  - P { font: bold italic large Palatino, serif }
  - P { font: normal small-caps fantasy }
  - P { font: oblique 12pt, serif; font-stretch: condensed }

# Text Properties

---

- **text-indent**
  - absolute length of indent
    - P {text-indent: 3em;}
  - percentage of containing block width
    - P {text-indent: 20%;}
- **text-align**
  - left
  - right
  - center
  - justify
  - P {text-align: center;}

# Text Properties (continued)

---

- text-decoration
  - none
  - underline
  - overline
  - line-through
  - blink
- text-shadow
  - Sets a shadow to the right and below the element's text.
    - No color has been specified so the shadow will have the same color as the element itself
    - No blur radius is specified, the text shadow will not be blurred:
    - H1 { text-shadow: 0.2em 0.2em }

# Text Properties (continued)

---

- `text-shadow`
  - Sets red shadow to the right and below the element's text with a 5px blur radius.
    - `H2 { text-shadow: 3px 3px 5px red }`
  - Sets a list of shadow effects.
    - `H3 { text-shadow: 3px 3px red, yellow -3px 3px 2px, 3px -3px }`
    - First shadow is red with no blurring to the right and below the element's text.
    - Second shadow overlays the first shadow effect. The shadow is yellow, blurred, and placed to the left and below the text.
    - Third shadow is placed to the right and above the text. Since no shadow color is specified for the third shadow effect, the value of the element's 'color' property will be used:

# Size Properties

---

- Em (**em**) - width of a lower case m
- X-Height (**ex**) - height of a lower case x
- Pixel (**px**) - height of one drawing element on the screen
- Inch (**in**) - one inch
- Centimeter (**cm**) - one centimeter
- Millimeter (**mm**) - one millimeter
- Point (**pt**) -  $1/72$  in
- Pica (**pc**) -  $1/6$  in (12 points)

# Shadow Example

---

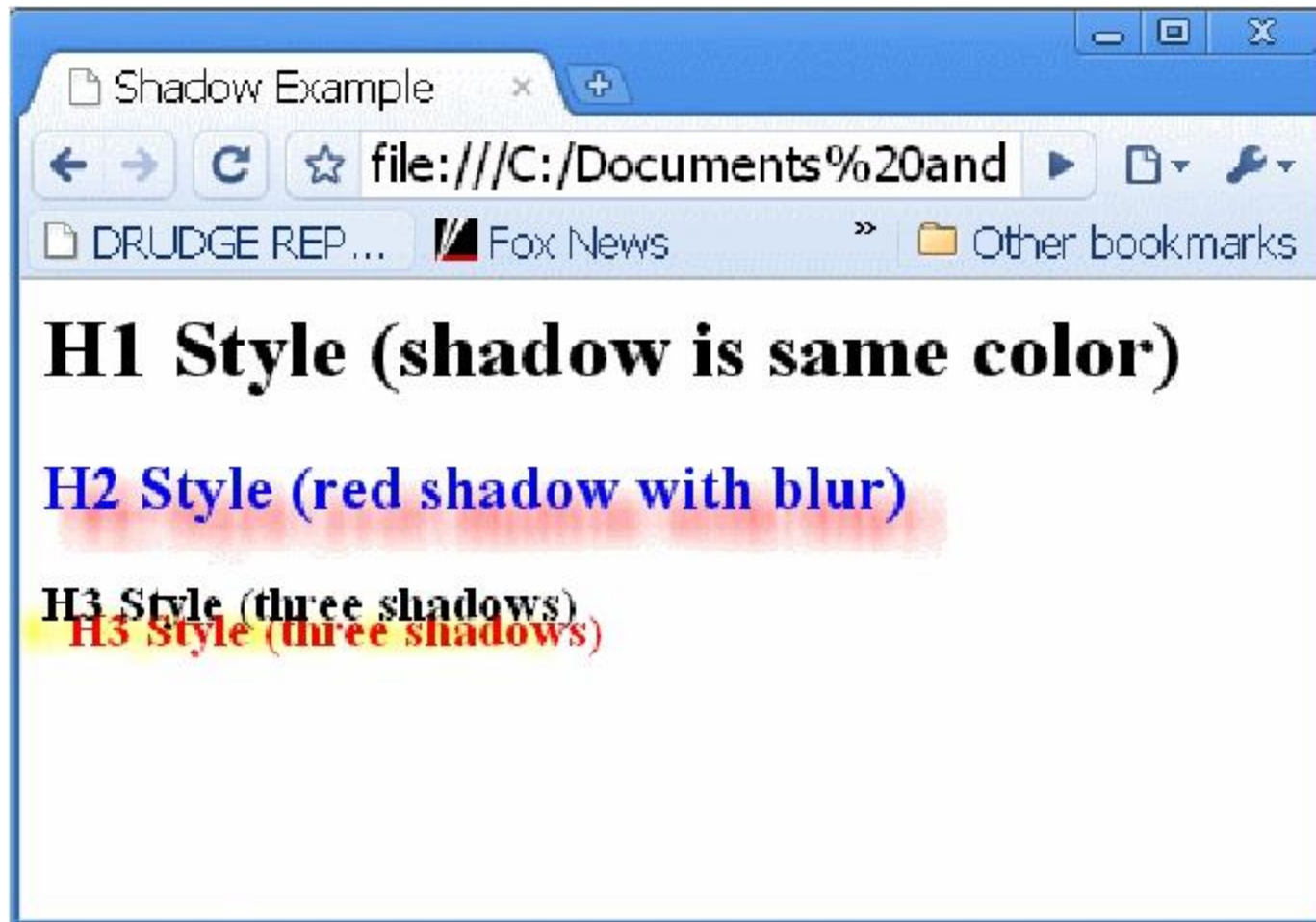
```
<HTML>
<HEAD><TITLE>Shadow Example</TITLE></HEAD>

<STYLE>
  H1 { color:black; text-shadow: 1.5em 1.5em }
  H2 { color:blue; text-shadow: 10px 10px 15px red }
  H3 { text-shadow: 10px 10px red, yellow -10px 10px 8px, 10px -10px }
</STYLE>

<BODY>
<H1>H1 Style (shadow is same color)</H1>
<H2>H2 Style (red shadow with blur)</H2>
<H3>H3 Style (three shadows)</H3>
</BODY>
</HTML>
```



# Shadow Example Output



# Text Properties (continued)

---

- letter-spacing
  - normal
  - length
  - percentage
  - BLOCKQUOTE {letter-spacing: .2em} /\* space between letters \*/
  - P {letter-spacing: -15% } /\* 15% smaller \*/
- word-spacing
  - normal
  - length
  - percentage
  - BLOCKQUOTE {word-spacing: .2em} /\* space between words \*/

# Text Properties (continued)

---

- line-height
  - Specifies distance within a paragraph between bottom of line on which a letter rests (not including descenders like p, q, and y) and the bottom of the next line
  - Normally 120% of font height
  - normal
  - number (multiple of normal size)
  - length
  - percentage
  - `BLOCKQUOTE {line-height: 2cm} /* space between words */`
  - `P {line-height: 3} /* three times the normal height */`

# Text Properties (continued)

---

- **text-transform**
  - `capitalize` /\* first letters of each word are capitalized \*/
  - `uppercase` /\* all letters of each word are in uppercase \*/
  - `lowercase` /\* all letters of each word are in lowercase \*/
  - `none`
- **white-space**
  - `normal` - collapses sequences of whitespace, and breaks lines as necessary to fill line boxes
  - `pre` - prevents collapsing sequences of whitespace and lines are only broken at newlines in the source
  - `nowrap` - collapses whitespace as for 'normal', but suppresses line breaks within text

# Text Properties (continued)

---

- vertical-align
  - Sets a block of text to be a superscript or subscript of another block of text
  - Similar to SUB and SUPER tags of HTML
  - sub
  - super
  - DIV {vertical-align: super}

# Color Properties

- color
  - Specifies foreground color
  - One of 16 named colors: aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white, yellow
  - RGB colors
  - Examples:

```
BODY {color: black;}
```

```
H1 { color: maroon; }
```

```
H2 { color: olive; }
```

```
EM { color: #f00; }          /* #rgb gets converted to #rrggbb */
```

```
EM { color: #ff0000; }      /* #rrggbb */
```

```
EM { color: rgb(255,0,0); } /* integer range 0 - 255 */
```

```
EM { color: rgb(100%, 0%, 0%); } /* float range 0.0% - 100.0% */
```

# Color Properties (continued)

---

- **background**
  - Can use this general keyword to express the background keywords below
- **background-color**
  - color (name, rgb, etc.)
  - transparent
- **background-image**
  - none
  - uri
  - Body {background: white url(image.gif)}
  - Body {background: white url(image\_dir/image.gif)}
  - Body {background: white url(http://www.images.com/image.gif)}

# Color Properties (continued)

---

- **background-repeat**
  - repeat - image is repeated both horizontally and vertically.
  - repeat-x - image is repeated horizontally only.
  - repeat-y - image is repeated vertically only.
  - no-repeat - only one copy of the image is drawn.
  - BODY {background-repeat: repeat-y;}
- **background-attachment**
  - scroll - image scrolls along with the document
  - fixed - image is “glued” to a spot on the browser window
  - Body {background-attachment: scroll;}



# Color Properties (continued)

- background-position
  - length length
    - P {background-position: 2cm 3cm;}
    - Image place 2cm across from left border and 3cm down from top border
  - percentage percentage
    - P {background-position: 10% 40%;}
    - The point 10% across and 40% down the image is placed in the position 10% across and 40% down the padding area
  - top left and left top /\* 0% 0% \*/
  - top, top center, and center top /\* 50% 0% \*/
  - right top and top right /\*100% 0% \*/
  - left, left center, and center left /\* 0% 50% \*/

# Color Properties (continued)

---

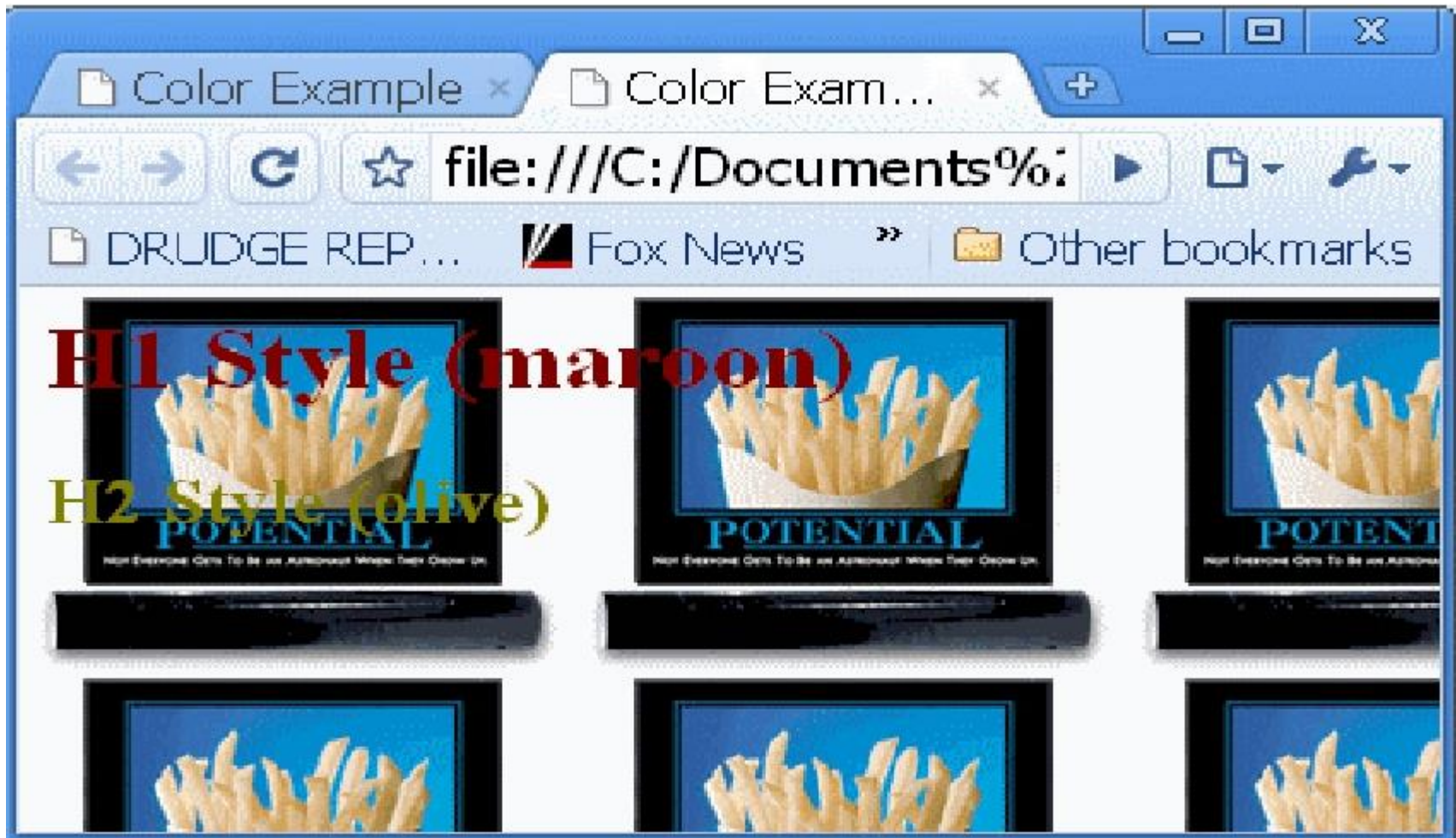
- background-position (cont.)
  - center and center center /\* 50% 50% \*/
  - right, right center, and center right /\* 100% 50% \*/
  - bottom left and left bottom /\* 0% 100% \*/
  - bottom, bottom center, and center bottom /\* 50% 100% \*/
  - bottom right and right bottom /\* 100% 100% \*/

# Color Properties Example

---

```
<HTML>
<HEAD><TITLE>Color Example</TITLE></HEAD>
<STYLE>
  BODY {color: black; background: white url(potential.jpg) repeat;}
  H1 { color: maroon; }
  H2 { color: olive; }
</STYLE>
<BODY>
<H1>H1 Style (maroon)</H1>
<H2>H2 Style (olive)</H2>
</BODY>
</HTML>
```

# Color Properties Example Output



# Box Properties - Dimensions

---

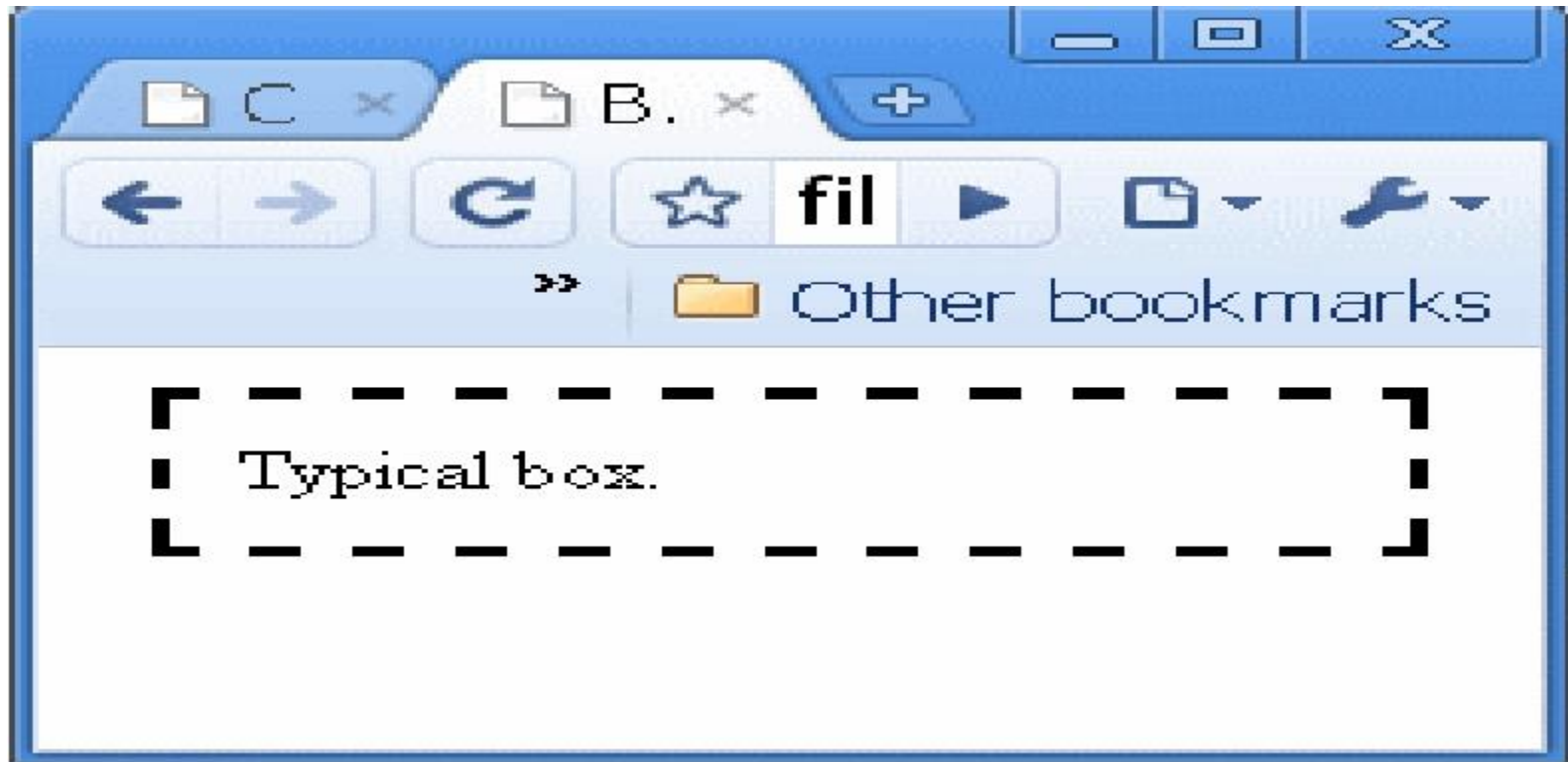
- A box has a content area (e.g., text, an image, etc.) and optional surrounding padding, border, and margin areas
- The size of each area is specified by box properties.
- The width and height of a box is the sum of:
  - the size of the main element of the box,
  - the size of the padding around the main element,
  - the size of the border around the padding, and
  - the size of the margins around the border
- Order of specification is top, right, bottom, left

# Box Properties Example

---

```
<HTML>
<HEAD><TITLE>Box Property Example</TITLE></HEAD>
  <STYLE type="text/css">
    P {margin: 12px 12px 12px 12px;
        padding: 12px 0px 12px 12px; /* Note 0px padding right */
        border-style: dashed;
        border-width: medium;      /* sets border width on all sides */
        border-color: black; }
  </STYLE>
</HEAD>
<BODY>
  <P> Typical box.
</BODY>
</HTML>
```

# Box Properties Example Output



# Boxes - Margin Properties

---

- Set margin sizes individually
  - margin-top
  - margin-right
  - margin-bottom
  - margin-left
- Sets size in terms of absolute size
  - margin-top: 3em; // size of font
  - margin-left: 4px; // size in terms of pixels
- Sets size in terms of percentage of containing block
  - margin-right: 10%;



# Boxes - Margin Properties

---

- margin
  - Shorthand property for setting 'margin-top', 'margin-right', 'margin-bottom', and 'margin-left'
- If there is only one value
  - Applies to all sides
  - margin: 3em; // margin of 3em on all sides
- If there are two values
  - Top and bottom margins are set to the first value
  - Right and left margins are set to the second value
  - margin: 2px 10px; // top & bottom are 2px; right & left are 10px

# Boxes - Margin Properties

---

- If there are three values
  - Top is set to the first value
  - Left and right are set to the second
  - Bottom is set to the third
  - `margin: 3px 5px 4px;`
  - Same as:
    - `margin-top: 3px; margin-left: 5px; margin-right: 5px; margin-bottom: 4px;`
- If there are four values
  - They apply to the top, right, bottom, and left, respectively.
  - `margin: 3px 5px 4px 6px;`
  - Same as:
    - `margin-top: 3px; margin-left: 6px; margin-right: 5px; margin-bottom: 4px;`

# Padding Properties

---

- Set the same way as margin properties
- Individual padding elements
  - padding-top
  - padding-right
  - padding-bottom
  - padding-left
- General padding specification
  - padding
  - padding: 1em 5em 4em
  - Same as:
    - padding-top: 1em; padding-left: 5em; padding-right: 5em; padding-bottom: 4em;

# Border Width

---

- Set the same way as margin properties
- Individual border width elements
  - border-width-top
  - border-width-right
  - border-width-bottom
  - border-width-left
- Values: thin, medium, thick, exact value
- General border width specification
  - border-width: thin thick 4em
  - Same as:
    - border-width-top: thin; border-width-left: thick; border-width-right: thick; border-width-bottom: 4em;

# Border Colors

---

- Set the same way as margin properties
- Individual border color elements
  - border-top-color
  - border-right-color
  - border-bottom-color
  - border-left-color
- Values: all color values, transparent (but has width)
- General border width specification
  - border-color: blue red
  - Same as:
    - border-top-color: blue; border-left-color: red; border-right-color: red; border-bottom-color: blue;

# Border Style

---

- Individual border style elements
  - border-top-style
  - border-right-style
  - border-bottom-style
  - border-left-style
  - border-style
- Values:
  - none: no border. this value forces the computed value of 'border-width' to be '0'.
  - hidden: same as 'none', except in terms of border conflict resolution for table elements.

# Border Style (continued)

---

- Values:
  - dotted: the border is a series of dots.
  - dashed: the border is a series of short line segments.
  - solid: the border is a single line segment.
  - double: the border is two solid lines. the sum of the two lines and the space between them equals the value of 'border-width'.
  - groove: the border looks as though it were carved into the canvas.
  - ridge: the opposite of 'grove': the border looks as though it were coming out of the canvas.
  - inset: the border makes the entire box look as though it were embedded in the canvas.
  - outset: the opposite of 'inset': the border makes the entire box look as though it were coming out of the canvas.

# Border Shorthand Properties

---

- Individual border style elements
  - border-top
  - border-right
  - border-bottom
  - border-left
  - border
- Examples
  - P { border: red groove }
  - H2 { border-top: solid 4em }

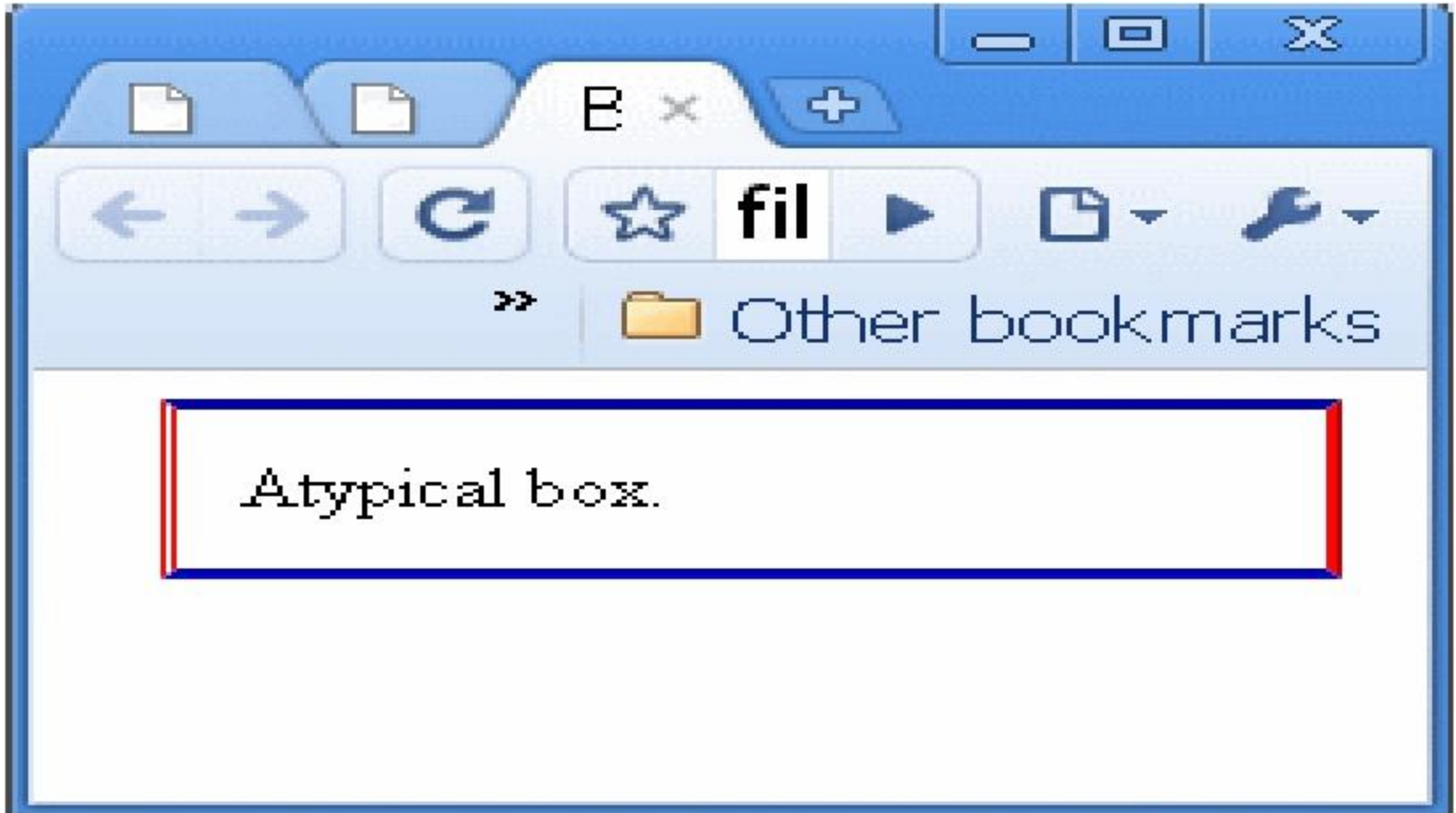


# Border Properties Example

---

```
<HTML>
<HEAD><TITLE>Box Property Example</TITLE></HEAD>
  <STYLE type="text/css">
    P {margin: 4px 8px 12px 16px;
        padding: 12px 0px 12px 12px; /* Note 0px padding right */
        border-top-style: inset; border-right-style: ridge;
        border-bottom-style: groove; border-left-style: double;
        border-width-top: thin; border-width-left: thick;
        border-width-right: thick; border-width-bottom: 4em;
        border-top-color: blue; border-left-color: red;
        border-right-color: red; border-bottom-color: blue; }
  </STYLE>
</HEAD>
<BODY>
  <P> Atypical box.
</BODY>
</HTML>
```

# Border Properties Example Output



# Τέλος Ενότητας



Ευρωπαϊκή Ένωση  
Ευρωπαϊκό Κοινωνικό Ταμείο



Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

