

CMPT 165

Unit 3 – CSS

May 27th, 2015

Today's Agenda

- Recap of relative URL
- More on styling with CSS
 - Styling in groups
 - Color formatting
 - ...

Absolute vs. Relative URL

`http://cmpt165.csil.sfu.ca/~lisat/SFU_logo.png`

`http://cmpt165.csil.sfu.ca/~lisat/index.html`

index.html:

Under same directory

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"          "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head><title>Title</title></head>
  <body>

    <h1>Heading</h1>
    <p></p>

    <p></p>

  </body>
</html>
```

Absolute vs. Relative URL

`http://cmpt165.csil.sfu.ca/~lisat/d1/SFU_logo.png`

`http://cmpt165.csil.sfu.ca/~lisat/index.html`

index.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"          "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head><title>Title</title></head>
  <body>

    <h1>Heading</h1>
    <p></p>

    <p></p>

  </body>
</html>
```

Absolute vs. Relative URL

`http://cmpt165.csil.sfu.ca/~lisat/d1/SFU_logo.png`

`http://cmpt165.csil.sfu.ca/~lisat/d2/index.html`



index.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"          "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head><title>Title</title></head>
  <body>

    <h1>Heading</h1>
    <p></p>

    <p></p>

  </body>
</html>
```



“parent” directory

Absolute vs. Relative URL

`http://cmpt165.csil.sfu.ca/~lisat/d1/SFU_logo.png`

`http://cmpt165.csil.sfu.ca/~lisat/d2/d3/index.html`



“grandparent” directory

index.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
strict.dtd">
<html>
  <head><title>Title</title></head>
  <body>

    <h1>Heading</h1>
    <p></p>

    <p></p>

  </body>
</html>
```



Absolute vs. Relative URL

`http://cmpt165.csil.sfu.ca/~lisat/d1/s/SFU_logo.png`

`http://cmpt165.csil.sfu.ca/~lisat/d2/d3/index.html`

index.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"          "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head><title>Title</title></head>
  <body>

    <h1>Heading</h1>
    <p></p>

    <p></p>

  </body>
</html>
```

Cascading Style Sheets (CSS)

What?

“Cascading” stylesheet?

– “Cascading”: answered later

Why CSS?

– You should know

How?

`<style>`

`<link>`

<style> tag

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
```

```
<head>
```

```
<title>Title</title>
```

```
<style type="text/css" media="all" >
```

```
p {  
  text-align: center;  
}
```

```
h1 {  
  text-align: center;  
  color: red;  
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<h1>Heading</h1>
```

```
<p>This is a paragraph.</p>
```

```
<p>This is another paragraph.</p>
```

```
<h1>Heading 2</h1>
```

```
<p>This is yet another paragraph.</p>
```

```
<p>More paragraphs.</p>
```

```
</body>
```

```
</html>
```

Required attribute


Optional attribute

Contents of <style> tag!

CSS syntax

Syntax of content of CSS/style tag

- Selector may refer to any number of elements that you are formatting
- Declarations are separated by semicolons!

selector1 {  "Curly brace"
Declaration

property_1: value_1;

property_2: value_2;
...
property_N: value_N;
}
selector2 {
property_1: value_1;
property_2: value_2;
...
property_M: value_M;
}

Example declarations:

```
ul {  
  list-style-type: circle;  
}  
ol {  
  start: c;  
}  
h1 {  
  text-align: center;  
}  
h2 {  
  text-align: center;  
}
```

Ways to define styles

1. In the header

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<html>
  <head>
    <title>Title</title>
    <style type="text/css">
      p{
        text-align: center;
        color: blue;
      }
    </style>
  </head>
  <body>
    <h1>Heading</h1>
    <p>This is a paragraph.</p>

    </body>
  </html>
```

2. "Inline" (FYI)

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<html>
  <head>
    <title>Title</title>

  </head>
  <body>
    <h1>Heading</h1>
    <p style="text-align: center;
color: blue;">This is a
    paragraph.</p>

    </body>
  </html>
```

Ways to define styles

3. Linking to an external stylesheet

second_page.html

index.html

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head>
    <title>Page 2</title>
    <link href="my_style.css" type="text/css" />
  </head>
  <body>
    <h1>Heading</h1>
    <p>This is yet another page.</p>
  </body>
</html>
```

```
<p>This is another paragraph.</p>
</body>
</html>
```

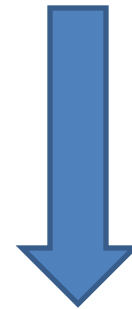
my_style.css

```
p {
  text-align: center;
}
```

3 ways to styling markup

Amount of work?

1. Inline
2. In the header
3. In a separate CSS file



Most

Least

CSS: multiple selectors

Grouping declarations by selector:

my_style.css

```
h1 h2 h3 {  
    text-align: center;  
}
```

```
p h1 h2 h3 h4 h5 h6 {  
    color: red;  
}
```

```
p h1 h2 h3 {  
    text-align: center;  
    color: red;  
}
```

More reasons for using CSS

- Link to an external CSS file produces smaller files
 - Smaller files ➔ faster transfer times
- Define style once
 - Consistency
 - Easily update appearance of entire site
 - E.g. Apply different color schemes for different seasons
- Easier to read markup/stylesheets
- Easier for search engine to parse them
 - Increase chances of user finding your webpages

Minimize clutter:

```
<body>
  <h1>Heading</h1>
  <p style="text-align: center;
    color: blue;">This is a
    paragraph.</p>
</body>
```

CSS: background

- Versions=levels:
 - Level 1: released in Dec 1996
 - Level 2: released in May 1989
 - Level 2.1: released in June 2011
 - Level 3 is being developed
 - Level 4 is planned for the future
- CMPT 165 uses CSS Level 1

CSS Level 1

Style support for:

- **Color** of element text, backgrounds, etc.
- **Alignment** of elements (text, images, etc.)
- **Text** formatting: e.g. spacing of words, letters, lines
- **Font** properties: typeface and emphasis
- **Boxing**: margin, border, padding, and positioning
- **Unique identification**: explained later
- **Generic classification**: explained later

Colors

17 standard color presets

- White
- Silver
- Gray
- Black
- Red
- Maroon
- Yellow
- Olive
- Orange
- Lime
- Green
- Aqua
- Teal
- Blue
- Navy
- Fuchsia
- Purple

RGB model

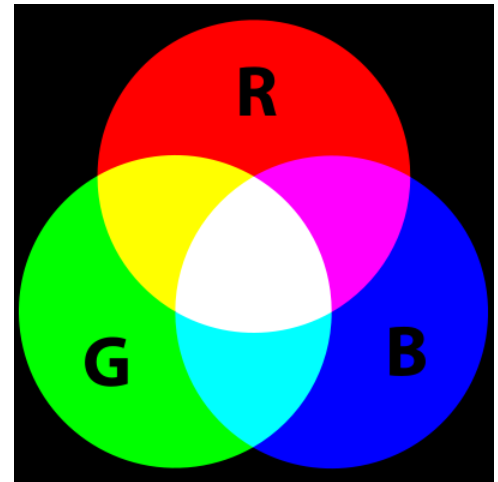
- “primary colors”: Red + Green + Blue
- “Additive” model:

i.e. Red + Green = Yellow

Red + Blue = Purple

RGB coding:

- System for specifying web colors
- A numerical value reflecting *intensity* (“strength”) of a color channel:
e.g.
 - 5 is brighter than 0
 - 8 is brighter than 2
- 3 channels → 3 sets of values, e.g. Bright red given by 900



<http://en.wikipedia.org/wiki/File:AdditiveColor.svg>

RGB model



Examples:

Possible RGB encoding:

- | | |
|-----------------|-------|
| • Bright green? | 0 9 0 |
| • Dark green? | 0 5 0 |
| • Bright blue? | 0 0 9 |
| • Dark red? | 5 0 0 |
| • Dark blue? | 0 0 5 |
| • Purple? | 5 0 5 |
| • Black? | 0 0 0 |
| • Gray? | 5 5 5 |

Color specification via hex triplet

Decimal system (base=10):

0 1 2 3 4 5 6 7 8 9

Darkest  Brightest

Hexadecimal system (base=16):

0 1 2 3 4 5 6 7 8 9 A B C D E F

Darkest  Brightest

Example:

Brightest red? RGB = X X X?
= F 0 0

RGB model



0 1 2 3 4 5 6 7 8 9 A B C D E F

Examples:

	<u>Decimal</u>	<u>Hexadecimal</u>
• Bright green?	0 9 0	0 F 0
• Dark green?	0 5 0	0 8 0
• Bright blue?	0 0 9	0 0 F
• Dark red?	5 0 0	8 0 0
• Dark blue?	0 0 5	0 0 8
• Purple?	5 0 5	8 0 8
• Black?	0 0 0	0 0 0
• Gray?	5 5 5	8 8 8

RGB model

“Truecolor”: 6-digit hexadecimal code

Hexadecimal system (base=16):

0 1 2 3 4 5 6 7 8 9 A B C D E F

Dark  Bright

00 01 02 88 ... FE FF

Dark  Bright

Example:

Bright red? RGB= XX XX XX?

= FF 00 00

Side notes: 24-bit true color

- Use 1 byte/channel
- 1 byte = X bits?
 - $X = 8$
 - 1 “binary” bit gives 2 variations: 0 1 ← (see Week#1)
 - $2^8 = ?$
 - $2^8 = 256$ variations per channel
- 3 bytes = Y bits?
 - 3 bytes = $8 \times 8 \times 8 = 24$ bits
- $256 \times 256 \times 256 \rightarrow$ “24-bit true color”
- Need 2 hexadecimal numbers to represent 1 byte
- How many hexadecimal numbers do you need for each channel?
 - $16 \times 16 = 256 \rightarrow$ 2 hexadecimal numbers

RGB model



0 1 2 3 4 5 6 7 8 9 A B C D E F

Examples:

	<u>Decimal</u>	<u>Hexadecimal</u>
• Bright green?	090	0F0 = 00FF00
• Dark green?	050	080 = 008800
• Bright blue?	009	00F = 0000FF
• Dark red?	500	800 = 880000
• Dark blue?	005	008 = 000088
• Purple?	505	808 = 880088
• Black?	000	000 = 000000
• Gray?	555	888 = 888888

Color specification in CSS

Start with hash key (#):

```
p {  
    background-color: #0F0;  
    color: #A1AF00;  
}
```

body { Q: Why might this be a poor choice?

```
    background: #00FF00;  
    color: #0F0;  
}
```

Side notes:

- Use American spelling “color”
- British spelling “colour” won’t work

```
hr {  
    border-color: #0a0;  
}
```

Color specification in CSS

1. Presets: “red”, “blue”, ...
2. Hexadecimal code
 - a) 3-byte hexadecimal → 6 digits, e.g. #0000FF
 - b) Abbreviated form: 3 (hexadecimal)-digit, e.g. #00F
3. Function-based: `rgb(A,B,C)` `function(input1,input2,input3)=color`

Recall: 256 intensity values per channel

E.g.

Brightest red: `rgb (256 , 0 , 0) ;`

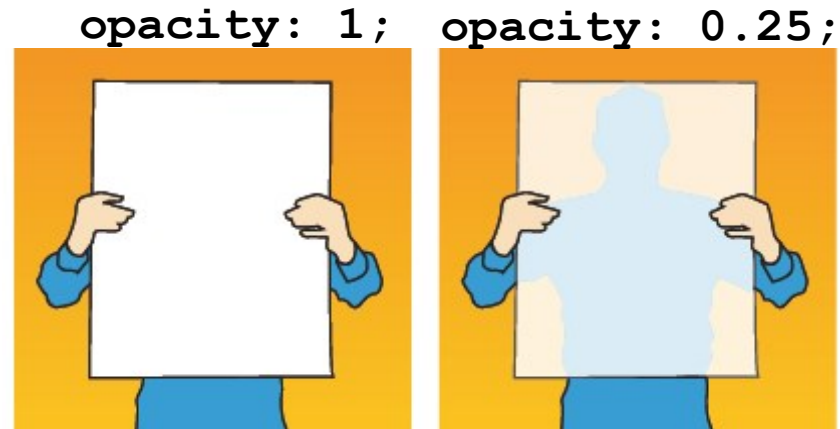
Grey: `rgb (128 , 128 , 128) ;`

Brightest red: `rgb (100% , 0% , 0%) ;`

Opacity property

- May add transparency to any element
- “Opacity”
 - Amount of light absorption
 - Strength of 0 to 1
 - 1 means 100% absorbed
- Examples:

```
hr {  
    border-color: red;  
    opacity: 0.5;  
}  
img {  
    opacity: 0.25;  
}
```



<http://www.archive.europapier.com/service/knowhow/testingpaper/visual-characteristics/img/opacity.jpg>

Today's Highlights

- More motivations for using CSS
- CSS
 - Formatting colors
 - Hexadecimal color coding
 - Color specification
 - Opacity (transparency)
- Commenting in markup and stylesheets

Commenting in markup

Sometimes you need to add comments (not to be displayed by browser)...

```
<!-- this is a comment -->
```

index.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"          "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head><title>Title</title></head>
  <body>

    <h1>Heading</h1> <!-- this will be ignored -->
    <p></p>
    <!-- this image was downloaded from www.abc.ca -->

  </body>
</html>
```

Commenting

In stylesheets:

```
/* this is a comment */
```

```
hr {  
    border-color: red; /* tested on May2 */  
    border-style: solid;  
}  
  
p { /* color found at http://abc.ca */  
    background-color: #0F0;  
    color: #A0F00;  
}
```

Questions?

Lab exercises

- Lab exercise 2:
 - XHTML + CSS
 - Due tomorrow 23:59pm
 - TA office hours today
- Lab exercise 1: grades released