

Cascading Style Sheets (CSS)

Systems and Web Development Workshop
2025 Spring

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Class exercises solutions, students added

- Class exercise solution will be released in few days.
 - Normally we release the solution after it is due.
 - So you can study the solution before the new material presented in the following week.
 - However **many students added** the class; cannot submit yet.
 - These students please have your **class exercises ready**.
 - When AR adds your names into this course,
 - TA will give you a **short period** of time to **submit**.
 - Then **solutions** will be **released**.

Sign-up with a partner in iSpace

- Everyone sign up as pairs in iSpace
 - Each **pair** uses one **stuweb** server account.
 - After ITSC sets up the accounts, we will give that to you.
 - So each pair will do many **class exercises** and **assignments** together.
 - Sign up begins at the end of this week, after add/drop ends.
 - Start look for a partner now.

Assignment 1

- **Assignment 1** will be released after **Week 3**
 - Generally there will be an assignment or a test every 2 weeks or so, until we get to the presentation part of the course.
- At end of Week 3 or beginning of Week 4, we will determine the date and time for Test 1

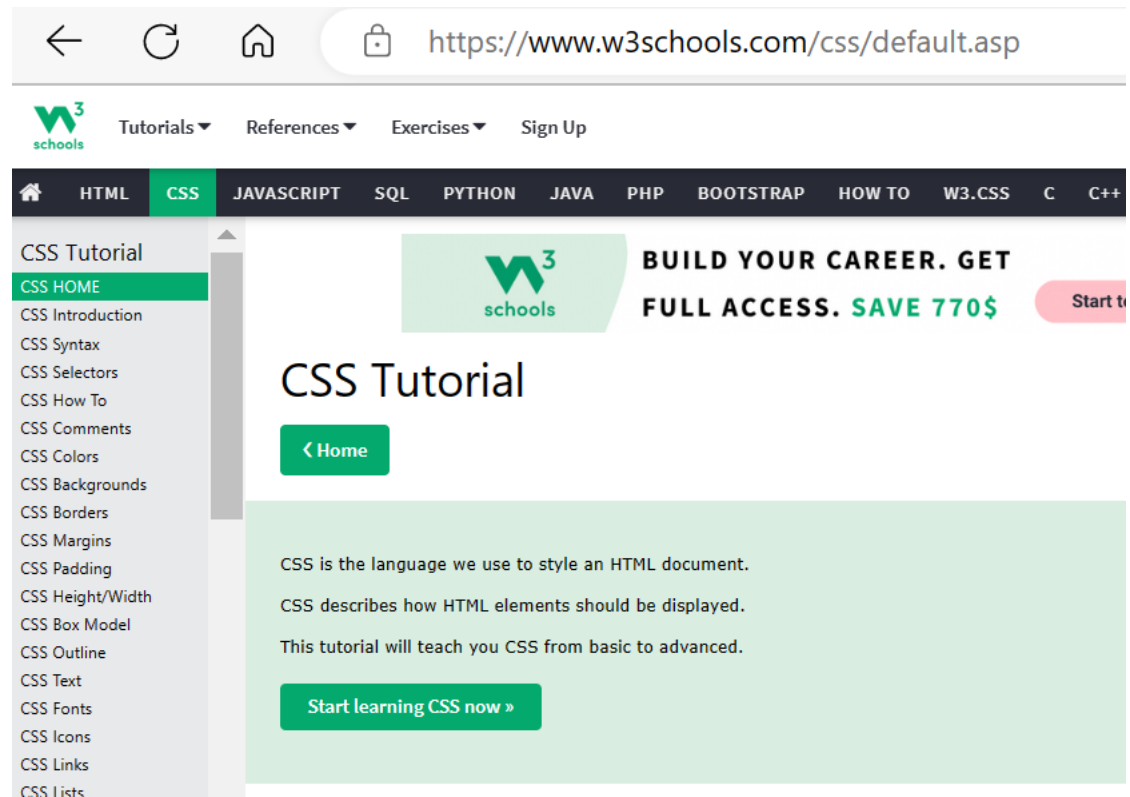
Reminder: These slides is a Tutorial

- Just like the week 1, these slides is a tutorial.
- During lecture
 - Teacher will point out main ideas during lecture
 - Bring your laptop to “Try it Yourself” in W3 Schools
- During lab
 - Running the examples that don't understand
 - Run and study the sample code
 - Do the class exercises

W3 Schools

- We will not teach you everything.
- You can find more explanations and examples in
 - w3schools.com/css
 - w3schools.cn/css
 - w3school.com.cn

- Click “Try it Yourself” to run the examples in the W3 Schools website.



Outline

- What and Why CSS
- 3 Ways to Insert CSS
- Multiple Style Sheets
- CSS Syntax
 - Selectors
 - Background
 - Text
 - Fonts
 - Links
 - Box Model

Outline (Continue)

- Class Exercises 1
- CSS syntax (continue)
 - Position
- Class exercise 2
 - Sample code on CSS position

What is CSS?

- CSS stands for **C**ascading **S**tyle **S**heets
- CSS **describes** how HTML elements are **to be displayed** on screen, paper, or in other media
- CSS controls the **layout** of **multiple web pages** all at once.
 - A lot less work than using HTML alone.
- External stylesheets are stored in CSS files
 - E.g. MyStyle.css.

Why use CSS?

- CSS **defines the styles** for your web pages, including
 - the **design**
 - **layout** and variations in display for different devices
 - **screen sizes**
- HTML was **never** intended to contain tags for formatting a web page!
 - HTML was created to describe the content of a web page
- CSS removed the style formatting from the HTML page!
 - CSS Saves a Lot of Work!

Three Ways to Insert CSS

- There are three ways of inserting a style sheet:

1. **External style sheet** specifies the style in a **CSS file**.

- Can apply to multiple pages.

```
<link rel="stylesheet" type="text/css" href="mystyle.css" />
```

2. **Internal style sheet** specifies the style in the **head section**.

- Applies to entire page.

```
<style type="text/css">  
hr {color:sienna;}  
</style>
```

3. **Inline style sheet** specifies style **within an element**.

- Only applies to that element.

```
<p style="color:red; padding:10px"> paragraph.</p>
```

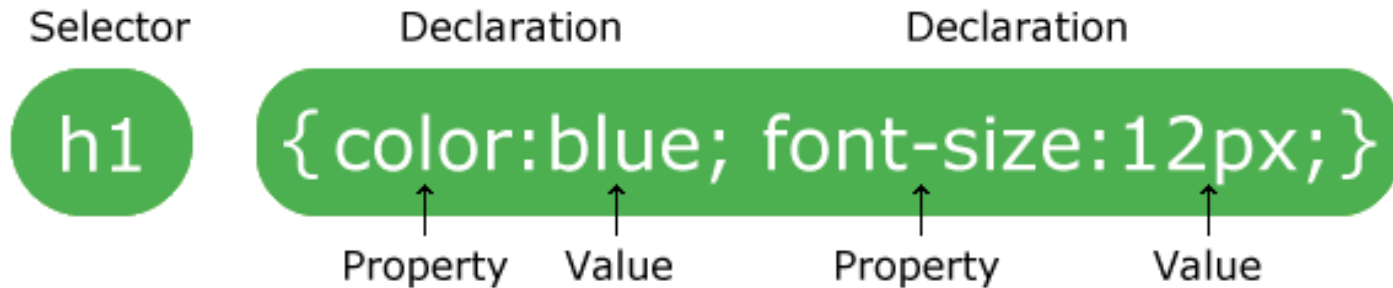
Multiple Style Sheets

- Which style will be used when **more than one style** are **specified** for an HTML element?
- Multiple Styles will **cascade** into one
- Cascading order
 1. **Browser default**
 2. **External style sheet**
 3. **Internal style sheet** (in the head section)
 4. **Inline style** (inside an HTML element)

Multiple Style Sheets

- In a webpage, style settings are applied in this order:
 1. **Browser default** style is applied to all elements in the webpage.
 2. **External style** sheet is applied.
 - Replace the current elements style **by** those specified in the external CSS file.
 3. **Internal style sheet (in head section)** is applied.
 - Replace the current style setting in the webpage by the element's style specified in **the head section**.
 4. **Inline style** is applied.
 - Replace the current style setting in the webpage by the elements style specified for the **specific element**.

CSS Syntax



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

<h1> text will be in blue with font size 12 pixels.

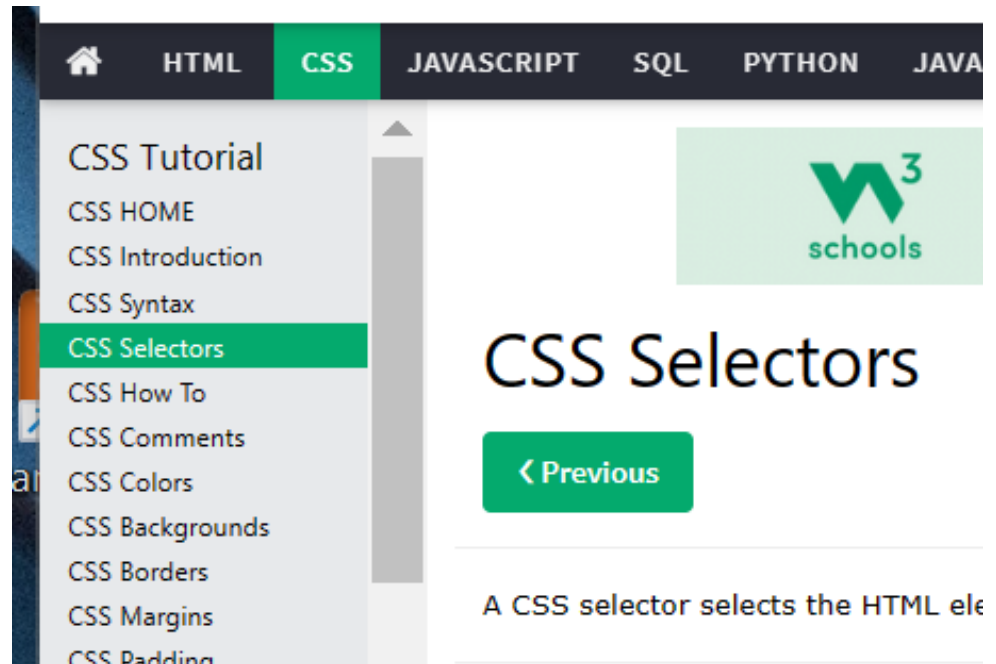
<p> will be in red and center aligned.

Try it Yourself in
w3schools.cn/css/css_syntax.asp

CSS Selectors

- We can use **CSS selectors** to "find" (or **select**) **HTML elements** based on their
 - element name,
 - id,
 - class,
 - attribute,
 - and others.

Try it Yourself in
https://www.w3schools.com/css/css_selectors.asp



CSS Selectors: Elements name

Select style by
elements name

- Elements name: <p>, <h1>, <h6>, <body>

```
<!DOCTYPE html>
<html>
<head>
<style>
  p {text-align: center; color: red; }
</style>
</head>
<body>
<p>Every paragraph will be affected by the style.</p>
<p id="para1">Me too!</p>
<p>And me!</p>

</body>
</html>
```

Set the style for <p>

Every paragraph will be affected by the style.

Me too!

And me!

Try it Yourself in
https://www.w3schools.com/css/tryit.asp?filename=trycss_syntax_element

CSS Selectors: ID Selector

Select style by id

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<style>
```

```
#para1 {text-align: center; color: red;}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<p id="para1">Hello World!</p>
```

```
<p>This paragraph is not affected by the style.</p>
```

```
</body>
```

```
</html>
```

Put id name after #.

Id name cannot start with a number.

Using the id

Hello World!

This paragraph is not affected by the style.

CSS Selectors: ID Selector

Notes on the **previous slide**

- An id name cannot start with a number.
- The id selector uses the **id attribute** of an **HTML element** to select a specific element.
- The **id** of an element should be **unique** within a page
 - The id selector is used for selecting one unique element.
- To select an element with a specific id, use a **hash (#)** character, followed by the id of the element.
 - E.g. #para1
 - Then the style rule is applied to the HTML element with id="para1".
- **Try it Yourself**
 - https://www.w3schools.com/css/tryit.asp?filename=trycss_syntax_id

CSS Selectors: **class** Selector

Select style by class

Define the classes center and right.

```
<!DOCTYPE html>
<html>
<head>
<style>
.center {text-align: center; color: red; }
.right {text-align: right; color: blue; }
</style>
</head>
<body>

<h1 class="center">This heading is centered</h1>
<p class="center">I belong to class center</p>
<p class="right">I belong to class right</p>
<p class="center">I belong to class center</p>
<p class="center">I belong to class center</p>
<p class="right">I belong to class right</p>
<p class="center">I belong to class center</p>

</body>
</html>
```

This heading is centered

I belong to class center

I belong to class right

I belong to class center

I belong to class center

I belong to class right

I belong to class center

CSS Selectors: **class** Selector

Notes on the **previous slide**

- The class selector selects elements with a specific class attribute.
- To select elements with a specific class, use a **period** (.) character, followed by the **name of the class**.
 - For example, **.center**
 - Then all HTML elements with class="center" will be in red and center-aligned.
- Try it Yourself
 - https://www.w3schools.com/css/tryit.asp?filename=trycss_syntax_class

CSS Background

- CSS background properties define background effects of an element, including
 - background-color
 - background-image
 - background-repeat
 - background-attachment
 - background-position

CSS Syntax
CSS Selectors
CSS How To
CSS Comments
CSS Colors
CSS Backgrounds
Background Color
Background Image
Background Repeat
Background
Attachment
Background Shorthand
CSS Borders

CSS Backgrounds

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The CSS background properties are used to

In these chapters, you will learn about the f

- background-color
- background-image

Background Image

- Background-image specifies an image as the element's background.
- By **default**, the image is **repeated** to cover the **entire element**.
- **Repeat Horizontally** or **Vertically**
 - background-repeat:repeat-x
 - background-repeat:repeat-y
- Scroll along with other elements on the page
 - background-attachment:scroll // scrollable
 - background-attachment:fixed // no scroll

Background Image

- Set position and no-repeat
 - background-repeat:no-repeat
 - background-position:right top
- Shorthand property
 - It is also possible to **specify all the properties in one single property**. This is called a shorthand property.
 - E.g. :
body
`{background:#ffffff url('img_tree.png') no-repeat right top;}`

Background Image

- The **order** of the property values are:
 - background-color
 - background-image
 - background-repeat
 - background-attachment
 - background-position
- Need to specify in the above order.

```
body {background:#ffffff url('img_tree.png') no-repeat right top;}
```

Try it Yourself w3schools.com/css/css_background_image.asp
w3schools.com/cssref/pr_background-color.php
w3schools.com/cssref/pr_background-position.php

CSS Text

- Text Color

- The **color** property sets the color of the text.
 - name - a color name, like "red"
 - RGB - an RGB value, like "rgb(255,0,0)"
 - Hex - a hex value, like "#ff0000"

- Text Alignment

- The **text-align** property sets the horizontal alignment of the text.

- Text Transformation

- The **text-transform** property specifies **uppercase** and **lowercase** letters in a text.

Try it Yourself

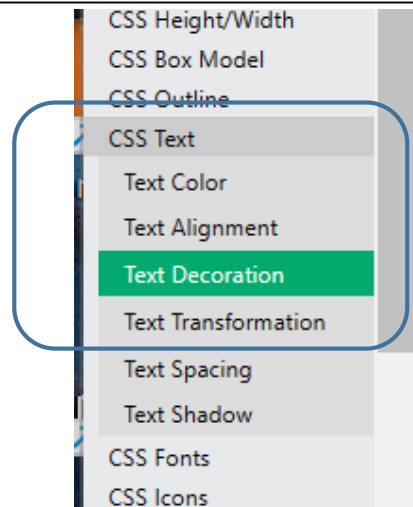
[w3schools.com/css/css_text.asp](https://www.w3schools.com/css/css_text.asp)

CSS Text

- Text Decoration

- The **text-decoration** property sets or removes decorations from the text.

```
a {text-decoration:none;}  
h1 {text-decoration:overline;}  
h2 {text-decoration:line-through;}  
h3 {text-decoration:underline;}  
h4 {text-decoration:blink;}
```



CSS Text Decoration

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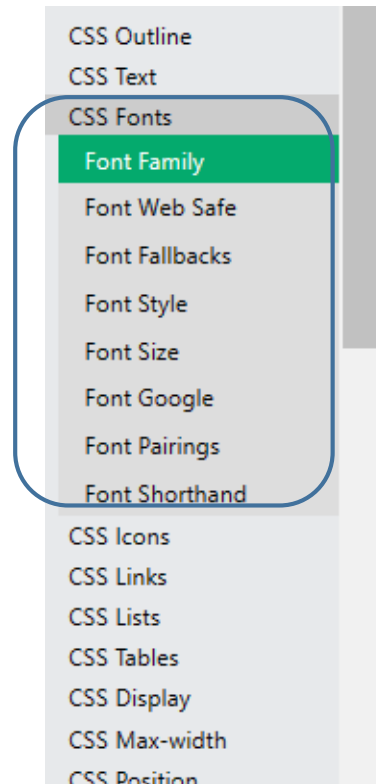
Text Decoration

In this chapter you will learn about the following properties:

- **text-decoration-line**
- **text-decoration-color**

CSS Fonts

- In CSS, there are two types of font family names:
 - **Generic family** - a group of font families with a similar look (like "Serif" or "Monospace")
 - **Font family** - a specific font family (like "Times New Roman" or "Arial")



CSS Fonts

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Choosing the right font for your website is i

Font Selection is Importa

Choosing the right font has a huge impact on l

The right font can create a strong identity for y

Using a font that is easy to read is important.

Generic Font Families

CSS Fonts

- Font Family

- The font family of a text is set with the **font-family** property.
- Start with the font you want, and end with a generic family, to let the **browser pick a similar font** in the generic family, if no other fonts are available.
- If the name of a font family is more than one word, it must be in quotation marks
 - E.g. "Times New Roman".

```
p{font-family:"Times New Roman", Times, serif;}
```

Try it Yourself

w3schools.com/css/css_font.asp

CSS Fonts

- Font Style
 - The **font-style** property specifies the style of text.
- This property has three values:
 - normal - The text is shown normally
 - italic - The text is shown in italics
 - ~~• oblique - Is very similar to italic, but less supported~~

```
p.normal {font-style:normal;}  
p.italic {font-style:italic;}  
p.oblique {font-style:oblique;}
```

CSS Fonts

- Font Size

- The **font-size** property sets the size of the text.
- Set Font Size With Pixels
- Set Font Size With Em (for emphasize)
 - For old browsers such as Microsoft IE

```
h1 {font-size:40px;}
```

```
h1 {font-size:2.5em;} /* 40px/16=2.5em */
```

Try it Yourself w3schools.com/css/css_size.asp

CSS Links

- Styling Links

- Links can be styled with any CSS property
- Links can be styled differently depending on its state
 - **a:link** - a normal, **unvisited link**
 - **a:hover** - a link when the user **mouse over** it
 - **a:visited** - a link the user **has visited**
 - **a:active** - a link the **moment** it is **clicked**
- In a link, if a:hover is used with a:link or a:visited, **a:hover** must come **after a:link** or **a:visited**.
- In a link if a:active and a:hover are both used, **a:active** must come **after a:hover**.

Try it Yourself, the example in
[w3schools.com/css/css_link.asp](https://www.w3schools.com/css/css_link.asp)

Added students

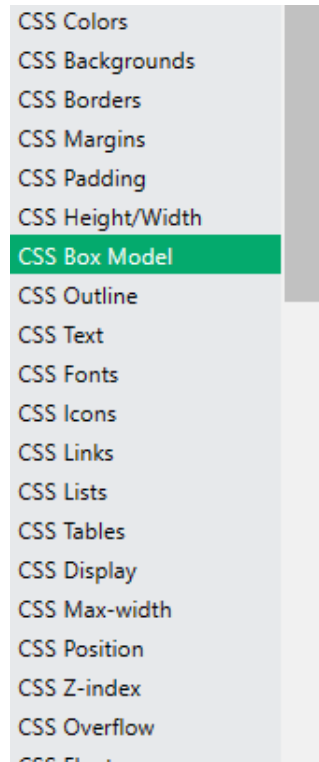
- Have your Week 1 class exercises ready to submit.
 - Cici the head TA will tell you when and how to submit.

Why your code not working properly?

- You typed in something wrong
 - Wrong tag
 - Color of the tag in the editor would be wrong.
 - Link or image name is wrong
 - If Charlie Brown image doesn't show up in the webpage, check if the file name or link address is wrong.
- Build your page little by little
 - Start with something that works, such as the sample code or intermediate soln.
 - Add a few tags at a time (e.g. one new row to a table), make sure the page runs correctly.
 - Add a few more tags, make sure the page runs properly.

CSS Box Model

- All HTML elements can be considered as boxes.
- In CSS, "box model" specifies the design and layout.
- The CSS box model consists of
 - margins
 - borders
 - padding
 - content



CSS Box Model

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All HTML elements can be considered as boxes.

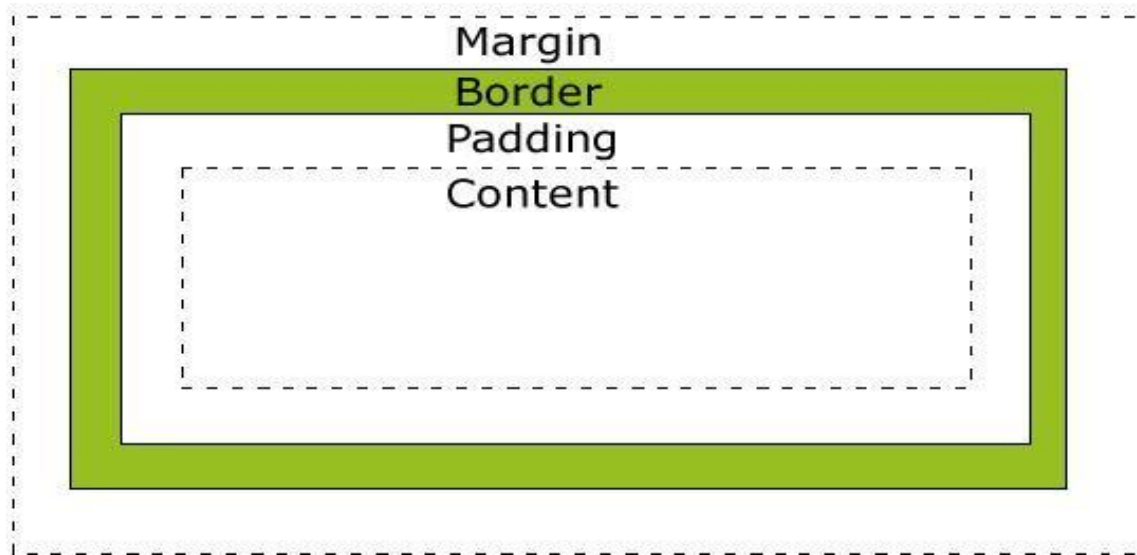
The CSS Box Model

In CSS, the term "box model" is used when talking

The CSS box model is essentially a box that wraps below illustrates the box model:



CSS Box Model



Margin - Clears an area around the border

Border - A border that goes around the padding and content.

Padding - Clears an area around the content

Content - The content of the box

CSS Box Model

- Width and Height of an **element**
- The width and height properties set the width and height of the **content area**.
- The **total width** of the element in the example below is **300px**.
 - $250 + 2*10 + 2*5 + 2*10 = 300$

```
width:250px;  
padding:10px;  
border:5px solid gray;  
margin:10px;
```

Class Exercise 1

- Try to create a similar page.
- Create the paragraphs according to the text written.
- Use an external css file
 - See **next slide**
- Submit your html and css files to ~~both stuweb and iSpace.~~

- ~~See the tutorial “Filezilla and Stuweb Server.docx” and video “How to upload to stuweb.uic.edu.cn Video”~~
- ~~Get from the Tools section in iSpace.~~

CSS Basic Class Exercise

use a css file : external.css

I am a paragraph with an id

I am a paragraph with a class

I am a paragraph with a class and an id

My font is a san-serif type, size 10px - same as the first link below

- I am a link with no underline
- I am link that stays the same colour after I have been clicked
- I am a link that changes to red when the mouse goes over

External CSS file

- Put this in the head section of the html file

```
<head>  
<link rel="stylesheet" href="external.css"/>
```

- The style specified in **external.css** would be virtually placed in this location in the html file.
- E.g. external.css might contain the following as the style for h3.

```
h3{height:30px;background-color:gray;color:white;text-align:right}
```

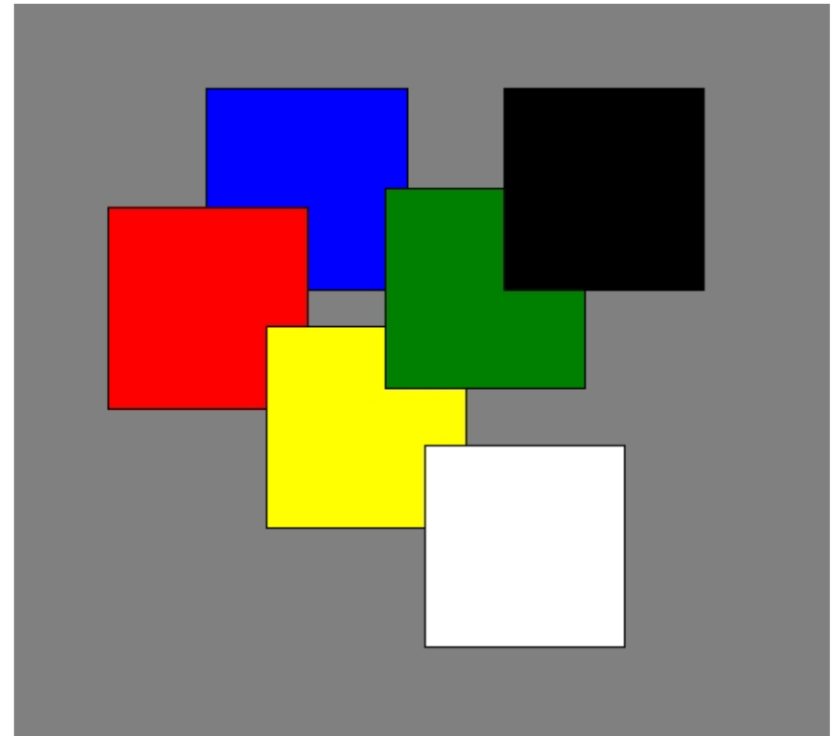
CSS Position

- https://www.w3schools.com/css/css_positioning.asp
 - “static” is the default position
 - “relative” is position relative to static position
 - “fix” is position relative to the screen; stuff in fix does not move when we scroll, even when other elements move.
 - “absolute” is related to the previous element, so we can have overlap elements.
 - Try it, in absolute with right:0, then left:0
 - The coordinate is related to the big box specified by “relative”
 - Don’t like the notation; try
- ```
<style>#box1{background-color:black;position:absolute;left:320px;top:40px;}
.boxsize{ // complete the box size } </style>
```
- ```
<div id="box1" class="boxsize"></div>
```

Class Exercise 2

If you have time after you finish Class Exercise 1,

- Study the **sample codes** in “1B CSS Sample Position” of iSpace and w3schools.com/css/css_positioning.asp
 - You can use any of the sample codes there, but I suggest **absolute.html**
- Create the following **boxes.html** with the help of [z-index](#) and `<div>`.
 - Try to create at **least 2 boxes** from the figure.
- If necessary, look up online for examples of these elements.
- Include your boxes.html in your zip file for Class Exercise 1 and submit the zip file to iSpace.



- Zip your html and css files in a folder, and submit it to iSpace.
- Next week, you will have stuweb accounts for you to submit your web pages.