Cascading Style Sheets (CSS)

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What is CSS

- Cascading Style Sheets 3 (CSS3)
  - Used to specify the presentation of elements separately from the structure of the document

- CSS validator
  - jigsaw.w3.org/css-validator/
  - This tool can help you make sure that your code is correct and will work on CSS3-compliant browsers

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Three Ways to Insert CSS I

1. Inline CSS

```
<!DOCTYPE html>
<html>
<head>

</head>
<body>

<h1 style="color:green">This is a heading</h1>
<p style="text-align:center;font-size:15px">This is a paragraph</p>

</body>
</html>
```

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Inline Styles

- Inline style
  - Declare an individual element's format using HTML5 attribute style

```
<h1 style="color:blue;">This is a Blue Heading</h1>
<p style="color:red;"> This is content </p>
```

This is a Blue Heading

This is content

- Each CSS property is followed by a colon (:) and the value of the attribute
  - Multiple property declarations are separated by a semicolon (;)

```
<p style = "font-size: 25pt; color:blue;">This is a Blue Heading</p>
```

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Color Settings

Color property sets text color

- Color names and hexadecimal codes may be used as the color property value
- A complete list of HTML standard and extended colors at
  www.w3.org/TR/css3-color/

Numeric	Color name	Hex rgb
	black	#000000
	silver	#C0C0C0
	gray	#808080
	white	#FFFFFF
	maroon	#800000
	red	#FF0000
	purple	#800080
	fuchsia	#FF00FF
	green	#008000
	lime	#00FF00
	olive	#808000
	yellow	#FFFF00
	navy	#000080
	blue	#0000FF
	teal	#008080
	aqua	#00FFFF

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Three Ways to Insert CSS II

2. Internal CSS

The internal style is defined inside the
<style> element, inside the head section

This is a heading

This is a paragraph

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
  background-color: pink;
}

h1 {
  color: green;
}

p {
  text-align: center;
  font-size: 15px;
}
</style>
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph</p>

</body>
</html>
```

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Three Ways to Insert CSS III

3. External CSS

Each HTML page must include a reference to the external style sheet file inside the <link> element, inside the head section

```
<!DOCTYPE html>
<html>
<head>
<link rel="stylesheet" type="text/css" href="style.css">
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph</p>

</body>
</html>
```

C:\Users\harmo\Desktop\style.css • - Sublime Text (UNF
File Edit Selection Find View Goto Tools Project Prefer

```
style.css
1  body {
2      background-color: pink;
3  }
4
5  h1 {
6      color: green;
7  }
8
9  p {
10      text-align: center;
11      font-size: 15px;
12  }
13
```

This is a heading

This is a paragraph

CSS Units

- *em: emphasized* the element

- *font-weight*: boldness of the text

- *font-family:* name of the font (serif, sans-serif)

- Each rule body is enclosed in curly braces { and }

This is a paragraph.

This is a paragraph.

This is a paragraph.

```
<!DOCTYPE html>
<html>
  <head>
    <style>
    em {
        font-weight: bold;
    }

    h1 {
        font-family: sans-serif;
    }

    p {
        font-size: 15px;
    }

    </style>
  </head>
  <body>
    <em>This is a paragraph.</em>
    <h1>This is a paragraph.</h1>
    <p>This is a paragraph.</p>

  </body>
</html>
```

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font-weight & font-family

font-weight specifies the boldness of text:

- bold
- normal (the default)
- bolder (bolder than bold text)
- lighter (lighter than normal text)

```
p {
    font-weight: bold;
}

em {
    font-weight: lighter;
}
```

font-family specifies the font name for an element

- Can hold several font names; if the browser does not support the first font, it tries the next font

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

em {
    font-family: Arial, Helvetica, sans-serif;
}
```

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font-size

- font-size specifies the size for an element

  - Relative value such as small, medium or large

- Relative font-size values are preferred over points

  - May not know the each client's display

  - More flexible viewing of web pages

```
em {
    font-size: 15px;
}

em {
    font-size: large;
}

em {
    font-size: 150%;
}
```

This is some text.
This is some text.
This is some text.

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Slide 11:

```
<!DOCTYPE html>
<html>
<head>
  <style type="text/css">
    .pahClass {
      font-weight: bold;
      background-color: green;
    }

    #pah1 {
      font-size: 40px;
    }
  </style>
</head>
<body>
  <div class="div1">
    <p id="pah1">This is a paragraph1</p>
    <p class="pahClass">This is a paragraph2</p>
  </div>
</body>
</html>
```

ID (#) and Class (.) attributes

id attribute is used to specify a unique id for an HTML element

- Cannot have more than one element with the same id in an HTML

Class can be applied to many elements

This is a paragraph1

This is a paragraph2

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Slide 12:

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
  color: blue;
}

.extra p {
  color: inherit;
}
</style>
</head>
<body>

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

<div class="extra" style="color:green">
  <p>This is a paragraph.</p>
</div>

</body>
</html>
```

Applying an Inherits Style Class

This is a paragraph.

This is a paragraph.

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```
<!DOCTYPE html>
<html>
<head>
 <style>
  span {
    color: blue;
    border: 1px solid black;
  }

  .extra span {
    color: inherit;
  }
 </style>
</head>
 <body>
  <div>
    Here is <span>a span element</span> which is blue, as span elements are set to be.
  </div>

  <div class="extra" style="color:green">
    Here is <span>a span element</span> which is green, because it inherits from its parent.
  </div>

  <div style="color:red">
    Here is <span>a span element</span> which is blue, as span elements are set to be.
  </div>
 </body>
</html>
```

Here is a span element which is blue, as span elements are set to be.

Conflicting Styles

```
<style type = "text/css">
    body     { font-family: arial, helvetica, sans-serif; }
    a.nodec  { text-decoration: none; }
    a:hover  { text-decoration: underline; }
    li em    { font-weight: bold;  }
    h1, em   { text-decoration: underline; }
    ul       { margin-left: 20px; }
</style>
```

li em   { font-weight: bold; }

h1, em   { text-decoration: underline; }

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```
<!DOCTYPE html>
<html>
<head>
<style>
p, em {
    color: blue;
}

li em {
    color: red;
}
</style>
</head>
<body>

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

<ul>
  <li>Google</li>
  <li><em>Firefox</em></li>
</ul>

</body>
</html>
```

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Conflicting Styles (Cont.)

text-decoration applies decorations to the element
- none
- overline
- line-through
- underline

This is a paragraph 1

~~This is a paragraph 2~~

This is a paragraph 3

```
h1 {
    text-decoration: underline;
}

h2 {
    text-decoration: line-through;
}

h3 {
    text-decoration: overline;
}
```

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Exercise-1

Apply CSS to two webpages

1. Declare the CSS in the <head> </head>
2. Include (at least) 3 different font styles
3. Applying an *inherits* style
4. Create a *conflict* style

HTML Styles - CSS

CSS stands for Cascading Style Sheets

CSS saves a lot of work

It can control the layout of multiple web pages all at once

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Linking External Style Sheets

External style sheets are separate docs that contain only CSS

- Create uniform look for a website; separate pages can use the same styles
- Modifying a single CSS file makes changes to styles across an entire website

HTML5 declares link element to include external CSS

- rel attribute declares the linked document to be a stylesheet for the doc
- href attribute provides the URL for the document containing the style sheet

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

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Absolute Path vs. Relative Path

```html
<!-- Absolute Path -->
<!-- direct file location -->
<img src="file:///D:/logo2.jpg"><p>

<!-- direct URL -->
<img src="https://www.w3schools.com/images/w3schools_green.jpg"><p>
```

```html
<!-- Relative Path -->
<!-- same folder -->
<img src="current.jpg"><p>

<!-- file is located in the images folder in the current folder -->
<img src="image/image-sample.jpg"><p>

<!-- file is located in the folder one level up from the current folder -->
<img src="../parent/parent-sample.jpg"><p>
```

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```html
<!DOCTYPE html>
<html>
<head>
<link rel="stylesheet" type="text/css" href="style.css">
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph</p>

</body>
</html>
```

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```css
style.css
1   body {
2       background-color: pink;
3   }
4
5   h1 {
6       color: green;
7   }
8
9   p {
10      text-align: center;
11      font-size: 15px;
12  }
13
```

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Absolute vs. Relative Positioning

- Absolute-length measurements (units do not vary in size):
  - in (inches), cm (centimeters), mm (millimeters)
  - pt (points; 1 pt = 1/72 in), pc (picas; 1 pc = 12 pt)
- Relative length measurements:
  - px (pixels – size varies depending on screen resolution)
  - em (usually the height of a font's uppercase M)
  - ex (usually the height of a font's lowercase x)
  - Percentages (of the font's default size)

https://www.w3schools.com/cssref/css_units.asp

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Absolute Positioning

```
<style>
.A {
  position: absolute;
  top: 10pt;
  left: 50pt; }
.B {
  position: absolute;
  top: 30pt;
  left: 100pt; }
.C {
  position: absolute;
  top: 50pt;
  left: 150pt; }
.D {
  position: absolute;
  top: 70pt;
  left: 200pt; }
</style>
</head>
<body>
  <p class="A">This is a paragraph 1</p>
  <p class="B">This is a paragraph 2</p>
  <p class="C">This is a paragraph 3</p>
  <p class="D">This is a paragraph 4</p>
</body>
```

This is a paragraph 1

This is a paragraph 2

This is a paragraph 3

This is a paragraph 4

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Relative Positioning

```
<!DOCTYPE html>
<html>
<head>
<style>
.A {
  color: red;
  position: relative;
  top: -1ex }
.B {
  color: red;
  position: relative;
  bottom: -1ex }
.C {
  color: red;
  position: relative;
  left: -1ex }
.D {
  color: red;
  position: relative;
  right: -1ex }
</style>
</head>
<body>
  <p>This is a <span class="A">paragraph 1</span></p>
  <p>This is a <span class="B">paragraph 2</span></p>
  <p>This is a <span class="C">paragraph 3</span></p>
  <p>This is a <span class="D">paragraph 4</span></p>
</body>
</html>
```

This is a paragraph 1

This is a paragraph 2

This is a paragraph 3

This is a   paragraph 4

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Exercise 2

1. Modify the exercise 1. Create an external CSS for the webpages.

2. Create class (.) and ID (#) in your CSS to specify its style

3. Practice absolute or relative positioning

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CSS Background Color

```
h1 {
   background-color: gray; }
div {
   background-color: lightgreen; }
p {
   background-color: red; }
```

```
<h1>Heading!</h1>
<div>
Div element
<p>This is a paragraph.</p>
Div element
</div>
```


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```
<head>
  <style>
    p { background: lightblue }
  </style>
</head>
<body>
  <p style="width: 20%;">National Chengchi University (Chinese: 國立政治大學;
shortened as "政大") is a Taiwan-based national research university.</p>

  <p style="width: 30%; height: 100px; overflow: scroll;">The university is
also considered as the earliest public service training facility of the
Republic of China. First established in Nanjing in 1927, the university was
subsequently relocated to Taipei in 1954.</p>

  <p style="width: 80%; text-align: center;">It is considered to be one of the
most prestigious and prominent universities in Taiwan.</p>
</body>
```

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Element Dimensions

Specifying the width and height of an element

▸ Dimensions of elements on a page can be set with CSS by using properties height and width

- Their values can be relative or absolute

Text-align Property

▸ Text in an element can be centered using text-align: center; other values for the text-align property are left and right

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Element Dimensions (Cont.)

Overflow Property and Scroll Bars

```
<p style="width: 20%; height: 90px; overflow: hidden;">National Chengchi
University (Chinese: 國立政治大學; shortened as "政大") is a Taiwan-based
national research university.</p>

<p style="width: 30%; height: 100px; overflow: scroll;">The university is
also considered as the earliest public service training facility of the
Republic of China. First established in Nanjing in 1927, the university was
subsequently relocated to Taipei in 1954.</p>
```

National Chengchi
University
(Chinese: 國立政治
大學; shortened as
"政大") is a

The university is also
considered as the earliest
public service training
facility of the Republic of
China. First established in

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CSS Padding

```
p {
    border: 1px solid black;
    background-color: lightblue;
    padding-top: 40px;
    padding-right: 30px;
    padding-bottom: 40px;
    padding-left: 80px;
}
p {
    border: 1px solid black;
    background-color: lightblue;
    padding: 40px 30px 40px 80px
}
```

- Padding
  - Generate space around content
  - padding-top, padding-right, padding-left and padding-bottom

  National Chengchi University (Chinese: 國立政治大學; shortened as "政大") is a Taiwan-based national research university.

- All the padding properties can have the following values:
  - length - specifies a padding in px, pt, cm, etc.
  - % - specifies a padding in % of the width of the containing element
  - inherit - padding should be inherited from the parent element

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CSS Margin

```
<style>
p {
    border: 1px solid black;
    background-color: lightblue;
    margin-top: 40px;
    margin-right: 40px;
    margin-bottom: 30px;
    margin-left: 80px;
}
</style>
```

- Margin
  - generate space around elements
  - margin-top, margin-right, margin-left and margin-bottom

  National Chengchi University (Chinese: 國立政治大學; shortened as "政大") is a Taiwan-based national research university.

  The university is also considered as the earliest public service training facility of the Republic of China.

- All the margin properties can have the following values:
  - auto - the browser calculates the margin
  - length - specifies a margin in px, pt, cm, etc.
  - % - specifies a margin in % of the width of the containing element

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CSS Border-style Properties

- border-width (border-width: 15px;)
- border-x-width (border-right-width: 5px;)
  - Top, left, right
- border-color (border-color: #ff0000 #0000ff;)
- border-style (border-style: solid;)
  - none, hidden, dotted, dashed, solid, double, groove, ridge, inset and outset
- border-x-style (border-right-style: solid;)
  - Top, left, right, bottom

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```
<body>
  <p style="border-style: inset;">This is a paragraph.</p>
  <p style="border-style: ridge;">This is a paragraph.</p>
  <p style="border-style: groove;">This is a paragraph.</p>
  <p style="border-style: double;">This is a paragraph.</p>
  <p style="border-style: solid;">This is a paragraph.</p>
  <p style="border-style: dashed;">This is a paragraph.</p>
  <p style="border-style: dotted;">This is a paragraph.</p>
  <p style="border-style: outset;">This is a paragraph.</p>
  <p style="border-style: none;">This is a paragraph.</p>
  <p style="border-style: hidden;">This is a paragraph.</p>
  <p style="border-style: dotted dashed solid double;">This is a parag
</body>
```

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

This is a paragraph.

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Float Property I

Float property specifies whether or not an element should float

```html
<head>
    <style>
        img {
            float: left;
            margin: 10px 10px 10px 10px;
        }
    </style>
</head>
<body>
    <img src="nccu.jpg" alt="nccuLogo" width="50" height="50">
    <p>National Chengchi University (Chinese: 國立政治大學; shortened as "政大") is
a Taiwan-based national research university. The university is also considered as
the earliest public service training facility of the Republic of China. First
established in Nanjing in 1927, the university was subsequently relocated to
Taipei in 1954. It is considered to be one of the most prestigious and prominent
universities in Taiwan.</p>
</body>
```

National Chengchi University (Chinese: 國立政治大學; shortened as "政大") is a Taiwan-based national research university. The university is also considered as the earliest public service training facility of the Republic of China. First established in Nanjing in 1927, the university was subsequently relocated to Taipei in 1954. It is considered to be one of the most prestigious and prominent universities in Taiwan.

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Float Property II

Move an element to one side of the screen; other content in the document then *flows around* the floated element

```html
<head>
    <style>
        h1 {
            float: right;
            margin: 10px 10px 10px 10px; }
    </style>
</head>
<body>
    <h1>National Chengchi University</h1>
    <p>National Chengchi University (Chinese: 國立政治大學; shortened as "政大") is
a Taiwan-based national research university. The university is also considered as
the earliest public service training facility of the Republic of China. First
established in Nanjing in 1927, the university was subsequently relocated to
Taipei in 1954. It is considered to be one of the most prestigious and prominent
universities in Taiwan.</p>
</body>
```

National Chengchi University (Chinese: 國立政治大學; shortened as "政大") is a **National Chengchi University** Taiwan-based national research university. The university is also considered as the earliest public service training facility of the Republic of China. First established in Nanjing in 1927, the university was subsequently relocated to Taipei in 1954. It is considered to be one of the most prestigious and prominent universities in Taiwan.

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Exercise 3

1. Use padding and margin to generate space around contents or elements
2. Create a headline in your table and use the float property to emphasize it
3. Add a figure and put it on the top right

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Media Types and Queries I

- Decide what a page should look like depending on the kind of media being used to display the page
- A block of styles that applies to all media types is declared by @media all and enclosed in curly braces

Media Types

Value	Description
all	Default. Used for all media type devices
print	Used for printers
screen	Used for computer screens, tablets, smart-phones etc.
speech	Used for screenreaders that "reads" the page out loud

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Media Features

Value	Description
any-hover	Does any available input mechanism allow the user to hover over elements? (added in Media Queries Level 4)
any-pointer	Is any available input mechanism a pointing device, and if so, how accurate is it? (added in Media Queries Level 4)
aspect-ratio	The ratio between the width and the height of the viewport
color	The number of bits per color component for the output device
color-gamut	The approximate range of colors that are supported by the user agent and output device (added in Media Queries Level 4)
color-index	The number of colors the device can display
grid	Whether the device is a grid or bitmap
height	The viewport height
hover	Does the primary input mechanism allow the user to hover over elements? (added in Media Queries Level 4)
inverted-colors	Is the browser or underlying OS inverting colors? (added in Media Queries Level 4)
max-height	The maximum height of the display area, such as a browser window
max-monochrome	The maximum number of bits per "color" on a monochrome (greyscale) device
max-resolution	The maximum resolution of the device, using dpi or dpcm
max-width	The maximum width of the display area, such as a browser window

https://www.w3schools.com/cssref/css3_pr_mediaquery.asp

Responsive Design I

```
<html>
<head>
<style>
body {
  background-color: pink;
}

@media screen and (min-width: 480px) {
  body {
    background-color: lightgreen;
  }
}
</style>
</head>
<body>

<h1>Resize the browser window to see the
effect!</h1>
<p>The media query will only apply if the
media type is screen and the viewport is 480px
wide or wider.</p>

</body>
</html>
```

Resize the browser window to see the effect!

The media query will only apply if the media type is screen and the viewport is 480px wide or wider.

https://www.w3schools.com/css/tryit.asp?filename=trycss3_media_queries1

```
<style>
    p {
        background-color: lightblue; }
    @media screen and (min-width: 480px) {
      p {
        background-color: lightgreen;
      }
    }
</style>
```

Responsive Design II


```
/* Footer */
.footer {
  padding: 20px;
  text-align: center;
  background: #ddd;
}

/* Responsive layout - when the screen is less
than 700px wide, make the two columns stack on top
of each other instead of next to each other */
@media (max-width: 700px) {
  .row, .navbar {
    flex-direction: column;
  }
}
</style>
</head>

<body>

<!-- Note -->
<div style="background:yellow;padding:5px">
  <h4 style="text-align:center">Resize the browser
window to see the responsive effect.</h4>
</div>

<!-- Header -->
<div class="header">
  <h1>My Website</h1>
  <p>With a <b>flexible</b> layout.</p>
</div>
```

https://www.w3schools.com/cssref/tryit.asp?filename=trycss3_media3

```
<style>
  .header {
    padding: 60px;
    text-align: center;
    background: lightblue;
  }

  .navbar {
    display: flex;
    background-color: #333; }
  .navbar a {
    color: white;
    padding: 14px 20px;
    text-decoration: none;
    text-align: center; }
  .navbar a:hover {
    background-color: #ddd;
    color: black; }
  @media (max-width: 400px) {
    .row, .navbar {
      flex-direction: column; }
  }
</style>
```

```
<body>
  <div class="header">
    <h1>Personal Website</h1>
  </div>
  <div class="navbar">
    <a href="#">Link 1</a>
    <a href="#">Link 2</a>
    <a href="#">Link 3</a>
    <a href="#">Link 4</a>
    <a href="#">Link 5</a>
    <a href="#">Link 6</a>
  </div>
</body>
```
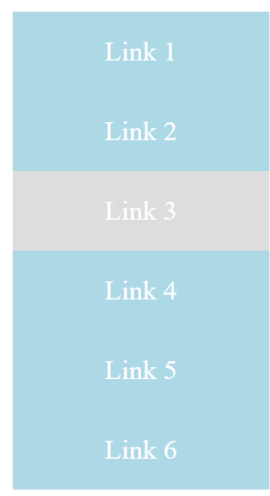
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CSS Drop-Down Menus

```
<head>
<style>
  .navbar {
    list-style: none;
    padding: 0;
    width: 30%;
    background-color: lightblue; }
  .navbar li {
    padding: 14px 20px;
    text-align: center; }
  .navbar li:hover {
    background-color: #ddd; }

  a {
    color: white;
    text-decoration: none; }
</style>
</head>
<body>
  <ul class="navbar">
    <li><a href="#">Link 1</a></li>
    <li><a href="#">Link 2</a></li>
    <li><a href="#">Link 3</a></li>
    <li><a href="#">Link 4</a></li>
    <li><a href="#">Link 5</a></li>
    <li><a href="#">Link 6</a></li>
  </ul>
</body>
```

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HW, due by 12/10, 11:59pm

- Create External CSS file in your website
- Use "margin-left:auto" & "margin-right:auto" to center the webpage info
- Try "%" instead of "px" when using margin, width and height
- Use "width" & "height" to control the display of the image
- Use any color, font, font size in the CSS to change the attributes

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