



IS216 Web Application Development II

Session 2
CSS - Basics

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Sections: G1 / G2 / G3 / G11



Agenda

What is CSS?

Three ways to use CSS

CSS properties

CSS



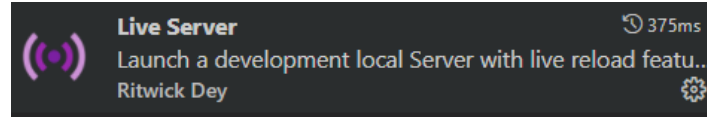
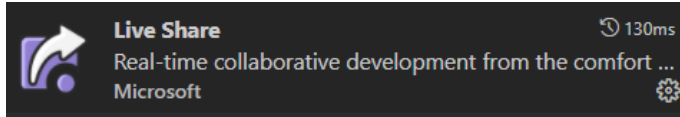
Source Code Files

eLearn → Content → Session 2 → In Class → **Week2.zip**

- **Unzip** it into your **webroot** (*any meaningful sub-directory*), for example:
 - (WAMP) C:\wamp64\www\is216\...\b>Week2
 - (MAMP) /Applications/MAMP/htdocs/is216/...\b>Week2
- You don't have to follow the above path – it's just an example.
 - But we DO strongly encourage you to keep source code files **organized** so that you can easily **search** them during **Lab Tests**

Pair Programming

1. Please fill out this form: <https://forms.gle/Fjb3ZS5kVzFgA5Za8>
2. Go to **VSCode** and install the following extensions:



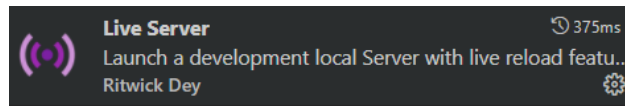
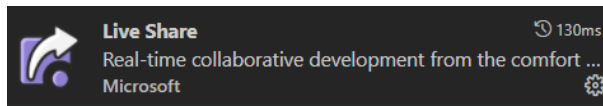
Windows users especially, please restart VSCode

3. We will use **Zoom** to randomly **pair** you up and assign **each pair** into a **breakout room** *later on*.
4. Let us (Kyong & TA) demonstrate to you how pair programming works virtually via VSCode Live Share & Server.
 - *Essentially, one person in each pair will share his VSCode file with his partner – where both can **co-edit** and **test** in a **web browser**.*
 - *How cool is that? ^_^*

VSCode

Troubleshoot

Credit to Nicholas & TAs (xie xie ni uncles and aunties!)



When you start **Live Share** in **VSCode**... and you run into this error message...



You need to install **.NET SDK**

- Go to: <https://dotnet.microsoft.com/download/dotnet/5.0>
- Under **SDK 5.0.400**, download an **Installer** suitable for your computer OS.
- **Install** it.
- **(Mac)** After install, **QUIT** VSCode and **Start** VSCode. Attempt **Live Share**.
- **(Windows)** After install, **RESTART** your laptop (OH NO! BUT DO IT!!). Attempt **Live Share**.

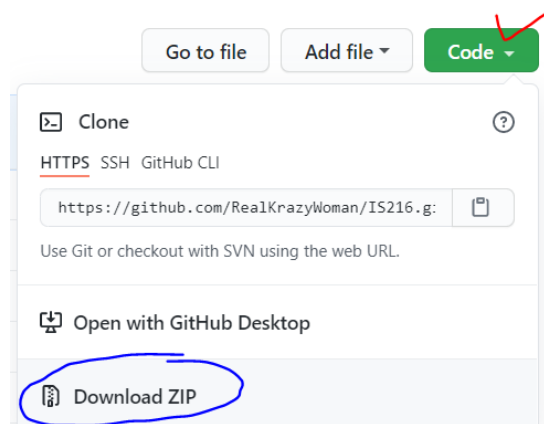
Follow Me (Code Together)

1. [meta.html](#) (meta tags and what they mean)
2. [home1.html](#) (inline CSS)
3. [home2.html](#) (internal CSS)
4. [away.html](#) (external CSS) + css/homestyle.css
5. (Pair Programming) [Exercise 1](#)
6. [selectors.html](#) + css/selectors_style.css
7. (Pair Programming) [Exercise 2](#)
8. [background.html](#)
9. [boxmodel.html](#)
10. (Pair Programming) [Exercise 4](#)
11. (YouTube Videos & Code Exercises)

How to **download** a **GitHub repo**?

Go to **Code** → **Download ZIP**

<https://github.com/RealKrazyWoman/IS216>



Things to Finish Before Session 3

1. Watch and follow code demo in [CSS – Part 1 \(Basics\) – Deep Dive – Link, List, Table video](#)
2. Complete [Exercise 5](#) (styling tables) in this slide deck
3. TRY [CSS – Part 1 \(Basics\) – Challenge #1](#) (*resource files can be cloned from GitHub*)
4. TRY [CSS – Part 1 \(Basics\) – Challenge #2](#) (*resource files can be cloned from GitHub*)
5. “My Profile” GitHub assignment

(Week 2) 🐱 Add CSS to beautify your website

The goal this week is for you to apply what you learned in class (CSS Basics) to your website.

- First, add a nice smiling face photo of yourself.
- Second, add a YouTube video about your favorite travel destination. When the user visits your website, the video must auto-play while muted.
- Third, write a small biography about yourself and make it appear inside a box.
- Fourth, feel free to add more stuff to your website.
- Apply as much of CSS as you can - based on what you learned in class this week.

6. eLearn → Content → Session 3 → Before Class
 1. Watch the video
 2. Complete [Session 3] Pre-Class Quiz (CSS – Bootstrap)

What is CSS?

CSS = Cascading Style Sheets

One of the three core technology of Web
(frontend) development

<https://www.w3schools.com/css/>

HTML: Content, *nouns*

CSS: Presentation, *adjectives*

Javascript: Dynamic effects, *verbs*


What is CSS?

By using CSS, we separate the content of a web page from the presentation (format & styling) of that content.

CSS enables us to make all pages of our website look similar and consistent.

CSS allows us to make site-wide formatting changes by making edits to a single file.

Example

 SamplePages

Given *wk2example1.html*, changing *mystyle1.css* to *mystyle2.css* changes the look.

Using CSS


Three ways

Inline style: CSS code is placed directly into an HTML element within the <body> section of a web page.

Internal style sheet: CSS code is placed into a separate, dedicated area within the <head> section of a Web page.

External style sheet: CSS code is placed into a separate file and then linked to a web page.

CSS: Inline Style

 SamplePages

Inline style

CSS code is placed directly into an HTML element within the `<body>` section of a web page.

To define an inline CSS style, we simply add the style attribute to an HTML element with the CSS declaration as the attribute value.

Example: *wk2example2.html*

```
<body>
```

```
<h2 style="color: red;">CAUTION: Icy Road Conditions</h2>
```

```
<h2>Please Slow Down!</h2>
```

```
</body>
```

Inline style applies to one tag only.

CSS: Internal Style Sheet



SamplePages

Internal style sheet

To use an internal CSS style sheet, we add a `<style>` section within the `<head>` of the page. All our CSS declarations go within this section.

Example: *wk2example3.html*

```
<head>
  <style type="text/css">
    h2 {
      color: red;
    }
  </style>
</head>
<body>
  <h2>CAUTION: Icy Road Conditions</h2>
  <h2>Please Slow Down!</h2>
</body>
```

Styles declared in the internal style sheet affect all matching elements on the page.

CSS Syntax

The syntax of CSS

```
selector { property: value; }
```

A semicolon must be placed after each CSS declaration. Omitting this semicolon is the single most common mistake made by those learning CSS.

Example

```
p {  
    color: red;  
}  
  
h1 {  
    font-style: italic;  
}
```

CSS Syntax

The syntax of CSS

```
selector { property: value; }
```

A semicolon must be placed after each CSS declaration. Omitting this semicolon is the single most common mistake made by those learning CSS.

Example

We can define as many properties as we wish for a selector.

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

CSS Comments

Single-line comment

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

Multi-line comment

```
/*  
  
    This is  
  
    a multi-line  
  
    comment  
  
*/
```


CSS: External Style Sheet

External style sheet

The real power of using an external style sheet is that multiple web pages on our site can link to the same style sheet.

The external style sheet contains one or more selector-property-value triples.

Example:

 SamplePages

wk2ex4.css

wk2ex4page1.html

wk2ex4page2.html

wk2ex4page3.html

Change *wk2ex4.css* changes the style of all linked pages

Styles declared in an external style sheet will affect all matching elements on all web pages that link to the style sheet.

Using CSS

	Scope	Separation of content and presentation	Remark
inline style	One tag	None	Not really CSS; not the focus here
internal style sheet	One file	A bit	Useful for small sites with few pages
external style sheet	All linked files	Yes	Better efficiency; Uniform style; Regression is easy

In-class Exercise 1

ExercisesResources

Given *Ex1-Page1.html*, build *Ex1-Page2.html* and *Ex1-Page3.html* such that

- They have the same appearance as *Ex1-Page1.html*.
- *Ex1-Page2.html* uses internal style sheet.
- *Ex1-Page3.html* uses external style sheet only.

[Page 1](#) | [Page 2](#) | [Page 3](#)

3 Ways to use CSS

- Page 1 - Inline Style
- Page 2 - Internal Style
- Page 3 - External Style

First Paragraph

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean suscipit eros at mi auctor tincidunt. Nulla orci arcu, egestas non metus non, tempus sollicitudin velit. Nullam interdum massa sapien, in congue ipsum convallis eget. Sed ut bibendum magna.

Second Paragraph

Integer gravida sem mauris. Maecenas ut vulputate ipsum, non commodo orci. Vestibulum tellus mauris, ullamcorper at justo vitae, egestas placerat quam. Donec vehicula sed orci non finibus. Vestibulum id iaculis nulla. Donec pellentesque tortor convallis, rutrum quam a, facilisis odio. Morbi in rhoncus leo, et fringilla quam.

CSS Syntax: Selector

Element Selector

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


```
h1, h2 {  
  color: blue;  
  text-align: left;  
}
```

id Selector

```
#emphasis {  
  font-style: italic;  
}
```

```
<p id="emphasis">  
  This is a unique paragraph that deserves an  
  emphasis.  
</p>
```

Example:

 SamplePages
wk2example4.html

CSS Syntax: Selector



Class Selector

Example: *wk2example5.html*

```
.normal {  
    color: black;  
}
```

```
<p class="normal">This is a paragraph that shares  
the style properties with the following  
paragraph.</p>
```

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

```
<p class="normal">This is a paragraph that shares  
the style properties with the paragraph above.</p>
```

```
<p class="normal center">This is also a normal  
paragraph but is centered.</p>
```

Note that an element can belong to multiple classes.

CSS Selectors

There are many selectors in CSS.

A reference list is here:

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

Some Exotic Examples

*	Select all elements
input:selected	Selects every checked <input> element
:not(p)	Selects every element that is not a <p> element
...	...

Cascading

A browser processes all CSS code, including those introduced by all three ways, and applies the following cascading order.

1. Inline style has first priority
2. Internal style sheet has second priority
3. External style sheet has third priority
4. Web browser default has lowest priority

 SamplePages

Example: *wk2example6.html*

```
<head>
  <style type="text/css">
    h2 {
      color: red;
    }
  </style>
</head>


<body>
  <h2 style="color: green;">
    CAUTION
  </h2>
</body>
```

What color is “CAUTION”?

Conflict Resolving

If multiple conflicting styles are defined with the same priority, the conflict is resolved as follows (assuming a left-to-right, top-to-bottom processing order).

- For inline style, the first one applies.
- For internal or external style sheet, the last one applies.

 SamplePages

Example: *wk2example7.html*

```
<head>
  <link rel="stylesheet" type="text/css" href="wk2ex7.css">
  <style type="text/css">
    h2 { color: grey; }
    h2 { color: red; }
  </style>
</head>
<body>
  <h2 style="color: green;" style="color: yellow;">
    CAUTION
  </h2>
```

What color is “CAUTION”?

In-class Exercise 2

CSS Debugging

 ExercisesResources

Given *ex2.html*, read the text and identify the problems.

Fix the bugs so that the text is consistent with its style.

CSS: Properties

There are many properties and corresponding values.

A reference list is here:

<https://www.w3schools.com/cssref/>

 SamplePages

Examples: *wk2example8.html*

Text display properties

Color: specify the color of the text

Text-align: specify horizontal alignment

Text-decoration: e.g.,

```
p { text-decoration: line-through; }
```

CSS: Properties

Display properties

Specifies how an element is displayed with respect to other elements. Every HTML element has a default display value.

- block: displayed on a new line
- inline: displayed inline with the previous element, i.e., place this element next to the previous one.
- none: hidden (used with JavaScript to hide/show elements depending on logic)



SamplePages

Examples: *wk2example9.html*

```
.normal {  
    display: inline;  
}
```

Value “inline” means to display like ``.

CSS: Properties

Category	Property	Example value
Font properties	font-family	“Times New Roman”
	font-style	italic
	font-size	default = 16px
Background properties Example: <i>wk2example10.html</i>	background-color	blue
	background-image	url(“mysite.site/head.png”)
...

CSS: Values

Each property is associated with multiple values.

Check out the list of values associated with each property at

<https://www.w3schools.com/cssref/>

 SamplePages

Examples: *wk2example11.html*

Color values

- hex color value (Google): #eab01c
- rgb values : (30, 200, 0)
- rgba: red, green, blue, alpha (where alpha is 0 means “fully transparent” and 1 means “fully opaque”)

Units of Measurement

Some CSS values such as values for font-size, width, height, margin, and padding have different units of measurement.

Absolute length:

- in (inches)
- cm (centimeters)
- px (pixels, $1\text{px} = 1/96 \times 1\text{inch}$)

Relative length:

- % (percentage)
- em (relative to the font-size)
- vw (relative to 1% of the width of the viewport - browser window size)

Exercise 3

ExercisesResources

Given *Ex3-paragraph.html*, create the view on the right using *Internal Style sheets*.

Do not worry about the exact font - something similar will do.

HTML element displayed differently

First Paragraph

Lorem ipsumLorem ipsum dolor sit amet , consectetur adipiscing elit. Aenean suscipit eros at mi auctor tincidunt. Nulla orci arcu, egestas non metus non, tempus sollicitudin velit. Nullam interdum massa sapien, in congue ipsum convallis eget. Sed ut bibendum magna.

First Paragraph New Class

Lorem ipsum dolor sit amet **TS216** , consectetur adipiscing elit. Aenean suscipit eros at mi auctor tincidunt. Nulla orci arcu, egestas non metus non, tempus sollicitudin velit. Nullam interdum massa sapien, in congue ipsum convallis eget. Sed ut bibendum magna.

First Paragraph

Lorem ipsum dolor sit amet

TS216

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First Paragraph Special

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean suscipit eros at mi auctor tincidunt. Nulla orci arcu, egestas non metus non, tempus sollicitudin velit. Nullam interdum massa sapien, in congue ipsum convallis eget. Sed ut bibendum magna.

First Paragraph New Class

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean suscipit eros at mi auctor tincidunt. Nulla orci arcu, egestas non metus non, tempus sollicitudin velit. Nullam interdum massa sapien, in congue ipsum convallis eget. Sed ut bibendum magna.

First Paragraph

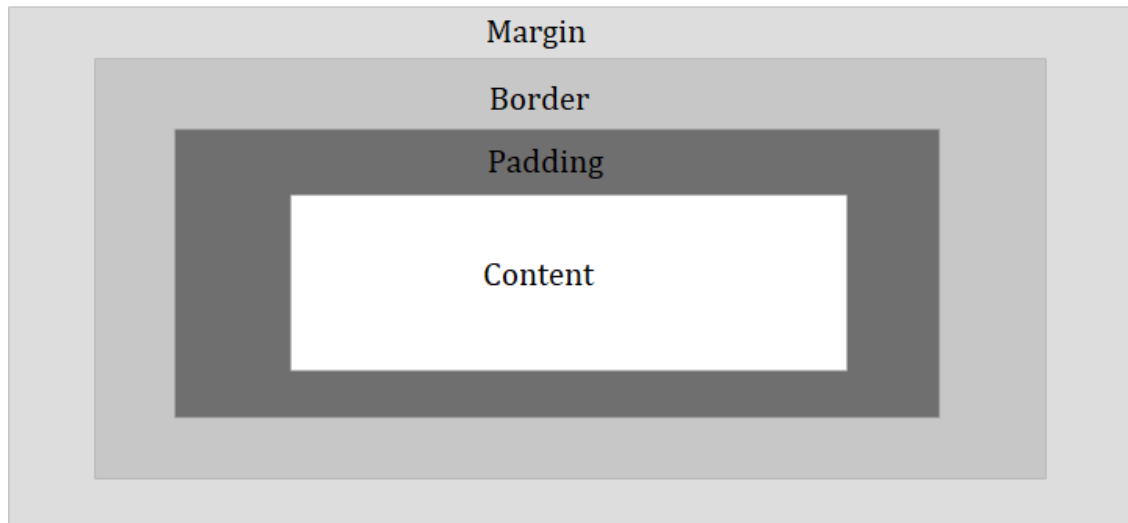
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean suscipit eros at mi auctor tincidunt. Nulla orci arcu, egestas non metus non, tempus sollicitudin velit. Nullam interdum massa sapien, in congue ipsum convallis eget. Sed ut bibendum magna.

The Box Model

In CSS, every HTML element is a box.

A box consists of: the content, the padding, the border and the margin.

Every part of a box can be decorated through CSS.



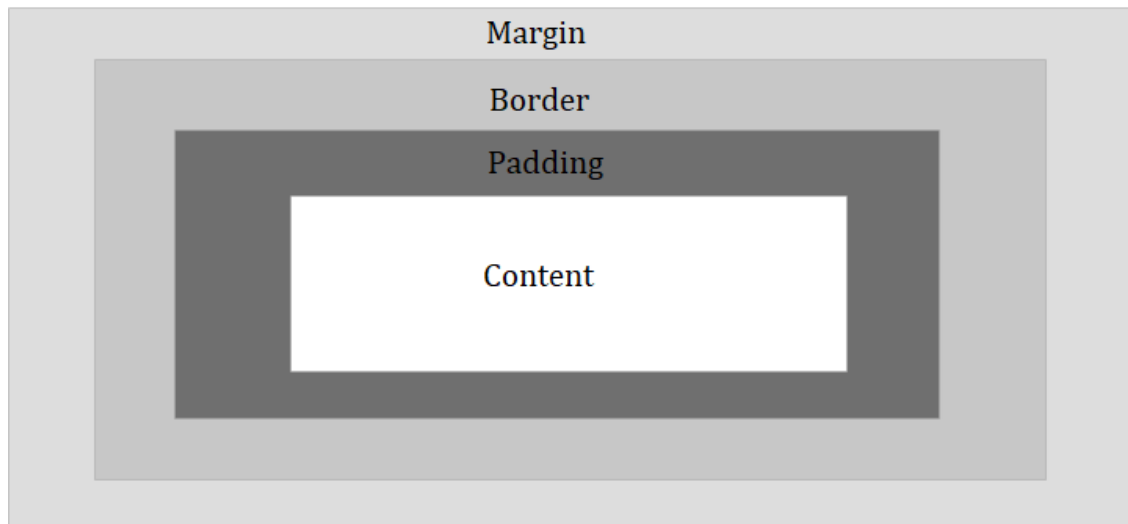
The Box Model

Content: text or images


Padding: an area around the content and inside the border; padding is transparent

Border: a border that goes around the padding and content

Margin: an area outside the border; margin is transparent



Decorating Content and Border

 SamplePages

Property width and height and border (whose value is composed of width, style, and color)

Example: *wk2example12.html*

```
centerdiv1 {  
    width: 400px;  
    margin: auto;  
    border: 3px solid black;  
}  
  
centerdiv2 {  
    max-width: 400px;  
    margin: auto;  
    border: 3px solid blue;  
}
```

This division element has a width of 400px, and margin set to auto. This element will not auto-resize but the browser will show a scroll bar.

This division element has a max-width of 400px, and margin set to auto. This element will auto-resize if the browser windows is smaller than 400px.

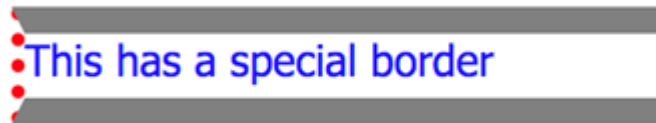
Decorating Border

Use border-left, border-right, border-top, border-bottom properties to specifically style the left, right, top, or bottom of a border separately

 SamplePages

Example: *wk2example13.html*

```
<p style="border-left: 5px dotted red">  
  This has a special border  
</p>
```

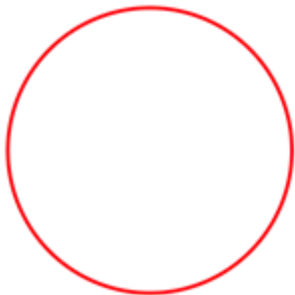



Decorating Border

Use border-radius property to create rounded borders

You can specify different radius for the four corners.

The radius can be absolute length or percentage (of the height or width).



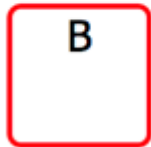
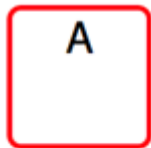
 SamplePages


Example: *wk2example13.html*

```
.circle {  
  width: 150px;  
  height: 150px;  
  border-radius: 90%;  
  border: 2px solid red;  
}
```

Decorating Margin

Use margin-top, margin-right, margin-bottom, margin-left properties to create space around (top, right, bottom, and left) an element's content, outside of its border.



 SamplePages


Example: *wk2example14.html*

```
.box {  
    text-align: center;  
    width: 150px;  
    height: 150px;  
    border-radius: 10%;  
    border: 2px solid red;  
    margin-top: 30px;  
    margin-bottom: 30px;  
    margin-right: 50px;  
    margin-left: 50px;  
}
```

Decorating Margin

Additionally, property values can be specified with the following.

- auto - horizontally center the element within its container
- length - specifies a margin in px, pt, cm, etc.
- % - specifies a margin in % of the width of the containing element
- inherit - specifies that the margin should be inherited from the parent element

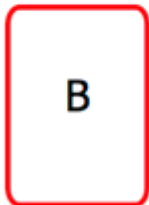
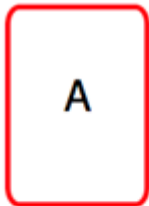
 SamplePages


Example: *wk2example14.html*

```
.box {  
    text-align: center;  
    width: 150px;  
    height: 150px;  
    border-radius: 10%;  
    border: 2px solid red;  
    /* top right bottom left */  
    margin: 30px 50px 30px 50px;  
}
```

Decorating Padding

Use padding-top, padding-right, padding-bottom, padding-left properties to generate space around an element's content, inside the border.



 SamplePages

Example: *wk2example15.html*

```
.box {  
    text-align: center;  
    width: 150px;  
    height: 150px;  
    border-radius: 10%;  
    border: 2px solid red;  
    padding-top: 22px;  
}
```

Exercise 4

ExercisesResources

Modify the internal style sheet in Ex4-boxmodel.html to make it look as close as possible to the ones on the right.

Images are in the “img” folder (naruto1.jpg, naruto2.jpg).

You do not have to use all the selectors if you so prefer.



Table Styling

Property

border: specify border size, style (solid, dashed, dotted) and color, e.g.,

```
table, th, td {  
    border: 1px dashed blue;  
}
```

Property

border-bottom: horizon dividers for <th> and <td>, e.g.,

```
th, td {  
    border-bottom: 1px solid black;  
}
```

Property

border-collapse: collapse into a single border, e.g.,

```
table { border-collapse: collapse; }
```


See: [Example](#)

Property

tr:hover : highlight table rows on mouse over, e.g.,

```
tr:hover { background-color: red; }
```

Example:

 SamplePages
wk2example16.html

Exercise 5

Given Ex5.html, provide an external CSS style sheet named Ex5.css so that the page looks like the one below. Note that the table stretches to the full width of the page. Do not worry about the exact color.



Singapore Tourism Board

Hotel Statistics 2019

Note: Value increase is green. Value decrease is red.


The set of data is taken from STB [here](#)

	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019
Maximum Room Nights	1,873,636	1,692,345	1,873,651	1,813,021	1,867,579	1,807,145
Paid Lettings	1,537,599	1,453,155	1,530,751	1,492,102	1,473,108	1,491,926
Available Room Nights	1,825,935	1,654,100	1,824,208	1,760,166	1,804,057	1,751,980
Gross Lettings (Room Nights)	1,541,573	1,456,306	1,534,648	1,497,124	1,477,100	1,495,600
Standard Average Occupancy Rate (AOR) (%)	84.4	88.0	84.1	85.1	81.9	85.4
Total Room Revenue (\$ m)	335.7	332.9	335.7	325.0	308.7	316.0
Standard Average Room Rate (ARR) (\$)	217.7	228.5	218.7	216.8	209.0	211.3
Revenue per Available Room (Revpar) (\$)	183.8	201.2	184.0	184.4	171.1	180.3

Position Properties

Value	Remark
static	Default value. Elements render in order, as they appear in the document flow
absolute	The element is positioned relative to its first positioned (not static) ancestor element
fixed	The element is positioned relative to the browser window
relative	The element is positioned relative to its normal position, so "left:20px" adds 20 pixels to the element's LEFT position
sticky	The element is positioned based on the user's scroll position. A sticky element toggles between relative and fixed, depending on the scroll position. It is positioned relative until a given offset position is met in the viewport - then it "sticks" in place (like position:fixed).

Example:

 SamplePages

wk2example17.html

Overlapping Elements

When elements are positioned, they can overlap other elements.

The z-index property specifies the stack order of an element (which element should be placed in front of, or behind, the others).

An element can have a positive or negative stack order

Example

```
img {  
  position: absolute;  
  left: 0px;  
  top: 0px;  
  z-index: -1;  
}
```

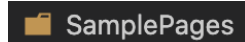
https://www.w3schools.com/cssref/tryit.asp?filename=trycss_anim_z-index

Link Properties

Links can be styled with any CSS property (e.g. color, font-family, background, etc.).

links can also be styled differently depending on what state they are in.

- `a:link` - a normal, unvisited link
- `a:visited` - a link the user has visited
- `a:hover` - a link when the user mouses over it
- `a:active` - a link at the moment it is clicked



Example: *wk2example18.html*

```
/* unvisited link */
a:link { color: red; }

/* visited link */
a:visited { color: green; }

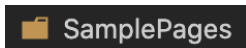
/* mouse over link */
a:hover { color: hotpink; }

/* selected link */
a:active { color: blue; }
```

List Properties

List style properties can be used to style ordered lists () and unordered lists ():

- Set different markers
- Set an image as marker
- Add background colors



Example: *wk2example19.html*

```
<ul class="a">
  <li>Coffee</li>
  <li>Tea</li>
</ul>
```

```
<ol class="c">
  <li>Coffee</li>
  <li>Tea</li>
</ol>
```

```
ul.a { list-style-image: url('img.png'); }
```

See: [Example](#)

```
ol.c { list-style-type: upper-roman; }
```

Styling Forms

We can use various CSS properties we have learnt to improve the look of HTML forms



Example: *wk2example20.html*

```
input { width: 100%}
```

```
input[type=text] { ... }
```

```
input[type=password] { ... }
```

```
input[type=text] {  
    background-color: white;  
    background-image: url('search.jpg');  
    background-position: 5px;  
    background-repeat: no-repeat;  
    padding: 12px 20px 12px 40px;  
}
```

Styling Forms



Example: *wk2exmaple21.html*

add width, border, background-color styles to
your select menu

```
select {  
  width: 100%;  
  padding: 16px 20px;  
  border: none;  
  border-radius: 4px;  
  background-color: #f1f1f1;  
}
```

Example: styling buttons

```
input[type=button], input[type=submit],  
input[type=reset] {  
  background-color: #4CAF50;  
  border: none;  
  color: white;  
  padding: 16px 32px;  
  text-decoration: none;  
  margin: 4px 2px;  
  cursor: pointer;  
}
```

Exercise 6

ExercisesResources

The Ex6 folder contains three webpages:

- Home – mainly text based
- Register – a registration form for a user
- Feedback – a form which allows a user to submit feedback

Beautify these pages (the best you can) with the help of internal/external style sheets. You are free to add in pictures too.

Your pages do not have to look like the ones on the right.

The image displays two web pages side-by-side. The top page is titled 'Feedback Form' and features a dark navigation bar with 'Home', 'Register', and 'Feedback' links. Below the navigation bar, there are input fields for 'Title', 'Name', and 'Type', each followed by a 'Submit' button. The bottom page is titled 'Registration' and features a dark navigation bar with 'Home', 'Register', and 'Feedback' links. Below the navigation bar, there are input fields for 'Name', 'Age', and 'Gender', each followed by a 'Submit' button. The 'Types of membership' field is a dropdown menu currently showing '5 Years'. The 'Interests' section has checkboxes for 'Travel', 'Food', 'Shopping', and 'Cars'. The bottom page also has a 'Submit' button at the bottom.

Take Away Message

- Internal style sheet applies to one page; external style sheet applies to all linked pages.
- A style sheet is a set of rules of the form:

```
selector { property: value; }
```