



## The CSS Box Model – Lab 9

**IMPORTANT!** Save all your work to a safe location such as OneDrive. Create a folder for GUI & Web Development into which you will save all your work for this module, arranged how you wish. Ideally you should create a folder each week for your lab exercises. Note that you should create a separate file for each exercise.

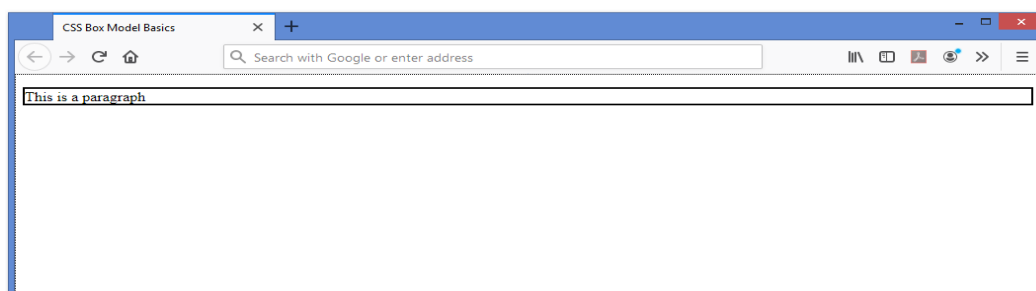
Everything in CSS has a box around it, and understanding these boxes is key to being able to create layouts with CSS, or to align items with other items. In this lesson, we will take a proper look at the CSS *Box Model* so that you can build more complex layout tasks with an understanding of how it works and the terminology that relates to it.

### Exercise 1: The basics of the box

1. Create the following page that has a single paragraph as shown below:

```
1 <!doctype html>
2 <html lang="en">
3 <head>
4     <meta charset="UTF-8">
5     <title>CSS Box Model Basics</title>
6     <style>
7         #para { border: 2px solid black;}
8     </style>
9 </head>
10 <body>
11     <p id="para">This is a paragraph</p>
12 </body>
13 </html>
```

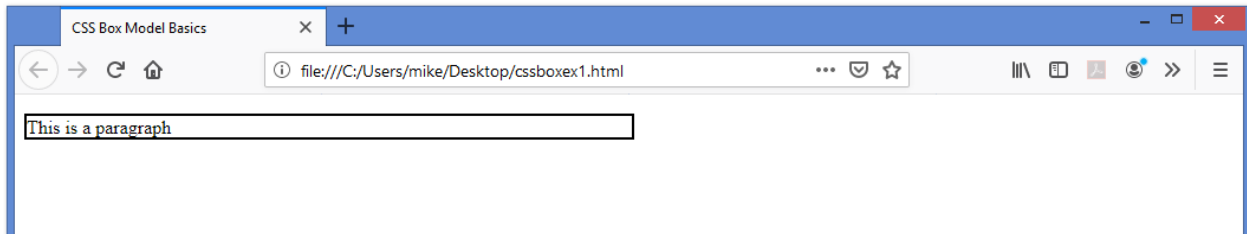
Save and view your page in the browser. Your page should look similar to as shown:



Change the size of the paragraph so that it has a width of 50%. It should now only use 50% of the space of its parent container (which in this case is the body tag).

```
6 <style>
7   #para { border: 2px solid black;
8           width: 50%;}
9 </style>
```

Your finished page should look similar to as shown below. Note that the black border around the box is now only taking up 50% of the width.



## Exercise 2: Boxes with style

In this exercise, you will use CSS to create 15 distinctly different boxes. Recreate the following HTML page using external CSS.

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language.

CSS describes how HTML elements are to be displayed on screen, paper, or in other media. CSS saves a lot of work. It can control the layout of multiple web pages all at once. External stylesheets are stored in CSS files.

All HTML elements can be considered as boxes. In CSS, the term "box model" is used when talking about design and layout. The CSS box model is essentially a box that wraps around every HTML element. It consists of: margins, borders, padding, and the actual content.

A CSS rule-set consists of a selector and a declaration block: The selector points to the HTML element you want to style. The declaration block contains one or more declarations separated by semicolons. Each declaration includes a CSS property name and a value, separated by a colon.

A CSS pseudo-element is used to style specified parts of an element.

With CSS3, you can give any element "rounded corners", by using the border-radius property.

With the CSS3 border-image property, you can set an image to be used as the border around an element.

Flexible boxes, or flexbox, is a new layout mode in CSS3. Use of flexbox ensures that elements behave predictably when the page layout must accommodate different screen sizes and different display devices.

The viewport is the user's visible area of a web page. The viewport varies with the device, and will be smaller on a mobile phone than on a computer screen.

Media query is a CSS technique introduced in CSS3. It uses the @media rule to include a block of CSS properties only if a certain condition is true.

The CSS border properties allow you to specify the style, width, and color of an element's border.

The CSS margin properties are used to create space around elements. The margin properties set the size of the white space OUTSIDE the border.

The CSS padding properties are used to generate space around content. The padding properties set the size of the white space between the element content and the element border.

Creating transparent images with CSS is easy. The CSS opacity property is a part of the CSS3 recommendation.

A pseudo-class is used to define a special state of an element.

The HTML for the page body is provided on the following page:

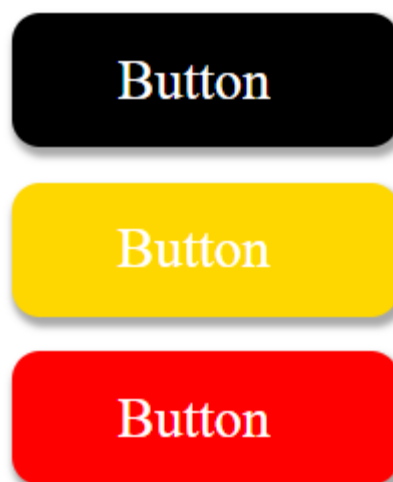
```

<p id="p1">Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written
in a markup language.</p>
<p id="p2">CSS describes how HTML elements are to be displayed on screen, paper, or in other media. CSS saves a lot of
work. It can control the layout of multiple web pages all at once. External stylesheets are stored in CSS files.</p>
<p id="p3">All HTML elements can be considered as boxes. In CSS, the term "box model" is used when talking about design
and layout. The CSS box model is essentially a box that wraps around every HTML element. It consists of: margins, borders,
padding, and the actual content.</p>
<p id="p4">A CSS rule-set consists of a selector and a declaration block: The selector points to the HTML element you want to
style. The declaration block contains one or more declarations separated by semicolons. Each declaration includes a CSS
property name and a value, separated by a colon.</p>
<p id="p5">A CSS pseudo-element is used to style specified parts of an element.</p>
<p id="p6">With CSS3, you can give any element "rounded corners", by using the border-radius property.</p>
<p id="p7">With the CSS3 border-image property, you can set an image to be used as the border around an element.</p>
<p id="p8">Flexible boxes, or flexbox, is a new layout mode in CSS3. Use of flexbox ensures that elements behave predictably
when the page layout must accommodate different screen sizes and different display devices.</p>
<p id="p9">The viewport is the user's visible area of a web page. The viewport varies with the device, and will be smaller on a
mobile phone than on a computer screen. </p>
<p id="p10">Media query is a CSS technique introduced in CSS3. It uses the @media rule to include a block of CSS properties
only if a certain condition is true.</p>
<p id="p11">The CSS border properties allow you to specify the style, width, and color of an element's border.</p>
<p id="p12">The CSS margin properties are used to create space around elements. The margin properties set the size of the
white space OUTSIDE the border.</p>
<p id="p13">The CSS padding properties are used to generate space around content. The padding properties set the size of the
white space between the element content and the element border.</p>
<p id="p14">Creating transparent images with CSS is easy. The CSS opacity property is a part of the CSS3 recommendation.
</p>
<p id="p15">A pseudo-class is used to define a special state of an element.</p>

```

### Exercise 3: Making Buttons

1. Recreate the following buttons using html and CSS. (Note: You can use a **div** tag rather than a button to create these).

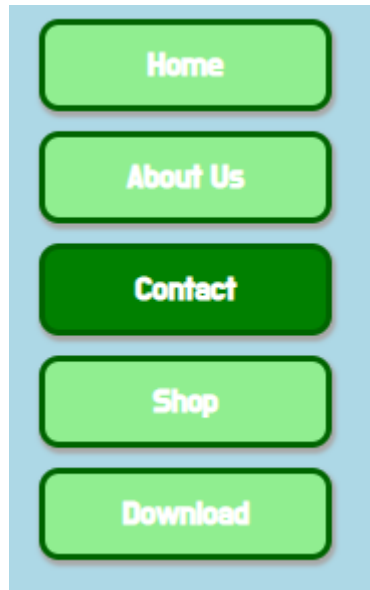


**Hint:** Use the box-shadow in CSS to create the shadow effect as shown [here](#).

2. Using pseudo-classes, change the colour of the button to lightblue when the mouse hovers over it.

## Exercise 4: Buttons with shadows

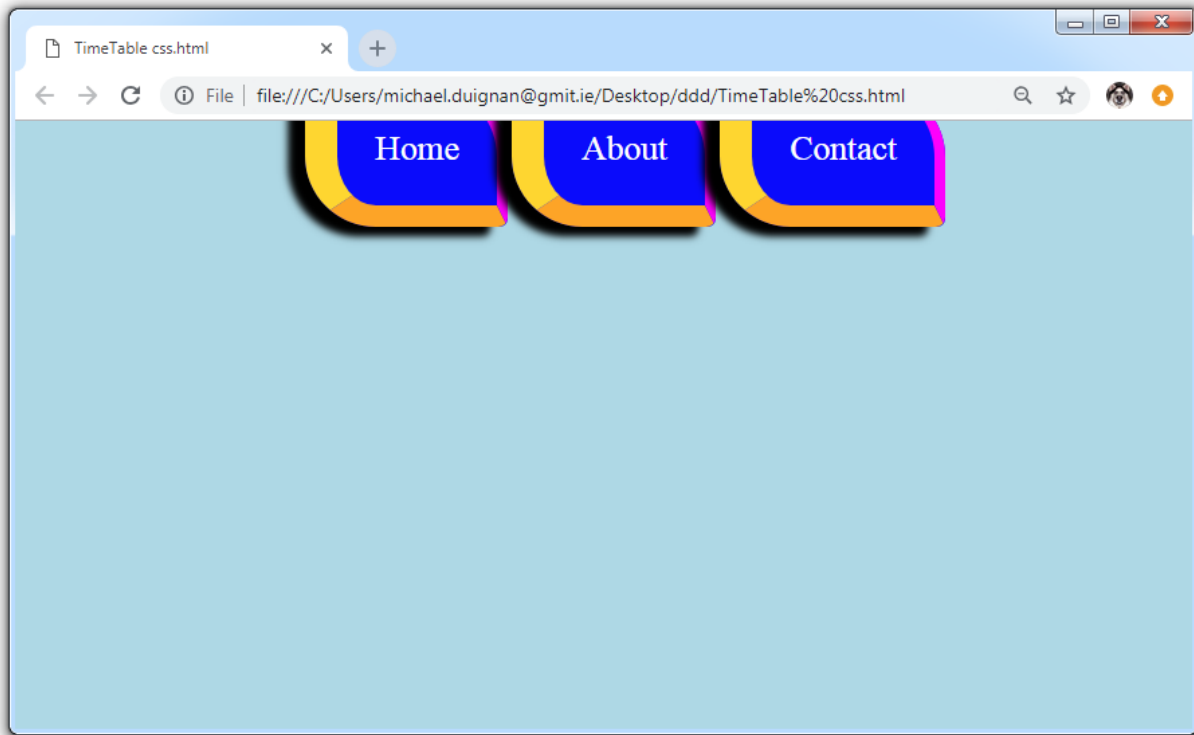
1. Recreate the following buttons using html and CSS. Note that when the user hovers a button, it changes (as shown in the “Contact” button - You can use a **div** tag rather than a button to create these).



**Hint:** Consider using an external font – Do Hyeon. See [here](#).

## Exercise 5: Ornate Buttons

1. Recreate the following buttons using html and CSS, using an **unordered list** `<ul>`. Note that your list should be displayed as **inline** rather than block level.



Specifications for the buttons:

- Must include a box shadow on the buttons
- The borders have varying widths from 20px on the bottom, 30px on the left, 10px on the right, and 5px on the top.
- The buttons should be padded so that they appear similar to the example shown above.
- The borders should have a radius of 2px, 66px, 9px, and 66px.

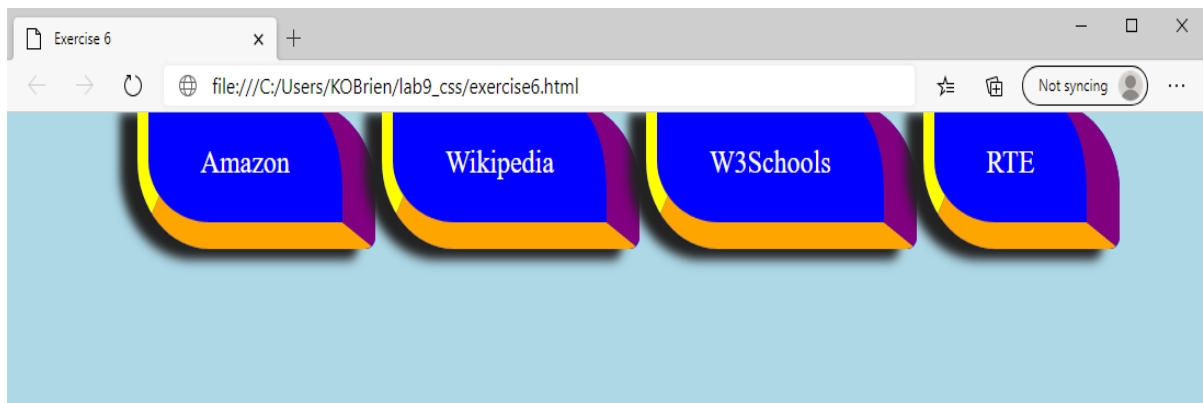
The button should change appearance when the user hovers over any of the buttons. The appearance of the button for the hover state is as shown below on the “about button”:



## Exercise 6: Ornate Buttons Continued

1. Using the page you created in exercise 5, change the menu so that the buttons link to the following sites:

- amazon.co.uk
- wikipedia.org
- w3schools.com
- rte.ie



All your links should open in a new tab. Ensure your links are displayed as white text without an underline.