Introduction to Cascading Style Sheets – Lab 7

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 foryour lab exercises. Note that you should create **a separate file** for each exercise.

This week we will begin using CSS to add style to web pages. CSS works with existing HTML and enables us to specify a web pages style - page layouts, colours, and fonts are all determined with CSS. CSS brings style to your web pages by interacting with HTML elements.

Exercise 1: Create a basic CSS rule

1. Create the following page that has a single H1 heading as shown below:

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>

    <h1>Hello CSS!</h1>

</body>
</html>
```

2. Save your page as a HTML document and view it in a browser. There should be a single h1 heading.

3. You will now create a CSS rule and apply it to the H1 heading. For this exercise, the CSS rules will be created inside the HTML, between the <head> tags. This is known as internal CSS. To use CSS internally, you will need to use the <style> tags. Amend your code so that you have <style> tags inside the <head> tags as shown below. Inside the pair of opening and closing <style> tags, you will place a rule that will target, or select the H1 and change its appearance – in this case, change the font colour to red (see next page):

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
    <style>
        h1 {color: red;}
    </style>
</head>
<body>

    <h1>Hello CSS!</h1>

```

Note that the CSS rule for colour uses the American spelling - **color**

4. Save and reload your page again. Your CSS rule should now be applied to the H1 heading and changed the font colour to red.

5. Add a paragraph to your HTML, underneath the H1, as shown:

```
<body>

    <h1>Hello CSS!</h1>
    <p>This is a paragraph</p>

</body>
```

6. Create a new rule for this paragraph that will change the colour of the paragraph text to green, as shown:

```
    <style>
        h1 {color: red;}
        p {color: green;}
    </style>
```

7. Save and run your page. Your finished web page should show a red heading and a green paragraph.

Hello CSS!

This is a paragraph

Exercise 2: Applying CSS rules using the class selector

1. In the previous exercise, the CSS rule used what is known as an element selector. In other words, the rule is applied to all elements of the same type. In this exercise, you will experiment with class selectors to achieve different results.
2. Create the HTML document containing 4 paragraphs, numbered, and a single H1 heading, as shown below:

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
</head>
<body>

    <h1>CSS Rules Tests</h1>
    <p>This is a paragraph number 1</p>
    <p>This is a paragraph number 2</p>
    <p>This is a paragraph number 3</p>
    <p>This is a paragraph number 4</p>

</body>
</html>
```

3. Save and run your page, ensure that it runs without issue. Add a CSS rule that applies to all paragraph elements, changing the font colour to red:

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
    <style>
        p {color: red;}
    </style>
</head>
<body>

    <h1>CSS Rules Tests</h1>
    <p>This is a paragraph number 1</p>
```

After running the page, all 4 paragraphs should be in red. The H1 heading remains in black.

4. On many occasions, you may wish to apply a rule to multiple elements, but not all elements of the same type. For example, let's say you want to apply a rule to paragraphs 1 and 3, but not 2 and 4. To achieve this you will need to use the ***class*** selector. See here for more information.
   Using the class selector: The rule will not change in this example, but the selector will. You will need to choose a suitable name for the class. It is important to note that class names cannot start with a number. A valid class name can start with a letter (a-z), an underscore (_), a hyphen (-) followed by any letters, numbers, hyphens, and underscores. A class name should be at least two characters long. Classes cannot start with a digit, two hyphens or a hyphen followed by a number. Note that CSS class selectors are generally case insensitive.

   In this example, let's use the name **`myClass`**

   Change your rule so that the selector is now **`.myClass`**

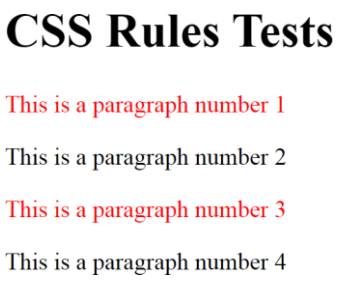
```
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Document</title>
    <style>
        .myClass {color: red;}
    </style>
</head>
<body>

    <h1>CSS Rules Tests</h1>
```

Is it important to use the *dot* before the class name in the selector. This lets CSS know that it's a class and not an element.

5. The class attribute will need to be applied to the elements you wish the rule to apply to – in this case, paragraphs 1 and 3. To apply the class, use the class attribute on paragraph 1 and 3 only, as shown below:

```
11
12      <h1>CSS Rules Tests</h1>
13      <p class="myClass">This is a paragraph number 1</p>
14      <p>This is a paragraph number 2</p>
15      <p class="myClass">This is a paragraph number 3</p>
16      <p>This is a paragraph number 4</p>
17
```

6. Save and run your page. Your page should be similar to as shown below, with only the first and the third paragraph coloured red:



7. Make the H1 heading a member of the *myClass* class. Save and run your page to confirm that the change worked.

Exercise 3: Applying CSS rules using the ID selector

1. Using the web page from exercise 2, in this exercise you will create a new rule using the ***ID*** selector. For more information on the ID selector, see here.
   Similar to the rules for naming classes, you can choose the name for the ID, but it should not start with a number. The rule you will create will change the background colour to yellow. In this case, use the ID name "yellowBG":

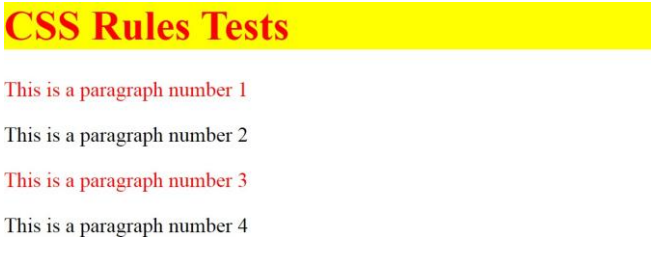
```
<head>
    <meta charset="UTF-8">
    <title>Document</title>
    <style>
        .myClass {color: red;}
        #yellowBG {background-color: yellow;}
    </style>
</head>
```

Is it important to use the *hash symbol* before the ID name in the selector. This lets CSS know that it's an ID and not an element.

2. The ID attribute will need to be applied to the element you wish the rule to apply to – in this case, the H1 heading. To apply the ID, use the ID attribute on the H1 element, as shown below:

```
<body>

    <h1 class="myClass" id="yellowBG">CSS Rules Tests</h1>
    <p class="myClass">This is a paragraph number 1</p>
    <p>This is a paragraph number 2</p>
    <p class="myClass">This is a paragraph number 3</p>
    <p>This is a paragraph number 4</p>

</body>
</html>
```

3. Save and run your page. Your page should be similar to as shown below, with the H1 heading now having a yellow background:



Exercise 4: Create a Web Page using CSS with IDs and Classes

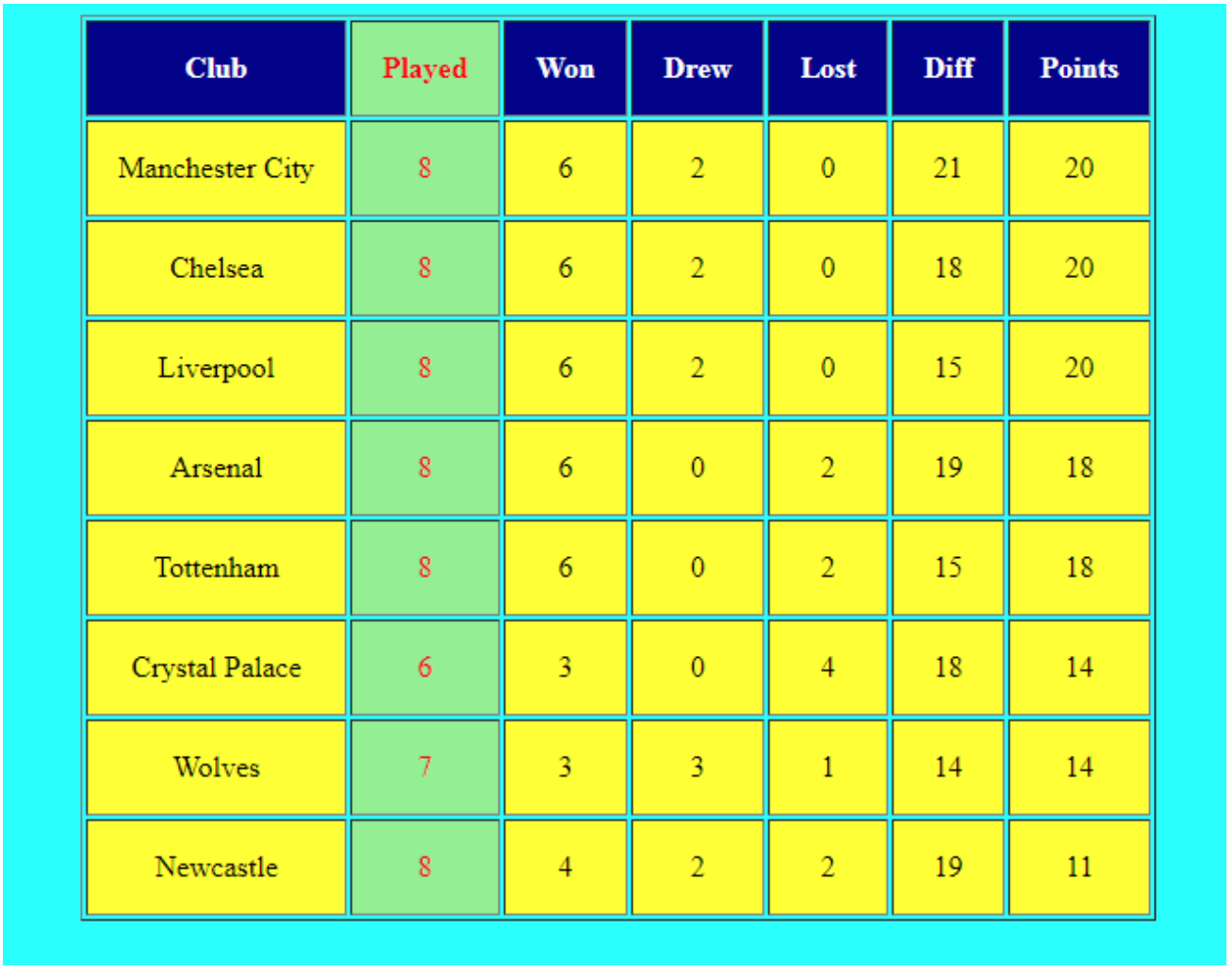
Copy and paste the code below into a new HTML document. Check the page in a browser to ensure that it works without issue.

```
<!doctype html>
<html lang="en">
<head>
 <title>Glossary</title>
</head>
<body>
 <h1>The World Wide Web</h1>

 <p>The World Wide Web (abbreviated WWW or the Web) is an information
space where documents and other web resources are identified by Uniform
Resource Locators (URLs), interlinked by hypertext links, and can be
accessed via the Internet.[1] English scientist Tim Berners-Lee invented
the World Wide Web in 1989. He wrote the first web browser computer
program in 1990 while employed at CERN in Switzerland. The Web browser was
released outside of CERN in 1991, first to other research institutions
starting in January 1991 and to the general public on the Internet in
August 1991.</p>

 <p>The World Wide Web has been central to the development of the
Information Age and is the primary tool billions of people use to interact
on the Internet. Web pages are primarily text documents formatted and
annotated with Hypertext Markup Language (HTML). In addition to formatted
text, web pages may contain images, video, audio, and software components
that are rendered in the user's web browser as coherent pages of
multimedia content.</p>

 <p>Embedded hyperlinks permit users to navigate between web pages.
Multiple web pages with a common theme, a common domain name, or both,
make up a website. Website content can largely be provided by the
publisher, or interactively where users contribute content or the content
depends upon the users or their actions. Websites may be mostly
informative, primarily for entertainment, or largely for commercial,
governmental, or non-governmental organisational purposes.</p>

</body>
</html>
```

1. Create a CSS rule to change the color of the H1 text to red.
2. Add another rule to specify that all paragraph tags have blue text.
3. Add another rule to specify that the second paragraph has a background colour of *lightgrey*. Use an ID attribute to specify the second paragraph.
4. Add a rule to specify that the first and last paragraph have a background colour of *lightgreen*. Use a class attribute to specify the both of these paragraphs.

Exercise 5: Letting CSS do the work for you

1. Download the HTML file leaguetable.html from the lab7_files folder on Moodle. Create a series of CSS rules so that the table resembles the following:



Club	Played	Won	Drew	Lost	Diff	Points
Manchester City	8	6	2	0	21	20
Chelsea	8	6	2	0	18	20
Liverpool	8	6	2	0	15	20
Arsenal	8	6	0	2	19	18
Tottenham	8	6	0	2	15	18
Crystal Palace	6	3	0	4	18	14
Wolves	7	3	3	1	14	14
Newcastle	8	4	2	2	19	11

Note the following:

- All table data should have the text aligned in the center.
  The CSS rule to center text is:
  ```
  text-align: center;
  ```
- The entire page should have a cyan background colour
- The colour scheme for the table should be as shown above.

Exercise 6: Using Classes and Elements in Tables

1. Recreate the table shown below, using the file course_timetable.html available in the lab7_files folder on Moodle. You should use classes where relevant for lectures (dark green), labs (dark blue) and tutorials (dark red). Links should have a text colour of white, and the table colour scheme should appear as shown below.

Sample College Timetable

Day of the Week	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
Monday	Java Lecture				Java Lab			
Tuesday	Maths		E-Bus			GUI Lab		
Wednesday	Maths		Java Lecture			Java Tutorial		
Thursday	LIS		Java Lecture		E-Bus		Java Lecture	LIS Lecture
Friday	E-Bus	GUI Lecture		Maths Tutorial				

Exercise 7: External CSS

1. Download the WWW history site available in the lab7_files folder on Moodle. It is a compressed zip, so once you download the file, you will need to extract its content.
2. Open the file mobileweb.html in a browser, and you will see a page similar in style to the page shown:

Note: `padding: 10px;` makes the links larger

3. Open mobileweb.html in notepad++, or any other text editor. Note the style

implemented for this page embedded in the <style> tags.

4. Move the CSS from the <style> tags to an external CSS file and update mobileweb.html so that it references the external stylesheet you have moved the CSS to. See here for details on how to add CSS via an external file.
5. Reload the page - mobileweb.html - in a browser and check the style is similar as shown in the screenshot above. Also, check the links from this page to ensure they work. Note that the other pages have a different style to the mobileweb.html page.
6. Update the other html pages so that they now reference the same external stylesheet as mobileweb.html.
7. Reload the page - mobileweb.html – in a browser and check each of the links work and that for each page a similar style is now applied.

Exercise 8

1. Using the file "tbl.html" in the lab7_files folder on Moodle, change the html to make it similar to the page shown below using **external** CSS.

Tim Berners-Lee

Sir Timothy John Berners-Lee (born 8 June 1955), also known as TimBL, is an English engineer and computer scientist, best known as the inventor of the World Wide Web. He made a proposal for an information management system in March 1989, and he implemented the first successful communication between a Hypertext Transfer Protocol (HTTP) client and server via the internet in mid-November the same year.

Berners-Lee is the director of the World Wide Web Consortium (W3C), which oversees the continued development of the Web. He is also the founder of the World Wide Web Foundation and is a senior researcher and holder of the founders chair at the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL). He is a director of the Web Science Research Initiative (WSRI), and a member of the advisory board of the MIT Center for Collective Intelligence. In 2011, he was named as a member of the board of trustees of the Ford Foundation. In 2004, Berners- was knighted by Queen Elizabeth II for his pioneering work.

In April 2009, he was elected a foreign associate of the United States National Academy of Sciences. Named in Time magazine's list of the 100 Most Important People of the 20th century, Berners-Lee has received a number of other accolades for his invention. He was honoured as the "Inventor of the World Wide Web" during the 2012 Summer Olympics opening ceremony, in which he appeared in person, working with a vintage NeXT Computer at the London Olympic Stadium. He tweeted "This is for everyone", which instantly was spelled out in LCD lights attached to the chairs of the 80,000 people in the audience. Berners-Lee received the 2016 Turing Award "for inventing the World Wide Web, the first *web browser*, and the fundamental protocols and algorithms allowing the Web to scale".

The World Wide Web

The World Wide Web (abbreviated WWW or the Web) is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs), interlinked by hypertext links, and can be accessed via the Internet. English scientist Tim Berners-Lee invented the World Wide Web in 1989. He wrote the first *web browser* computer program in 1990 while employed at CERN in Switzerland. The *Web browser* was released outside of CERN in 1991, first to other research institutions starting in January 1991 and to the general public on the Internet in August 1991.

The World Wide Web has been central to the development of the Information Age and is the primary tool billions of people use to interact on the Internet. Web pages are primarily text documents formatted and annotated with the Hypertext Markup Language (HTML). In addition to the formatted text, web pages may contain images, video, audio and software components that are rendered in the user's *web browser* as coherent pages of multimedia content.

Embedded hyperlinks permit the users to navigate between web pages. Multiple web pages with a common theme, a common domain name, or both, make up a website. Website content can largely be provided by the publisher, or interactively where users contribute content or the content depends upon the users or their actions. Websites may be mostly informative, primarily entertainment, or largely for commercial, governmental, or non-governmental organisation purposes