Faculty of Science, Engineering and Technology

COS30045 Data Visualisation

Task 2.1 D3 Binding and Drawing with Data

ILO	Create web-based interactive visualisations using real-world data sets.
Aim:	Use D3 to generate elements on a webpage
Resources:	*Textbook:* Murray Ch 5 Murray on ProQuest Murray on Safari
To be marked as Complete your submission must:	Submit working code that meets the requirements specified in document below. Demonstrate appropriate use of HTML, CSS and D3. Properly formatted code Well commented code with references to code sourced from web, stack overflow etc. where appropriate. Demonstrate and explain code to tutor in class.
Submission	Submit to Doubtfire • screenshot of final webpage and annotated DOM • code Bring code to class to demonstrate to tutor

Overview

In this tutorial we will start using D3.

Note: This Task Guide is not meant to be fully explanatory. You will also need to work through the examples in the text book *Interactive Data Visualisation* for the Web by Murray.

Step 1: Start a basic HTML template with D3

Firstly you need to set up a basic HTML template and add in reference to the D3 library in the header. You access the D3 library by storing a copy of the D3 library in your program folder or by using the web link. The second method will make sure you are always using the most up to date version of D3.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8"/>
    <meta name="description"    content="Data Visualisation"/>
    <meta name="keywords"       content="HTML, CSS, D3"/>
    <meta name="author"         content="Your name here"/>

    <title>Task 2.1 D3 Data Binding</title>

    <script src="https://d3js.org/d3.v5.min.js"></script>

</head>
<body>

    <h1>The D3 Journey starts here...</h1>

    <script>

            //D3 Code goes here

    </script>
```

reference to v5 of D3 library

Step 2 Generating new page elements with D3

Replace the `//D3 code goes here` with the following D3 code and run the web page.

```
    <body>

        <h1>The D3 Journey starts here...</h1>

        <script>
        //example from Murray

            d3.select("body")
              .append("p")
              .text("New paragraph!");

        </script>

        <br>
        <bf>
        <footer style="color:grey">COS30045 Data Visualisation<br>
            Joe Bloggs</footer>
    </body>
```

Select the body of the document.

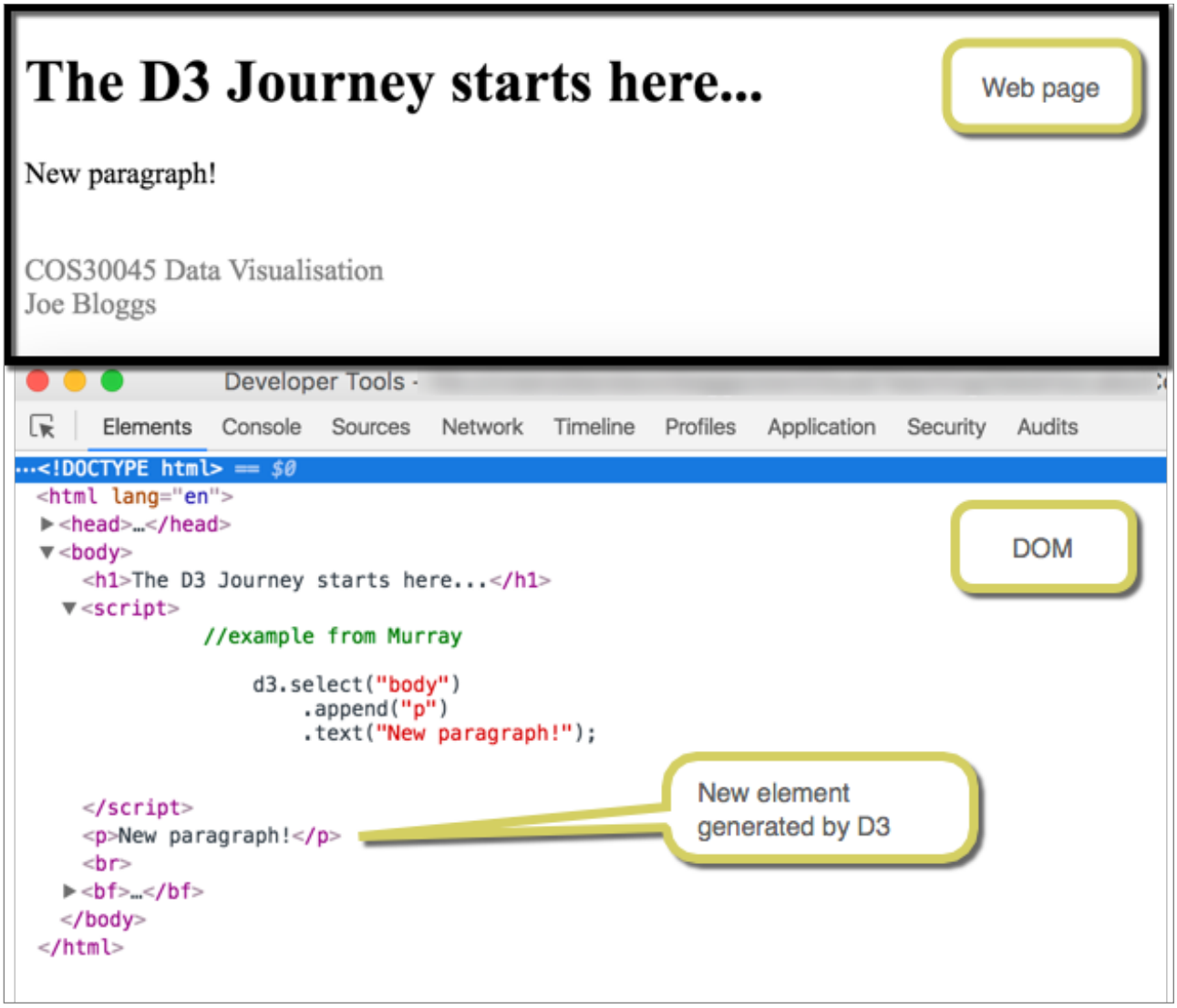
Append a paragraph element to the element selected previously (i.e., the body).

D3 methods

Insert the text into current selection (i.e., the newly generated   tags.

Finish command with ;

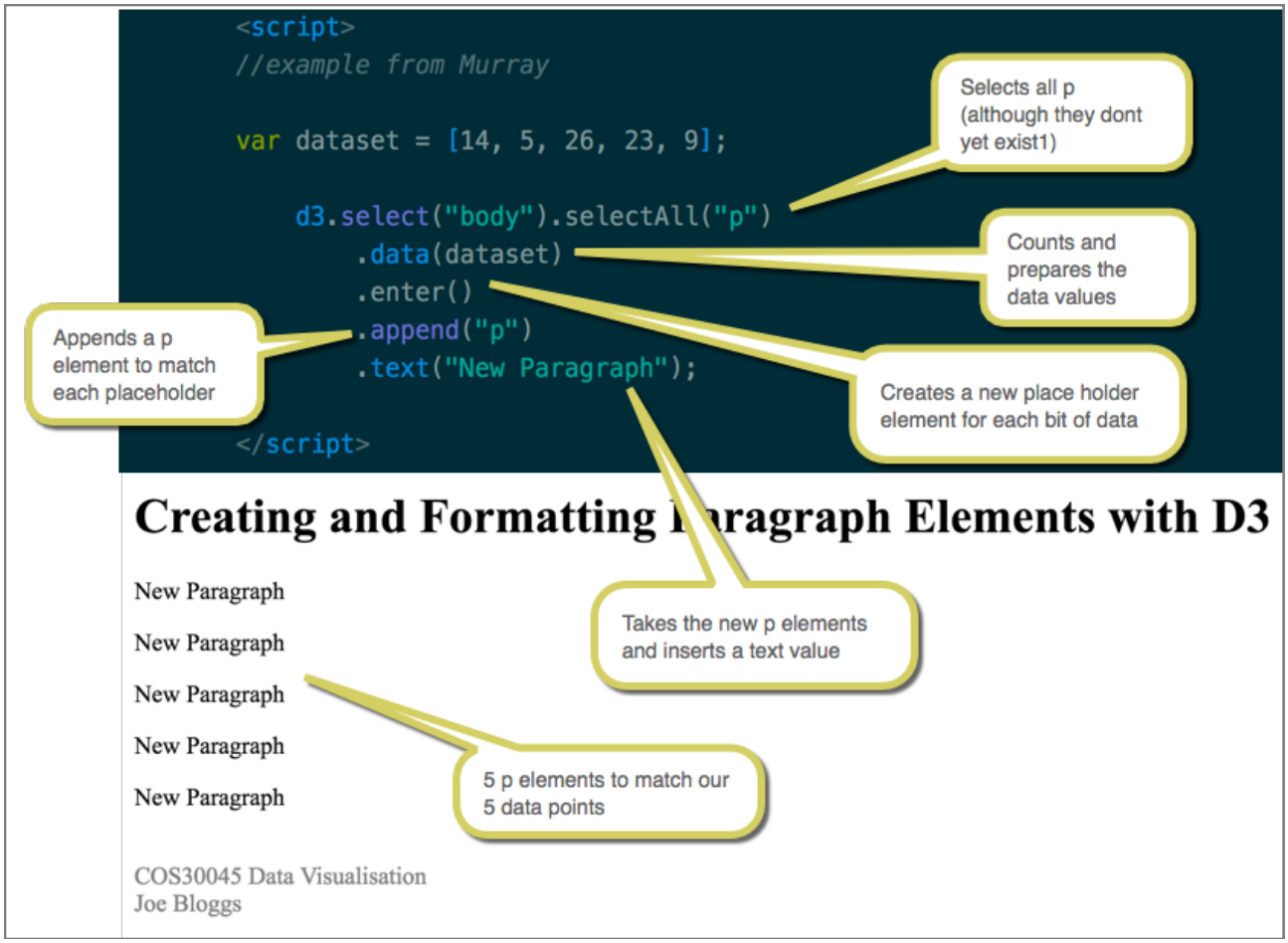
If you inspect the DOM you will see that D3 has added (i.e., appended) an a new p element and filled it with the specified text.



Step 3 Binding data to page elements

D3 allows us to generate page elements and map them to data. We can then customise some aspect of the page element (e.g., a rectangle, circle etc) to reflect some aspect of the data (e.g., height of rectangle, area of circle, colour, thickness of line etc).

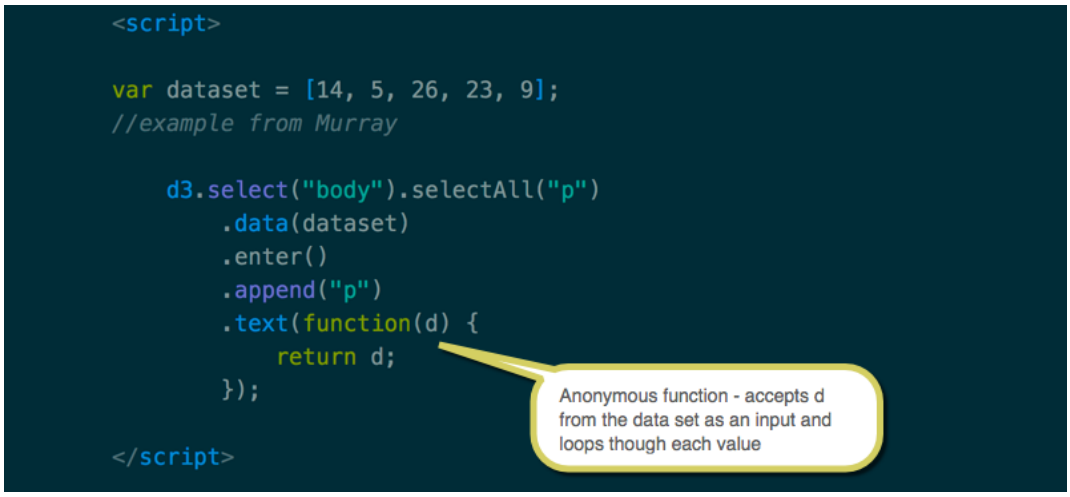
Just after the script tag, create a data variable containing numbers between 1 and 30. We will now bind the data set to a set of corresponding p elements.



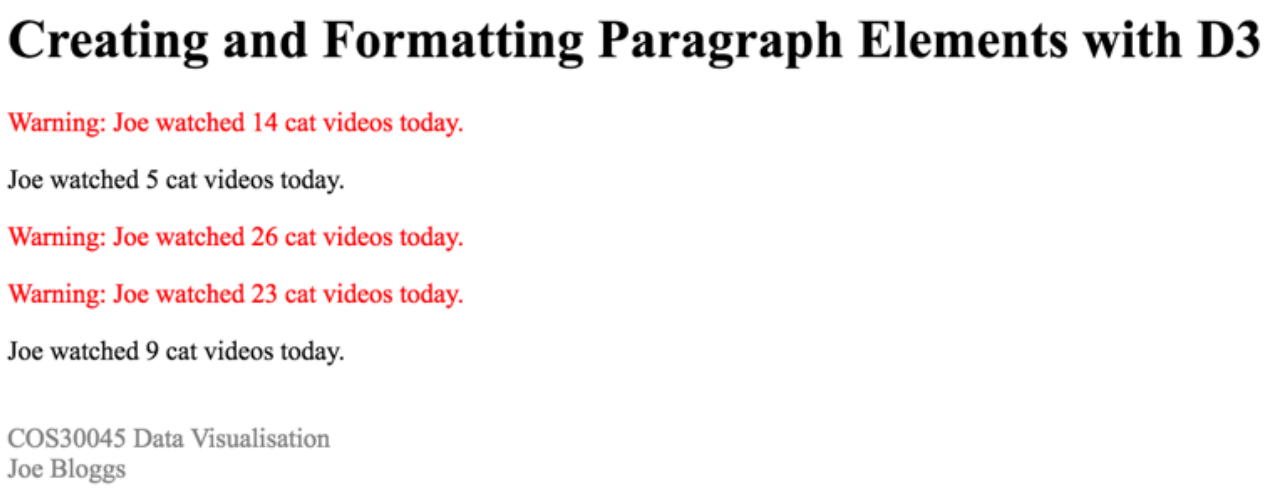
At the moment the data is attached to the p (you can see this by checking the DOM outputting the elements to the in the console using:

```
console.log(d3.selectAll("p");
```

However, the data is currently not being visualised in the display. Lets get the data to print to the web page:



Use some selection rules (e.g., if, else, then…etc) and html formatting to produce something like the following:



Tip: You can use both `d` and the index `i` in your anonymous functions. For example:

```
.text(function(d, i) {
    return "i = " + i + " d = "+d;
```

Will give you the following out put:

```
i = 0 d = 14
i = 1 d = 5
i = 2 d = 26
i = 3 d = 23
i = 4 d = 9
```

Requirements

Your submission must include:

- code demonstrating
    - standard HTML template with appropriate meta data and page title
    - the use of D3 to bind data values from a data set to html elements and display on a webpage
    - the use the data to manipulate some visual property of the html element
- screenshot of webpage

- annotated screenshot of DOM showing D3 generated elements (i.e., show the p elements, the indexes and the data in a p element). To view in the console use:

```
console.log(d3.selectAll("p");
```