Faculty of Science, Engineering and Technology

COS30045 Data Visualisation

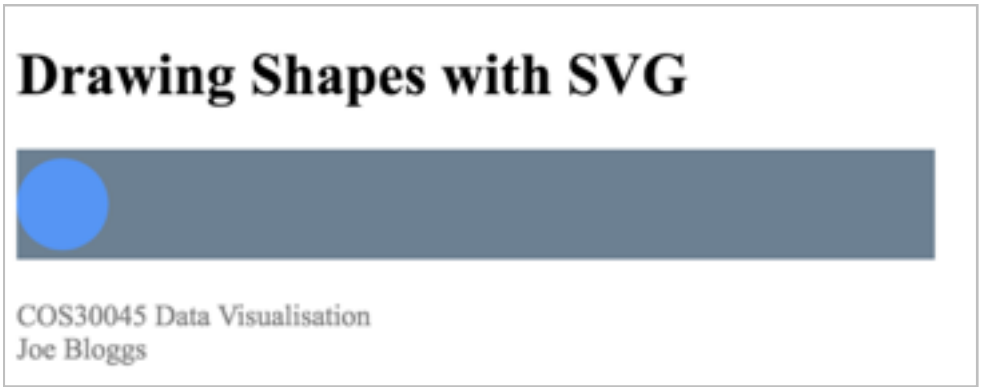
Task 1.3 Technology Fundamentals - SVG

ILO	Create web-based interactive visualisations using real-world data sets.
Aim:	Draw SVG shapes
Resources:	*Textbook:* Murray Ch 3 Murray on ProQuest Murray on Safari *Web Resources:* *W3Schools* *Modzilla Developer Network* *codeacademy* *Videos:*
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 SVG. 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 • code Bring working code to class to demonstrate to tutor

Note: This Task Guide is not meant to be fully explanatory. Unless you are already familiar with SVG you will need to read the text book and/or examine web resources. This is something you need to get used to doing when you get out into the 'real' world!

Overview

In this unit you will learn to use D3 to create web-based visualisations. Scaleable Vector Graphics (SVG's) are the building blocks of D3 visualisations. In this task you will create and style some SVGs. In the next task we will get D3 to generate the SVGs.



Step 1 Draw SVG shapes

Start with a basic html template with appropriately labeled meta data and title. The first step to creating an SVG is to create an SVG element which will act as a canvas on which our shapes will sit.

```
20  <body>
21
22      <h1>Drawing Shapes with SVG</h1>
23
24      <svg width="500" height="50">
25
26          <circle cx="25", cy="25", r="25"/>
27
28      </svg>
29
30      <footer>COS30045 Data Visualisation<br>
31              Joe Bloggs</footer>
32
33  </body>
34  </html>
35
```

In the body of the code, first create a 500 x 50 px SVG element with the SVG tag. To draw a circle you need to specify the type of shape you want to draw (i.e., a circle), the x and y of the *centre* of the circle and the radius.

If you run the code above it will become apparent that the default colour is black. Change the colour to something a bit more exciting. There are are a number of different ways to specify

colour, to start with use a simple colour name which will specify a standard websafe colour (i.e., cornflowerblue). In the example below a background colour is also specified for the SVG element.

```
<body>

    <h1>Drawing Shapes with SVG</h1>

    <svg width="500" height="60" style="background-color:slategrey;">

            <circle cx="25", cy="30", r="25" fill="cornflowerblue" />

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

</body>
```

There are a large number of attributes that you can specify for a SVG including animations. Make more circles demonstrating different styling. Do the same with some other shapes such as rectangles, elapses and lines.

Requirements 1:

Make sure you include examples of: • three or more different shapes • different stroke and fill colours • transparency • stroke width	• overlapping shapes • Optional 1: Try some transformations and animations • Optional 2: Make your webpage interactive with some JavaScript Don't forget to comment your code!

Colour is very important in data visualisation. Try to make your colour combinations harmonious! Try using colorbewer for inspiration. Or w3schools' HTML Colour 'Picker'.

See an example on page below…


```
<body>

    <h1>Drawing Shapes with SVG</h1>

    <svg width="500" height="60" style="background-color:slategrey;">

        <g transform="translate(20, 0)">
            <circle cx="25", cy="30", r="25" fill="cornflowerblue" />
            <rect x="50", y="5", width="50", height="50" fill="rgb(100, 149, 237)" />
            <ellipse cx="140" cy="30" rx="40" ry="25"
             fill="rgba(100, 149, 237, 0.5)" />
             <Line x1="0" y1="30" x2="180" y2="30" stroke="black"
             stroke-width="5"  />
        </g>

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

</body>
```

Drawing Shapes with SVG

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Next week we will start using D3 to bind data to SVG elements. We can then use the the data to help draw the SVG. For example, we can take a rectangle SVG and create a ‘bar’ with a height that correlates with the bound data value.