**F21DV Lab 2 Report**

# Part 1. CSS Effects/Animations

## Exercise 1.

I struggled to get the dot to pulse properly while on the path of the line graph despite the fact the CSS correctly makes the circle I created outside the SVG pulse. The dots on the line graph seem to move off the axis of the line while increasing/decreasing in size and the colour fill changes to red.

Chart, line chart

Description automatically generatedText

Description automatically generatedCSS: Result:

## Exercise 2.

For this exercise I created an array of shapes that can be added to the SVG when the user clicks the corresponding button. Initially I bind button objects to the array of shape names so a button is added to the body of the window for each shape in the shape array that have the value of the shape name. I then add the shape() function as a function to execute when the each button is clicked using attr(‘onclick’, ‘shape(this)’). When each button is clicked, the value is checked and a shape corresponding to that value is added to the SVG. A class is also added to the shape so that text will appear above it when a user hovers their mouse over it. When another button is pressed, the previous shape is removed from the screen.

Background pattern

Description automatically generated with low confidenceA screenshot of a computer

Description automatically generated with medium confidence

Result:

Onclick function:

# Part 2. Events

## Exercise 3

In addition to the colour change of the shape, I increased the size, added a dotted red border, rotated the shape 45 degrees and added a top margin of 75px so that the full shape showed on screen after being rotated.

After:

Before:

onmouseover properties:

Logo, icon

Description automatically generatedText

Description automatically generated

## Exercise 4.

I successfully replaced the div with an SVG appended to the body. I then appended a circle to the SVG and added the .on(‘mouseover’,…) property. When the mouse hovers over the circle the radius doubles in size and the fill changes from green to orange. Once the mouse has moved away from the circle, it returns to 50px (it’s original size) and the fill changes to steelblue.

Shape

Description automatically generatedShape, circle

Description automatically generatedShape

Description automatically generatedText

Description automatically generated

After:

During:

Before:

onmouseover properties:

## Exercise 5.

To make the text follow the mouse pointer I used the d3.pointer(event) array with the value at index 0 being the x coordinate and the value at index 1 being the y coordinate. Inside the mouseover function I set the x and y attributes of the text box to be the x and y values in the d3.pointer(event) array. In the mouseout event I removed the text from the SVG so that it didn’t create a trail of text across the screen. I also offset the text box from the pointer by 0.5 so it is clearly visible.

Code:

A screenshot of a computer

Description automatically generated with medium confidenceA picture containing text, screenshot, monitor, computer

Description automatically generatedA screenshot of a computer

Description automatically generated with medium confidence

# Part 3. Transitions

## Exercise 6.

To complete this exercise I added another transition with a duration of 2000 milliseconds and a style change of background-color green to the chain already present.

Graphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generated

Text

Description automatically generated

## Exercise 7.

To achieve the resizing I used the same code as in exercise 7 and added in a width and height change and an additional transition to increase the size to 200px x 200px after the color change to green.

A picture containing graphical user interface

Description automatically generatedGraphical user interface, application

Description automatically generatedGraphical user interface, application

Description automatically generatedGraphical user interface, application, Teams

Description automatically generatedText

Description automatically generated

Result:

Code:

## Exercise 8.

For this transition I used the mouseover event from exercise 3 but instead used the transitions and attributes from exercise 7. This achieved the desired effect of completing the transition of exercise 7 only when the mouse hovers over the square. As soon as the mouse moves away from the square the square transitions back to it’s original size and colour with a transition duration of 2 seconds.

Code:

A screenshot of a computer

Description automatically generated with low confidence

## Exercise 9.

For this exercise I copied the d2.select chain for the first div and changed the easing property. In the second div I used d3.easeElastic and in the third div I used d3.easeBack.

Code:

A screenshot of a computer

Description automatically generated with medium confidence

## Exercise 10.

For this exercise I modified the code from exercise 5 by adding an ease function to the mouseover function chain of functions. I passed in as the ease d3.easeBounce as specified in the lab sheet and also use the same ease for the mouseout function so the circle returns to it’s original shape with a 1 second easeBounce transition.

Code:

Text

Description automatically generated

## Exercise 11.

For exercise 11, I created an SVG and appended a text element with font-size 20px. During the transition in the mouseover function the font-size increases to 50px, the text colour changes to darkOrange and the transition happens with a d3.easeBounce ease. The same transition happens in reverse in the mouseout function where the text returns to font-size 20px and a steel blue colour.

Text

Description automatically generated

Before/After mouseover:

Code:

Graphical user interface, text, application

Description automatically generated

On mouseover:

Graphical user interface, text

Description automatically generated

## Exercise 12.

To add a third bar, I copied the same code as for the first two bars in order to keep them identical. I also added the same transition and height property so it would match the first two, however this timeammending the duration function to be 4000 ms.

Text

Description automatically generated

During Transition:

Code:

Icon

Description automatically generatedText

Description automatically generated

## Exercise 13.

To reverse the transition I chained the reverse transition to each of the bar transition functions, paying particular attention to the delay time. The third bar starts reducing in height first for a duration of 2 seconds and so the second bar has a delay of 4000ms before it starts reducing to account for the 2000ms for the third bar to get bigger and 2000ms to get smaller. The final bar has a reduction transition delay of 8000ms to account for the second and third bars growing and shrinking transition times.

A screenshot of a computer

Description automatically generated with low confidence

Code:

## Exercise 14.

For this exercise I again chained more functions to the bar transaction functions, this time adding style functions to change the fill. The bars begin blue, transition to darkOrange as the bars grow and then back to blue as they reduce in size.

During Transition:

Code:

Chart, icon

Description automatically generatedText

Description automatically generated

## Part 4. Animated Chart

## Exercise 15.

In selectAll(“.bar”) function chain:

Functions:

Text

Description automatically generatedText

Description automatically generated

## Exercise 16.

To append the text to the screen I added to the onMouseOver function. When the user moves their mouse over a bar, in addition to the bar getting slightly larger and turning orange, a text box is added to the “g” that contains the bar with the dollar value of the bar. To align it above the bar itself the x position is taken using the x() function to align it with the corresponding year on the x axis and to it is added the width of the bar divided by 2 which aligns the text in the centre of the bar. On the y axis, 15px are taken away from the value after passing the value through the y() function so it sits above the bar and its readable.

Result:

Code:

Chart, bar chart

Description automatically generatedText

Description automatically generated

## Exercise 17.

For this exercise I created an object with 6 key:value pairs. Each key is a number and the value is a colour. The keys represents thresholds for the data to separate each bar out into its own colour, For example, the first colour threshold is 46 and when searching through the key:value pairs, any bar with a value less than 46 will be given the associated colour. This splits all the bars out into a different colour. These colours show when the mouse is hovered over the bar but for the purposes of demonstration they are all being shown in the screenshot below.

Result:

Declaring colours:

A screen with numbers and letters on it

Description automatically generated with low confidenceChart, bar chart

Description automatically generated

Assigning colours:

Text

Description automatically generated

## Part 5. Changing Data and Transitioning

## Exercise 18.

To add more data to the visual, I created another data array and gave each group a random value. I then added another button that when clicked, called the update function and sends the “data3” object as an argument.

Result:

Chart, bar chart

Description automatically generated

Declaring new data:

Text

Description automatically generated

Adding a new Button:

A screenshot of a computer

Description automatically generated with low confidence

## Exercise 19.

To achieve exercise 19, I used a similar approach as in exercise 17 whereby I created an object where the keys are the data arrays and the values are colours for the bars. These are then assigned to the correct dataset through a function in the attr(“fill”…) function. If the name of the dataset being used (passed as an argument in update function when it is called by the button) matches the key, the colour that is the value is used to fill the bars.

Text

Description automatically generated

Passing the arguments through the update function:

Creating the colour object:

Updating the colours:

Text

Description automatically generated

Variable 3 Colour:

Variable 2 Colour:

Variable 1 Colour:

Chart, bar chart

Description automatically generatedChart, bar chart

Description automatically generatedChart, bar chart

Description automatically generated

## Exercise 20.

For this exercise I used the same principles as in exercise 16 whereby I used half of the bandwidth() function to align the text over the centre of the bar.

Result:

;:

Code:

;:

Chart, bar chart

Description automatically generatedText

Description automatically generated

## Exercise 22:

Need to use .style() rather than .attr() to make transitions work

x.bandwidth() finds width of bar, use to centre align text

Output colour from interpolation is dark orange/brown