Assignment 3

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1 Introduction

In the first part of this assignment, I have to draw the shape given to me as triangle lines. At the same time, it is necessary to add 4 buttons to change its direction, speed up, slow down and change its color randomly.

In the second part of this assignment, I need to add the spin movement with changing speed,scale and spiral movement with changing speed features to a emoji with mask that i have created before.Also, I need to use buttons for each feature.

2 Experiment

2.1 Part 1

In this part,I first converted the shape from a square to draw only triangle lines. I completed this step by using LINE LOOP instead of TRIANGLE STRIP.

To change the direction of the shape, I increased or decreased the theta value that I used in the vertex shader. I used the delay value and with it the setTimeout function to speed up or slow down the shape.

Finally, I changed the r,g,b values of each vertex using Math.random() to randomly change the color of the shape. And I pushed these values into the colorsForEachVertices array. Also, I use four buttons for each feature.

2.2 Part 2

In this part, there were spiral,scale and spin movements that I had to do. In spin movement, I had to constantly rotate the emoji shape clockwise or counter-clockwise. And I did this by increasing or decreasing the theta value according

to the direction of the shape. To change the speed, I changed the theta value proportionally to the speed.

In scale, I make the shape grow and shrink in size. And I set this animation to the largest 1.5 and the smallest 0.5. When my currentScale value reaches 1.5, I start to shrink it. Likewise, when it reaches 0.5, I start to grow the shape.

In the spiral movement, I needed to change the location value of my shape and I created values such as radius, angle, increment in this logarithmic spiral movement. Over time, I changed the angle and radius values by changing the increment according to the position of the shape. To change the speed, I changed the increment value proportionally to the speed. And this I saved the changes to my currentLocation value. Also,I used getUniformLocation for all movements and buttons for each feature.

Table 1: Classes

Class Name	Attributes	Methods
initialize	- -	_createBufferObject, toBezier, toSquare, toCircle, loadShader, initShaderProgram
app	speedSpiral, speedSpin, theta, thetaLoc changeDForSpin, changeDForSpiral changeScale, changeSpiral,xSpiral, ySpiral gl, type, normalize, stride, offset, program pressStartSpin, scaleUp, spiralFirst, currentScale, scale currentLocation,location1, colorF, angle, increment	main, drawScene, onkeydown
shaders	vsSource , fsSource	-
html	-	-

Table 2: Methods

Method Name	Input(s)	Output(s)	Info
_createBufferObject	gl, array	buffer	Create buffer object
toBezier	gl, positionsOfCurve arrayCurve, colorOfCurve	posBuffer,colorOfCurve	Create bezier curve
toSquare	gl, positionsOfSquare, color	posBuffer,colorOfCurve	Create square shape
toCircle	gl, positions, colors centerX, centerY, radius	posBuffer,colorOfCurve	Create circle shape
loadShader	gl, type, source	shader	Create and compile shader
initShaderProgram	gl, vsSource, fsSource	shaderProgram	Initialize shader program
main	-	-	Create to arrays and call methods
onkeydown	e	-	Create to use keyboard keys
drawScene	buffer, NumVertices,offset	-	Create to draw shape and animations

3 Conclusion

In this section, I learned how to speed up and slow down the shape. I realized that I can also do this using the setTimeout function.Also,I learned how to make spiral,scale and spin animation.And by using the values that I created in these movements,

I understood how to change the speed in positive and negative ways.Also, I learned methods to create buttons in this assignment.According to me, the most challenge part was to doing spiral movement.

References

- Lecture Slides