

Assignment 2

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1 Introduction

In the first part of this assignment, I have to draw the given shape only as lines. At the same time, I have to update the colors according to the scene requested from me.

In the second part of this assignment, I need to add the swinging animation and color change features to a emoji with mask that i have created before and I should consider the situation of staying in place. Also, I use 3 different keyboard keys in these steps.

2 Experiment

2.1 Part 1

In this part, I first converted the shape from a triangle to draw only lines. I completed this step by using `LINE_LOOP` instead of `TRIANGLES`. So I changed this line in my code:

```
gl.drawArrays(gl.LINE_LOOP, 0, points.length);
```

In order to achieve the desired color, each triangle had 4 faces and each of them contained 3 vertices and these 3 vertices had the same color. By changing this situation, I added different colors to each of the 3 vertices of the 4 faces. I added the correct colors using the shape with `TRIANGLES` method that you gave us as a reference.

2.2 Part 2

In this part, there were 3 steps that I had to do first and I started by using different keyboard keys for each step. In Step 1, I drew a emoji with mask in a smaller size and kept the shape in place.

In Step 2, I thought of this move as 4 steps for animation. These were in the following order: going left, coming left and going right, coming right. Thinking of the emoji as a unit circle, I created and changed various values for each of these four movement(vs.radians,angle).

Also, These affect current scale and current rotation vector(I used them in uniform).And,I called drawArrays() to draw the shape. At this point, the frame has been drawn. To program this next one, I did it with requestAnimationFrame(). I also updated the previousTime.Finally, I call drawScene() to draw the next frame.In Step 3, I changed the color according to the rotation of the emoji.I made the color of the shape darker or lighter according to the angle.

Table 1: Classes

Class Name	Attributes	Methods
initialize	-	_createBufferObject, toBezier, toSquare, toCircle, loadShader, initShaderProgram
app	previousTime, degreesPerSecond pressed, round, rotation, currentScale scale, colorF, rotationV, angle gl, type, normalize, stride, offset, program	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, boolChangeColor	-	Create to draw shape and animations

3 Conclusion

In this section, I learned how to make swing animation, how to use `requestAnimationFrame()`, how to rotate the shape I drew. Also, I learned methods to use keyboard keys in this assignment, and as the rotation of the shape changes, I also learned to change color with it. According to me, the most challenging part was to change color according to the rotation.

References

- https://developer.mozilla.org/en-US/docs/Web/API/WebGL_API/Basic_2D_animation_example
- Lecture Slides