Assignment 4

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1 Introduction

In the first part of this assignment, I update theta and pi according to my mouse movement in the file given to me. At the same time, I do the mouse movement with the pointer lock api and I make it active and deactive with 'p'.

In the second part of this assignment,I save the vertices to arrays with the given obj file. And I try to rotate the resulting monkey-head shape counterclockwise continuously. And I handle the increase and decrease of this rotation speed with the '+' and '-' keys and I change the position of the camera by pressing many keys.Also, I used mouse movement for this part.

2 Experiment

2.1 Part 1

In this part, if the x position of the mouse has changed, I have updated the theta. If the y position has changed, I have updated the phi.

At the same time, I have made the mouse movement with the pointer lock api and I used exitPointerLock() and requestPointerLock() to make it active and deactive with 'p'.

2.2 Part 2

In this part, I first used ajax (jquery) for load mesh and I saved the vertices to the verticesOfShape array with the given obj file.

I try to rotate the resulting monkey-head shape counterclockwise continuously. I used theta and rotate for this. And I handle the increase and decrease of this rotation speed with the '+' and '-' keys.

I used lookAt to change the camera position.I also used perspective to calculate the projection matrix.With these actions, I changed the x, y or z positions of the camera according to the key I pressed.

Finally, I do the mouse movement with the pointer lock api .I changed camera position according to mouse movement.I used exitPointerLock() and requestPointerLock() to make it active and deactive with 'p'. Also I used document.onkeydown for keyboard events.

Table 1: Classes

Class Name	Attributes	Methods
initialize	-	_createBufferObject,loadShader initShaderProgram
app	gl, type, normalize, stride, offset, program canvas, colorF, modelViewMatrix, aspectRatio cameraPos, target, moveCallback, x, y, isM verticesOfShape, vertexCount, posBuffer, theta, speed	pointerLockApi, render,loadMeshData objLoader, init,onkeydown
shaders	vsSource , fsSource	-
MV	-	-

Table 2: Methods

Method Name	Input(s)	Output(s)	Info
_createBufferObject	gl, array	buffer	Create buffer object
loadShader	gl, type, source	shader	Create and compile shader
initShaderProgram	gl, vsSource, fsSource	shaderProgram	Initialize shader program
render	-	-	Create to use uniform locations,perspective, lookAt and theta
pointerLockApi	-	-	To mouse movement
init	-	-	Create to use program, buffer object and initialize some variable
loadMeshData	string	-	Push vertices into the array
onkeydown	e	-	Create to use keyboard keys
objLoader	-	-	Send javascript object with AJAX

3 Conclusion

In this section, I learned obj load and I did it by understanding jquery (ajax). I also understood the use of lookAt,perspective. and I used the pointer lock api to perform the mouse movement correctly. According to me, the most challenge part was to doing controllable camera.

References

- Lecture Slides