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7-1 Final Project

8/18/2024

For the final project, I was tasked generating representations of 3D objects using application

programming interface libraries and computer graphics development best practices. I selected a

3D scene using a flashlight, a lantern and a spotlight

To create the low-polygon 3D representations in my 3D scene, I used the following shapes. For

the yellow flashlight, I used the tapered cylinder basic mesh object, rotated and adjusted it to the

shape of the flashlight. For the headlight end of the flashlight, I used the basic box mesh object

and adjusted to the size of the flashlight. For the switch, I used the basic box mesh, rotated and

reduced it to the size of the switch. For the lantern in the middle of the scene, I used the cylinder

basis mesh for the base, the middle green portion, the clear section and the top section. I adjusted

and rotated each section to fit the proportions of the green lantern and for the handle, I used three

box basic mesh objects, one for each side of the handle and one for the top of the handle. I

reduced the box shapes, rotated and positioned them. For the spotlight on the left, I used the

basic cylinder mesh for the bottom, middle and top sections, rotated and adjusted each section to

the shape and position of the spotlight. For the flashlight stand, I used a basic box mesh and

reduced it to the shape. For the table, I used the basic box mesh and chose wood for the texture.

For the backdrop, I used the basic plane mesh, and used the backdrop texture because I wanted to

be able to see the handles and other items on the table clearly.

For the flashlight, I used a yellow texture for the shape and a black texture for the headlight and

switch sections. For the lantern, I used a green texture for the middle portion and the top and a

black texture for the bottom and the handle. For the spotlight, I used a black texture for the stand,

the bottom and top sections and a red texture for the middle.

I used two light sources, ambient and diffuse. Ambient lighting is the normal environmental light

that is present, natural lighting. Diffuse lighting simulates the directional impact a light object

has on another object.

The input devices that I used were the mouse and the keyboard. I implemented the camera

controls by using the WASD keys for horizontal and depth movement and the QE keys for

vertical movement. I used the mouse to control the yaw and pitch movements of the camera. I

implemented the perspective and orthographic views by allowing the user to toggle between the

two views using a key press.

I ensured my code was well formatted and documented. I added comments to explain the

functionality of the different sections of the code. I broke the code down into classes and

functions to ensure modularity and readability.

My original 3D scene showed items that would be needed during a power outage, a flashlight, a

candle, water, ice packs, and a lighter. The scene was too complex so I reduced the items to the

three objects for light.

I faced some difficulties trying to download the texture images. They had to meet the

specifications for the program such as minimum 1024 x 1024 with aspect ratio of square, jpg not

png and larger than 2mp. I downloaded several images but could not get them to load for use in

the 3d scene.