**Final Project Reflection**

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**Project Reflection**

For this project, I decided to choose a simple scene that would be easier to work with. It consisted of a sticky notepad, a pencil, a small white box, and a cookbook. To make my project more organized and make shapes easier to add I made meshes for each primitive object, prism, pyramid, cube, and plane. I created a UCreateMesh function that contained the primitive vertices, normals, and texture coordinates. The function only needed to be called once for each mesh within the main method to be used. A UCreateTexture was used similarly to handle textures.

To create the sticky notepad, I chose to use the cube mesh. I adjusted the scale of the cube on its x, y, and z axis to turn it into the correct shape. For its texture, I took a picture of the notepad, edited it to the correct resolution, and applied it to the object. I wanted my objects to look decently close to how they’re depicted in real life. The white box was the simplest object in the scene. It was created with a cube and a white plastic texture was placed on it.

The pencil was the complex object for the scene and the most difficult for me to create. It is made up of two primitive objects, a pyramid for the tip of the pencil, and a cylinder/prism for the body. When originally working on the prism, I used a mesh created by Professor Scott Gray. However, I had trouble understanding how to add textures to the mesh. At this point in the course, I had a better understanding of how to create objects, so I was able to make my own prism mesh and edit it successfully. The pencil also makes use of combined textures.

For the cookbook, I had a few different ideas of how I could create it. I chose to use an edited cube for the pages of the book with a white paper texture. I then used similar flat rectangular cubes to represent the covers of the book. The surface/plane is using a black plastic texture to represent the black freezer surface the objects are sitting on in the original image. I was originally planning to change this to a wooden texture but decided to try and match the image as closely as I could to replicate the lighting.

To light up my scene, I placed a directional light and three point lights. The directional light was used to light up the scene and fully reveal the surface/plane. It would represent that there was always a form of light in the room, like the sun, lighting up the objects. Next, I needed to add a light that produced color. To attempt to make this seem more natural for my scene I placed a yellow point light behind the small white box at the top of the scene. The point light had high specularity and was placed a bit further from the notepad and pencil so that it mostly lit up the box. The box is not an extremely shiny object, but the edges do give off a shine. A second point light was placed on the right side of the screen to provide more light and also show off a shine that comes off of the cookbook which is made of a shiny material. A final third point light was placed near the bottom for more light on the pencil.

The user can navigate around the scene using the camera. A UProcessInput function was created to handle user inputs. The WASD keys are used to move the camera around the axis. The user can also use the Q and E keys to move the camera straight up and down. The camera’s static view also follows the mouse cursor so wherever the user moves the mouse, the camera will follow. The scroll wheel controls the speed at which the camera moves. These controls help the user move around the scene at any speed they prefer. Alongside editing the UProcessInput function, I needed to edit the camera.h file to accept the new inputs from source.cpp.

In conclusion, this was a fun but very challenging project to work on. The overall most difficult part to learn was how to utilize the lighting and create a natural looking scene. I may come back to work on this project in the future, but I am happy with the progress I have made on it right now.



