Project 2 Design Decisions

The 3D scene I created is designed to be objects sitting on a table, with a light cast on it. I chose to represent these objects primarily using triangles because it was optimal for vertices to be shared across the scene. In the scene there are four objects observed.

**What Objects are in the Scene?**

First there are two wood grain photo frames. These are two rectangular prisms comprised of multiple right triangles each for a total of four. The next is the desk the objects sit on. This is made up of a deconstructed cube which has the bottom face removed. This decision was made as it was the easiest way to imply that the table has two legs and a top surface. Finally – a sign that says “bless our home” which is made up of a triangle and a rectangle bookends the scene. The text “bless our home” is not scene as that is not in the scope of the materials we covered. The scene also has lighting and texture.

**Lighting**

The lighting model used is the phong lighting model which utilizes all three main types of light (spectral, diffuse, & ambient) to give the scene reflective properties and does the best job of allowing the objects within the scene to be visible. The phong lighting model also uses RGB which was easily adaptable to the scene. Texturally, a wood grain was used as this best captured the textural qualities of the images in the scene. Each object (table, photo frames, sign) all were of wood grain textures. The lighting device is a lamp that rotates around the scene. This decision was made because it simulates the viewpoint as if the user were able to see the scene from multiple perspectives.

**Navigation**

The scene is also navigable by the user. The user can use the keyboard as the primary input device to traverse across the different objects. The scene is also able to be zoomed in and out by using the W & S keys. The function “glfwGetKey” was used to map the keys to the actions. Furthermore, by using A & D the user can move left & right respectively. The use of the W,S,A & D keys is common practice for key mapping in OpenGL.

**Conclusion**

In conclusion, the scene was more difficult than I imagined when I made the proposal. The biggest challenge was spacing the objects out across the table. This is why in the finished project things are sort of jumbled together as they kept falling out of the scene. One change I would’ve made would have been to scale down the objects size so as to be able to space the then smaller images out across the scene. One omission was the coffee cup. It was in my initial proposal but was not able to be completed as time and resources were not optimal to be able to implement non triangle derived objects into the scene. The coffee cup consisted of a cylinder (elongated sphere + two flattened circles) and a half sphere for the handle.

**Cited Source**

*LearnOpenGL - Advanced Lighting*. (n.d.). https://learnopengl.com/Advanced-Lighting/Advanced-Lighting