**SNHU**

**CS 330**

**7-1 Project**

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**Design Decisions**

*Justify development choices for your 3D scene. As you write, think about why you chose your selected objects. Also consider how you were able to program for the required functionality.*

For this scene I choose objects that could be made with a variety of basic shapes but that were not overly complicated, since this was my first time working with OpenGL. I chose a scene that was indoors, where 4 objects were placed on a table, with light coming from a ceiling lamp. I created a plane to represent the table surface, and the objects were created with cylinders, cubes, and pyramids. In order to program for the required functionality, I read the tutorials and documentation several times, which allowed me to understand what functions I needed to implement. The camera was setup with a camera helper class and the key binding was implement through the GLFW library.

*Explain how a user can navigate your 3D scene. As you compose your thoughts, discuss how you set up to control the virtual camera for your 3D scene using different input devices.*

A user can navigate the 3D scene with a keyboard and mouse, which were the only input devices considered for the assignment. When the program is started, it shows the scene from a close distance, and the user is able to move the camera with the mouse, the keys WASD allow for movement, while the keys QE elevate and descend the camera. The scene is started with a perspective view, but by pressing P, the user can see an orthogonal view. The initial camera speed is relatively slow, but by scrolling with the mouse wheel, the user can increase, or decrease said speed.

*Explain the custom functions in your program that you are using to make your code more modular and organized. Ask yourself, what does the function you developed do and how is it reusable?*

While I did not develop any custom functions for the program, I did try to make it as modular and organized as possible, and I also used pre-created functions. My code is modularized in blocks, where the most repeated parts are located. We have a block with the vertices, followed by a block of VBO and VAO instantiation, followed by the loading of textures. In the main loop, there is a block where each object is rendered and assigned a texture. One of the functions I reused was the creation of cylinders, which was based on a Cylinder class.