When I was working on creating the 3D scene I had chosen to do a topiary garden. When thinking of a garden or plants in general I thought it would be best to use a pyramid and cube to create trees and bushes, adding a cylinder to create trunks for both those objects as all plants have trunks or stalks. Finally I used planes to create the grass and dirt pathway as the floor of the scene. I was able to abstract out the shapes so simple calls could be used to create more objects in the scene. This was done to allow for simple or quick changes to be made, this did however lead to a weird work around for adding textures as each object is its own mesh. Since that is the case each mesh needs its own texture meaning objects cannot share textures and duplicates are used to create the appropriate textured effect. This just makes for bulky code as additional textures that would not normally need to be implemented over and over are being put into the program. Even so the program still projects the required output.

While creating the navigation system was fairly simple, given that there are simple ways to set the keys and actions to take on key press. With the being said movement keys for the camera were bound to w, a, s, d, q, and e which reflect forward, left, back, right, up, and down respectively. The rest of the camera movement is controlled through the mouse movement, as the mouse movement changes it changes the camera position allowing the user to look up and down or left and right or any combination of them depending on the mouse position.

As for the rest of the program everything was developed along the lines of the tutorials provided, however I did use the opportunity to abstract out some of the functions as their own classes to help keep the code more readable and friendly. This was done by abstracting out the mesh, camera, shader, shapes, and textures from the main application and creating their own classes and header files to be called into the main portion of the program. I also decided to use some of the newer C++ conventions when coding along with a newer version of OpenGL which meant I had to make some adjustments to the main code to get everything to function properly when compared to the tutorials provided. This was done with the help of additional resources found through a youtube tutorial series.

[SNHU Computer Science]. (2023, January 30). *SNHU CS-330 | Week 5 | Textures!* [Video]. YouTube. [SNHU CS-330 | Week 5 | Textures!](https://www.youtube.com/watch?v=qk4c6OmvUKk&list=PLI5uOhAD-G-PxbJ_Wq4nY0a8bWRSJMQij&index=9)