Final Project

Overall, this project was a very difficult one. After eight weeks of learning openGL and its different functions, I still have much to learn about how it works and the proper ways of using it. In terms of this project, however, there are some things that I am proud that I was able to accomplish given my understanding of the subject. For this project, I chose a scene inspired from a very popular painting known as “Basket of Apples” by Paul Cézanne. This seemed like a very good inspiration due to its mundane nature and common shapes. My scene consisted of a plane or the counter on which all of the objects lay, a box of pasta, a cylindrical container of oil, another cylindrical container, this time with pasta sauce, and a box shaped container of black pepper. In my program, I was able to correctly create the box of pasta, and with this I worked with my understanding of geometry and vertex positions to correctly place it on the scene where I thought would be most appropriate while leaving space for the other objects. As evidenced by my scene being devoid of other shapes, I was unsuccessful in identifying how to create and add other shapes into the scene, including the plane which it lay on. That being said, however, I was able to add the lamp, which is positioned back four and a half units on the z axis, up one point two units on the y axis, and over negative two units on the x axis so that the light from it could shine onto the front of the scene as that is the primary subject. The goal of positioning it here was to give the effect of an angled light on the scene where the fronts and tops of the objects were given almost full light exposure, similar to the picture of the real objects I had taken for subject matter.

There are a few ways to navigate my scene overall. As far as traditional movement goes, the user can utilize the “W”, “A”, “S”, and “D” for traditional left, right, forward and back movement. Additionally, the “Q” and “E” keys can be used respectively to go up or down with the camera. These common controls were the cornerstone of navigating the scene, but additional functionality is always useful. In addition to the other commands listed before, the “P” key can be pressed to set the scene on a flat level with the objects, giving it more of an orthographic view. This can also be used as a reset if the scene needs to be put back to its base view. The other keys for navigating the scene are using the scroll wheel on the mouse for zooming in or out, and two forms of panning. By holding the Alt key and pressing the left mouse button, the user can move around freely with a lock on the overall movement being 360-degree camera movement. The final bit of mobility is utilizing the middle mouse button and left alt key, and when combined, they make it so that the user can look left, right, up, or down for different perspectives on the scene.

The most organized and modular sections of my code have to be in the movement controls, as they utilize several sets of similar variables to adjust and manipulate. The movement controls are all grouped together at the bottom of the code, and are mostly written using similar styles of commands. With the transform camera functions and the input processing functions, they are crafted in a way that utilizes key presses within the window, and are organized by the type of movement they control. The other part of my code, although not as functional as the movement controls, that is more organized and easier to identify is the declaration of EBO’s, VBO’s, and VAO’s. These , as well as the indices and vertices are all done within the main function to keep it all together as much as possible.