**Development Choices**

After completing my final project there were many positives and a few negatives from the outcome. My initial scene I selected in week two consisted of a variety of objects and my lack of knowledge in 3D design proved my ability to work with 3D scenes wrong. So unfortunately I had to switch a few objects around in my scene. I went from a scene that had a spoon, candy cane box, round speaker, and a can all that sat on a wooden base area. AFter working through openGL I had issues working with round based objects which caused issues with the spoon and can. I instead switched out those objects with a candy cane box, a tree, and a hexagonal speaker shape. I was able to keep the same wooden base so just the objects changed. IN order to keep the objects as real as possible I was able to find images that closely represented the real object and having those textures applied were easy to do once I learned about how to apply them properly. Placing my objects in my scene was easy because after the objects were built I was able to change their size and location so setting them up in my scene was decided based on what looked most realistic. Lighting was the next challenge but seeing some examples online I was able to create a shape for my light and then properly output light from them onto my objects. I tried to most closely match my room which I was using in my example to set up the lighting. SO in my final project I have a spot light which represents an overhead light that I have in the room, and then lighting that equally lights the whole area up which represents light that comes from windows around my scene in the real world. The overall development of the project came out well with some minor issues other than some of the objects that were changed. I will continue working on these skills as it is enjoyable and I can see how creative these skills can make me.

**User Navigation**

The user can navigate the scene using their keyboard and mouse. The W,A,S,D keys moved the camera forward, backward, left, and right just as it would make sense for a user to use. Then the Q and E keys were used to move in and out of the scene. Next I was able to have the ESC key escape and close the program. For the keys the last key that was used was the P key which lets the user switch between orthographic(2D) and perspective(3D) to be able to see the differences in the scene. Then I was able to apply usage to the mouse which allowed the user to move the scene around when moving the mouse and then the scroll wheel let the user scroll in and out of the scene. Overall the navigation of the scene worked well. The only issue I had was getting the Orthographic to work initially but it seems to be working now but might need some slight editing to make it show the image better for the user.

**Custom Functionality**

The code was written to be kept as neat as possible as I didn't want to confuse anyone who may want to use this as an example. I kept stuff together so it was easier to copy information moving toward in a list. It also helped me to verify that multiply-like terms were not used for more than one item. I tried to keep the notes simple as they can add confusion but may add more notes in the future as I may have made them too simple. Overall my goal when creating the code was to keep things together and then have it run in a realistic pattern so it sets initial parameters, sets up settings for each parameter, creates objects, and then destroys objects upon closing the program. Thai helped to keep it modularized as best as I could to keep it clean and neat.