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7-1 Project Reflection

My scene is set on a kitchen countertop with multiple items sitting on it. Those items include an olive oil bottle, plastic spatula, plastic spoon, potholder, and two seasoning shakers. First, to create the countertop I made a plane by declaring 6 vertices that represent two triangles that make up the plane. Next, I applied a texture to make it look similar to my own countertop. For the oil bottle, I used a cube with a cylinder attached to the top. I elongated them both to approximate the shape of the bottle. After that, I then applied textures to the bottle to make it look like green glass to resemble my bottle. For the plastic spatula and spoon, I used one elongated cube for both the handles and one flattened cube to create the head of the spatula and a flattened cylinder for the head of the spoon. Then for the textures, I chose a black plastic that looked similar to my own utensils and applied it to both utensils objects. For the potholder, I used another plain and scaled it down a lot compared to the counter making it about the same size as my potholder. I then translated it to make it lay underneath the spatula and spoon but above the counter and added a red fabric texture to it. Then for the seasoning shakers, I used the same shapes for both shakers. To represent the shakers, I created three different cylinders to recreate the shape of the bottle one for the top and two for the shaker's shape. The texture was tricky for these because I could not find a texture that would work that looked like an actual shaker with seasoning in it. Instead, I went with a texture of just the seasoning itself and a black plastic texture to represent the lid.

I made it pretty simple for users to navigate the program using a mouse and keyboard. The user can look around the environment by using the mouse to change the orientation of the camera. Using the mouse scroll, the user can change the speed of the camera's movements. They can use the W, A, S, and D keys to move forward, backward, left, and right and they can use the Q and E keys to move up and down. They can reset the speed back to default and reset the camera to the start position if they press the spacebar. They can also change between the orthographic and perspective view, the user can press O for orthographic, and P for perspective.

My program uses a few essential functions to allow the display to work properly. First, I created the UCreateTexturedMesh function. This function is used to create the vertices of each of the shapes. The vertices I created are used to display the planes, cubes, and cylinders which are used to create each of the objects. Next, I created the mesh and activated the VAO and VBO for each object then I created the vertex attribute pointers for each object. This function is reusable since I used basic vertices for multiple shapes which only needed to be scaled, rotated, or translated to create the shape that I needed. It can also be used as a guide on how to create a mesh for any object. The next function I made was the URender function which allowed me to render the different objects. This function is used to scale, rotate, and translate each object, activate the shader program, bind the vertex array and textures then draw each of the objects. I could reuse some of this function but not all of it, but I could use this function to guide me in the future if I needed to make another program like this. Finally, the last function that I created was the UProcessInput function. This function allows the system to process any inputs from the user. In combination with the camera.h file, I can tell the system what to do when the user makes a certain input. This function would be reusable for other projects using OpenGL I would have to make sure to import the camera.h file as well though.