7-1: Final Project Submission

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Reflection

The selected scene for the project involved the creation of a couch, a curtain rod, and the curtain itself. For the 3D scene choice, I selected to use three box meshes for the recreation of the couch. The curtain rod involved two spheres, one at each end and a cylinder joining the two. For the curtain, I opted for a thin rectangular box. These rudimentary shapes were chosen to recreate the scene in a simplified manner. This scene was chosen as it would be easy to recreate with a combination of basic shapes.

To navigate the scene, I coded camera controls using various input devices. The WASD keys allow movement along the X and Z axes. A and D allow for left and right movement while Q and E allow for the camera to move upward and downward along the Y-axis. We used the mouse to control the pitch and yaw to adjust the camera's orientation. Vertical mouse movement alters the pitch controlling up and down movement while horizontal movement alters the yaw controlling the left and right camera movement. To adjust the camera speed, I coded speed adjust to the mouse scroll wheel. Scrolling up increases the camera movement speed while scrolling down decreases the camera speed. This feature allows us to navigate the scene at our own pace and more accurately examine certain details.

To further enhance user experience, we implemented the ability to switch between perspective and orthographic projection views. The scene has been coded so that when the key P is pressed the scene toggles to a perspective view. If the O key is pressed, then the orthographic view scene switches to an orthographic view. Our perspective view provides us with a more realistic 3D view of our scene while our orthographic view provides removes perspective distortion that can be useful for technical analysis. In both views the camera will remain consistent and ensure continuity that may become useful when changes to the scene are conducted.

Along with input devices, light sources were added to further enhance the scene. I applied the Phong lighting model that controls how the light interacts with objects and creates reflections, shadows, and highlights. By adjusting attributes like ambient color, diffuse color, and specular intensity we can adjust the intensity and focus of the lighting effects. By incorporating these lighting controls, alongside the camera system, we created a more immersive and visually appealing 3D environment. The user will have the ability to explore the scene from various angles and perspectives but will also experience a well-lit environment where every detail is brought to life through careful manipulation of light sources. The camera movement and dynamic lighting enhance the realism and depth of the 3D scene, making it more engaging for the user.