For this project, I have taken a 2D picture of my desk and converted it into a 3D scene using OpenGL. For the objects in the scene, I modeled the desk, the desk shelf, a mug and a monitor. For the desk I used a plane to create a surface that all the other objects would be placed on. For the desk shelf I used a box to create another surface above the desk. For the mug I used two shapes to make a more complex object. I used a cylinder for the base of the mug and a torus for the handle. For the monitor I used a box in a similar way to the desk shelf. I chose to use plain colors for the monitor and the desk shelf. For the mug I used textures that closely resembled the actual mug on my desk. For the desk I also tried to find a grey texture that closely resembled the color of the desk.

For controlling the camera in the scene, I used the mouse to move the direction of the camera. I also used the mouse scroll wheel to change the speed of the camera movement. I used the keyboard w, a, s, and d keys to move the camera forward, left, backward, and right. I chose to use the q and e keys to move the camera vertically up and down. The P key is used to switch to a 3d perspective, and the O key is used to switch to an orthogonal perspective.

There PrepareScene function is used to call the functions that define object materials, setup the scene, load the textures, and load the meshes for the objects in the scene. The SetupSceneLights function configures all the lighting properties for the scene. It is where the position, ambient, diffuse, and specular colors of the lights are defined. It’s reusable because it is one central place where you can make a change that affects all the objects in the scene. The LoadSceneTextures function takes the texture image files and loads them into the engine so they can be called from objects to give each object a texture. They can be reused by multiple objects but only loaded once, not each time a texture is used by and object.