CS-330 Project Design Decision

**Development Choices**

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The goal of the project was to create an OpenGL engine for arranging and navigating 3D objects in a 3D scene based on the 2D picture below:

A computer and other objects on a table

Description automatically generated

The objects were initially chosen based on the closest objects I could locate with simple forms. My choices were soon challenged as the peanut jar, table-light, and orange I chose contained complex primitive meshes (cylinder and sphere) that required more elaborate Vertex Array Objects. I had to limit my choice of objects to those containing only three primitives (plane, cube, and cylinder) to meet up with the project requirement within the allowed time.

**Scene Navigation**

The scene makes use of a basic camera with both perspective and orthographic projections. The WSAD keys are used to move forward, backward, left, and right directions respectively. QE keys are used to move upward and downward, as the P key is used to toggle between perspective and orthographic camera projections.

**Custom Functions**

The engine is modularized to allow the addition and removal of any game object with custom texture into the scene through the core application source file. The engine also allows for the use of up to two spotlights and a directional light that can be adjusted for ambient, diffuse, specular, and color. The lights also permit attenuation adjustment to simulate lighting distance and fall-off.

**Engine Output Reference Image:**

A table with a red and yellow container on it

Description automatically generated