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**CS-330 Computational Graphics and Visualization**

**Reflection: Design Decisions**

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Although I encountered some challenges during this project, I found immense enjoyment in recreating my 3D scene within the program. To start, I opted for a cube positioned at the center of the scene as it provided a straightforward conceptual foundation using triangles. Following that, I included a cylinder (representing a cinnamon stick) and a sphere (depicting a cookie) due to their relative simplicity compared to more complex objects like large pumpkins, leaves, and star anise seeds.

Navigation within the scene is facilitated through keyboard and mouse inputs. Keyboard functionalities enable users to move the camera upwards, downwards, leftwards, and rightwards using the “Q”, “E”, “A”, and “D” keys, respectively. Additionally, the “W” and “S” keys facilitate zooming in and out. Mouse inputs affect the camera position along the x and y-axis when moved and scrolling the mouse triggers zooming in and out along the z-axis. Furthermore, mouse clicks (left, middle, and right) provide information on which button was pressed and adjust the camera's upward movement.

The program incorporates several custom functions designed to enhance reusability and organization. For instance, the shader function enables multiple objects to transmit vertex shader and fragment information to the GPU. Moreover, the mesh and render functions facilitate the addition of various objects to the program. Modularizing these functions significantly contributes to organizational efficiency, promotes reusability, and facilitates code maintenance and scalability. By compartmentalizing functionalities, these custom functions not only improve the overall structure of the program but also streamline the process of incorporating new objects or making modifications to existing ones. This modular approach fosters better code management, easier debugging, and enhances the potential for future expansions or updates in the 3D scene.

**3D Scene:**



**My 3D rendering:**

A screenshot of a computer

Description automatically generated

**References:**

*Modular Approach in Programming - GeeksforGeeks*. (2018, September 7). GeeksforGeeks. https://www.geeksforgeeks.org/modular-approach-in-programming/