Final Project Reflection

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In developing the 3D virtual desk scene, I made several choices regarding the objects included and the required functionality. I chose to have a desk, a computer monitor, a can, and various other objects to create a familiar and relatable environment for the user. These objects reflect a typical workspace and allow users to explore and interact with the scene realistically. The selection of objects showcases my ability to work with various 3D models, shaders, and textures.

To program the required functionality, I made use of modern OpenGL techniques. This allowed me to leverage powerful features like shaders, which are instrumental in defining the appearance and behavior of objects in the scene. I employed vertex and fragment shaders to process vertex data, calculate vertex positions, and determine the color and texture of the objects, resulting in a visually rich and engaging environment.

Users can navigate the 3D scene through keyboard and mouse input. I set up the virtual camera to be controlled by specific keys and mouse movements, allowing the user to explore the scene from different perspectives. For example, the user can move the camera forward, backward, left, and right using the W, S, A, and D keys. Mouse movements control the camera's pitch and yaw, providing users with a more immersive and interactive experience.

I implemented custom functions for various tasks to make my code more modular and organized. One such function is loadTexture, which takes a file path as an argument and loads the corresponding texture from disk. This function can be reused throughout the code, making it easier to load multiple textures without duplicating code. Another custom function is createShader, which takes a shader type and source code as input, compiles the shader, and returns the shader ID. This function simplifies creating and managing shaders, promoting code reusability and maintainability.

I demonstrated my understanding of OpenGL concepts and techniques by justifying my development choices, explaining user navigation, and elaborating on custom functions. The virtual desk scene showcases the effective use of shaders, textures, and user input to create an engaging and visually appealing 3D environment that is both modular and organized.