Reflection

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Creating my 3D scene was both a challenge and a rewarding experience. I set out to build a realistic workstation environment, centering the scene around an iMac on a desk, complete with a mouse, keyboard, pencil holder, pencils, and a stack of books. Every object was carefully chosen to enhance the visual appeal and functionality, making the space feel like a real, lived-in workspace. To construct these elements, I used a mix of torus, cylinder, plane, and box shapes—keeping the design detailed yet easy to understand from any perspective. Utilizing basic 3D modeling principles, such as shape composition and lighting techniques, helped create a visually compelling scene (Marschner & Shirley, 2018).

Programming the scene's functionality was just as crucial as its visual design. I implemented WASD keys for fluid movement in four directions—forward, backward, left, and right—allowing for intuitive navigation. The QE keys control vertical movement, letting users move up and down through the space. To create a more immersive experience, I used mouse input for camera control, allowing users to look around freely in all directions by moving the cursor. The mouse scroll adds another layer of control by adjusting movement speed, giving users the ability to explore at their own pace. Implementing smooth and responsive navigation is a core principle in interactive 3D environments, ensuring a more natural user experience (Eberly, 2007).

To keep my code modular and efficient, I designed custom functions tailored to specific tasks. For example, I created separate functions for handling keyboard inputs and camera orientation, ensuring clean and organized logic. By encapsulating these functionalities into reusable functions, my code remains easy to maintain and modify, making future improvements seamless.

Ultimately, my focus was on realism, usability, and structured code design. From object selection to user interaction mechanics, every decision was made to craft an immersive and intuitive experience while ensuring long-term maintainability and scalability of the project.

Sources:

Eberly, D. H. (2007). *3D Game Engine Design: A Practical Approach to Real-Time Computer Graphics*. CRC Press.

Marschner, S., & Shirley, P. (2018). *Fundamentals of Computer Graphics* (4th ed.). CRC Press.