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Reflection

The purpose of this project was to design and render a three-dimensional scene consisting of four or more objects that I personally use in my daily life. For my project, I chose to model a realistic computer desk setup that reflects my own workspace and habits as a computer science student. The final composition included a monitor, keyboard, mouse, water bottle, pencil, and a C programming book arranged on a desk surface. Each of these items was chosen for its personal relevance and its contribution to a balanced, functional environment. My goal was to create a scene that not only met the technical requirements of the project but also represented an authentic part of my daily routine.

I began by modeling each object with careful attention to size, proportion, and placement. Using Visual Studio as my development environment allowed me to work directly with OpenGL code to control transformations such as translation, rotation, and scaling. This process provided precise control over the spatial relationships between objects in the scene. Early in the design process, I decided that the monitor would serve as the visual anchor of the composition. I placed the keyboard and mouse in front of it to form the main workspace area, while the water bottle, pencil, and C book were positioned slightly off to the side to add a sense of realism and asymmetry. These placement choices helped create a natural flow for the viewer’s eye across the scene.

One of the more interesting modeling decisions involved the computer monitor. To make the display appear realistic, I added a very thin box mesh to act as the screen surface. This thin layer provided a plane for projecting the Windows lock-screen background texture, giving the monitor a sense of depth and functionality. Without that addition, the screen looked flat and lifeless. Including the thin mesh helped simulate the reflective quality of an actual display and made the monitor stand out as a key focal point in the scene.

Lighting played a major role in setting the mood and realism of the project. I implemented a simple overhead light source to represent typical indoor desk lighting. My goal was not to create dramatic contrast or stylized lighting effects, but instead to achieve soft illumination that would highlight the objects without harsh shadows. Adjusting the light position was one of the most challenging aspects of the project. If the light was placed too high or too far, parts of the desk appeared dull or unevenly lit. Through trial and error, I found a balanced position that illuminated the objects evenly while maintaining natural shading. This experience helped me better understand how light interacts with different materials and how subtle changes in direction and intensity can influence the overall look of a scene.

Choosing and adjusting materials was another key design consideration. Each object required its own material properties to look realistic under the light. For example, the keyboard and monitor used darker, matte materials to prevent excessive reflection, while the water bottle used a metallic material to represent the reflective surface of stainless steel. The pencil required both a wooden texture and a reflective metallic surface for the tip, which involved adjusting the specular and diffuse values carefully. The book had to appear solid and slightly textured to differentiate it from the smoother surfaces of the other objects. These material adjustments were crucial in making the objects appear believable and distinct from one another.

One of the most technically demanding tasks was positioning the pencil correctly on top of the book. Because object positioning in three-dimensional space is sensitive to small changes, even a minor adjustment could cause the pencil to hover above the book or clip into it. It took several iterations of coordinate adjustments to ensure that it rested naturally. This process reinforced the importance of precision and observation when working in computer visualization.

In conclusion, the design decisions made throughout this project were guided by a focus on realism, technical accuracy, and personal connection. Each modeling, lighting, and material choice was made intentionally to support a cohesive, believable depiction of my everyday workspace. While I encountered several challenges, particularly with lighting and object positioning, the process deepened my understanding of 3D visualization and the relationship between design principles and technical implementation. Completing this project not only strengthened my modeling and rendering skills but also allowed me to express a personal part of my life through digital design.