Final Project

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The process of creating a 3D scene involves a thoughtful selection of objects that not only adhere to the project's constraints but also contribute to the overall visual appeal and storytelling. In my scene, I carefully considered objects that are commonly found in a workspace setting, aiming for a balance between realism and creativity.

The choice of a coffee cup as one of the objects was rooted in its ubiquitous presence on desks. Its incorporation adds a touch of familiarity and relatability to the scene. Moreover, the coffee cup presented an interesting modeling challenge due to its combination of cylindrical and conical shapes. By integrating these two primitive shapes, I was able to demonstrate my ability to create complex forms through thoughtful composition.

Sugar cubes, retained from a previous milestone, complemented the coffee cup while adhering to the polygon count limit. Their simplistic geometry not only aligned with the low-poly aesthetic but also represented a common item found in office spaces. This choice also allowed me to focus on efficient geometry organization, ensuring well-spaced and connected polygons for optimal visual quality.

To add diversity to the scene, I introduced a computer monitor placed behind the coffee cup and sugar cubes. I opted to represent the monitor's screen with a square to manage polygon count while maintaining a recognizable form. This decision showcased my creative problem-solving skills, as I aimed to capture the essence of a monitor within the constraints of the project.

User navigation within the 3D scene was achieved through a user-friendly combination of keyboard and mouse inputs. The WASD keys served as the foundation for horizontal movement, allowing users to explore the scene from different angles. The QE keys provided vertical control, enabling users to ascend and descend smoothly.

The mouse cursor played a pivotal role in enhancing the user experience. By moving the mouse, users could intuitively adjust the camera's orientation, providing a dynamic and immersive perspective on the objects. This interaction simulated real-world exploration, enabling users to view the scene from multiple viewpoints and angles.

To further enhance usability, I implemented the mouse scroll as a speed control mechanism. This feature allowed users to fine-tune the camera movement speed to their preference. By providing this level of customization, I aimed to ensure that users could engage with the scene comfortably and at their own pace.

Throughout the development process, I adhered to coding best practices by creating custom functions that enhanced the code's modularity and organization. The "UInitialize" function encapsulated essential setup tasks, abstracting away complexities and ensuring a clean main function. This approach not only improved readability but also adhered to the principle of separation of concerns.

The "UMouseCallback" function played a critical role in responsive camera orientation. By calculating yaw and pitch angles based on mouse movement, I enabled smooth and natural camera adjustments. This modular function not only improved code structure but also highlighted my ability to create user-friendly interactions.

In addition, the "UProcessInput" function efficiently managed keyboard inputs, translating them into meaningful camera movements. By centralizing this logic, I ensured that the code remained concise, readable, and maintainable.

In conclusion, my 3D scene development was driven by thoughtful object selection, intuitive user navigation controls, and modular coding practices. These decisions collectively contributed to a visually engaging and interactive experience that met the project's requirements while showcasing my technical and creative skills.