**Morgun Leonard**  
**8-2 Final Project Submission 3D Scene Reflection**

**CS 330 Final Project 3D Scene Completion**

For my final project I successfully replicated my personal computer desk setup in a fully realized 3D scene using OpenGL. This project built upon my original concept and expanded the level of detail realism and technical structure. The completed scene features three angled computer monitors a large wooden desk a desktop PC tower a mechanical keyboard a mouse and a desk mat. Each element was created through careful scaling positioning and texturing with materials defined for glass metal and wood surfaces.

**Completed 3D Scene Overview**

The final 3D scene includes a realistic workspace with clear lighting and accurate proportions. The monitors are modeled using box meshes with separate internal and external surfaces simulating display depth. The central and side screens are angled slightly to create a curved multi monitor effect. The desk surface uses a wood grain texture for warmth and realism while the monitor stands mouse and tower use metallic and dark materials for contrast. Depth and spatial consistency were achieved by fine tuning GLM transformations and adjusting rotation scale and position vectors.

The environments lighting system defined in the shader manager provides ambient and specular illumination that enhances the reflective properties of the metal materials. The desk mat and mouse introduce curvature and small details that balance the geometric uniformity of the rest of the scene. The final render successfully captures the organized modern appearance of a professional computer workspace.

**Technical Breakdown**

Each object in the final version was constructed using combinations of primitive shapes  
• **Monitors** Box meshes with inner and outer display textures named MainDesktop and AltDesktop  
• **Monitor Stands** Box and cylinder meshes positioned to simulate realistic height and support  
• **Keyboard** A thin box mesh scaled to reflect the flat base of a mechanical keyboard  
• **Mouse** A small sphere mesh stretched for a rounded contour  
• **PC Tower** A tall box mesh with a black metallic texture symbolizing the desktop case  
• **Desk and Mat** Planes scaled to form the desk surface and mousepad area

**Reflection and Design Outcome**

The most rewarding aspect of this project was integrating transformations and textures to achieve realism. Using GLMs scale rotation and translation functions provided precision and structure during modeling. The lighting and texture mapping added a layer of visual fidelity that made the scene feel complete.

This project deepened my understanding of 3D rendering pipelines shader communication and scene organization. It also strengthened my problem solving and debugging abilities through iterative testing. The result is a balanced combination of technical accuracy and visual design a realistic digital recreation of a personal workspace that demonstrates mastery of OpenGL fundamentals and scene composition.