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CS-499

7/27/25

This artifact is a C++-based 3D scene renderer created in February 2025 as part of my final project for the Graphics and Visualizations course. It includes the SceneManager.cpp file, which manages scene preparation, texture loading, lighting, and rendering using OpenGL. I selected this item for my ePortfolio because it demonstrates my understanding of software architecture in a graphics pipeline and showcases my ability to manage scene components modularly and efficiently.

The artifact highlights my skills in resource management, modular design, and basic shader configuration. Specific improvements included adding proper error handling for texture loading, implementing cleanup functions to prevent memory leaks (such as DeleteSceneTextures()), and restructuring material definitions to improve maintainability. These enhancements directly support course outcomes related to software engineering principles and efficient scene rendering.

Yes, I met the course outcomes I aimed for in Module One, particularly in applying best practices for design and maintainability in software systems. No updates are needed to my outcome-coverage plans at this time.

Throughout the enhancement process, I learned the importance of proactive error handling and memory management in real-time applications. One of the biggest challenges I faced was debugging issues related to uninitialized variables and missing function declarations, which required careful planning and structural review of the class interface. The process helped reinforce professional coding habits and deeper OpenGL knowledge.