For my final project, I endeavored to create a 3D scene including a bottle of lotion, a cotton swab, a cube of soap, and a credit card. The selection of these objects was deliberate, aiming for a balance between simplicity and recognizability. By breaking each object down into primitive shapes and rendering them accordingly, I achieved a low-polygon rendering while ensuring that each object remained distinct within the scene.

The programming aspect of the project presented its own set of challenges and opportunities. By leveraging functions to create primitive shapes and meticulously applying transformations, I was able to position each object within the scene with precision. However, this process was not without its difficulties. Aligning the shapes and adjusting their sizes required careful consideration of spatial relationships and coordinate systems.

Navigating the 3D scene was made possible through the implementation of a virtual camera system. Using the camera header, I mapped the mouse and keyboard to control the camera's movement and perspective. This allowed users to explore the scene from various angles and view more by exploring the spatial arrangement of the objects.

Central to the organization and modularity of the code were the custom functions I implemented. These functions, included transformation functions, vertices and indices generators, and texture importers, streamlined the development process and are available for reuse. For example, the vertices and indices generators allowed for the efficient creation of primitive shapes, while the texture importers facilitated the seamless integration of textures onto the objects. By encapsulating key functionality within modular components, I created a framework that is both flexible and extensible, paving the way for future development and refinement.

The final project provided a valuable opportunity to explore the intricacies of 3D graphics programming and exercise creative problem-solving skills. While the journey was marked by challenges and uncertainties, the end result speaks to the power of perseverance and ingenuity in the face of complexity. Moving forward, I look forward to applying the lessons learned from this project to future endeavors, confident in my ability to navigate the ever-evolving landscape of computer graphics and visualization.