This project demonstrates the creation of three kitchen objects—a maple syrup bottle, mixing bowl, and peanuts can—using only basic OpenGL primitives (boxes, cones, cylinders, and planes). Through iterative refinement, I addressed key technical challenges in modeling, texturing, and lighting while maintaining geometric constraints. Due to technical constraints & time constraints, I had to omit the vegetable chopper.

The maple syrup bottle combined a cylinder base, tapered cylinder neck, and spherical cork top. Careful scaling ensured proper proportions while preserving the bottle’s recognizable silhouette. The mixing bowl required a modified sphere for its concave interior and a flattened cylinder rim to define its edges. For the peanuts can, a single cylinder formed the body, while a rotated, flattened sphere created the subtle dome of the lid.  
Aligning objects on a 3D plane (countertop) proved challenging. The syrup bottle initially appeared to float, requiring a standardized base elevation adjustment. Final placement used depth cues—positioning the bottle behind the bowl and angling the can for naturalism.  
Textures loaded individually but failed to compile into a unified material library. As a workaround, I bound each texture separately before rendering. The countertop’s wood grain required iterative UV scaling to match object proportions.  
Single-side lighting cast harsh shadows, obscuring details like the bowl’s interior. I added a low-intensity fill light to maintain visibility while preserving directional emphasis.

Despite primitive constraints, strategic manipulation of shapes, & iterative refinement helped produced this scene. Though some areas are incomplement, the base design is complete. Some key lessons to take into account are the importance of proportional scaling, texture management, & balancing the lighting effects better. This project helps to underscore how fundamental geometry can be carefully implemented, can achieve recognizable 3D representation. Future work could explore more advanced texturing or the dynamix lighting to enhance the realism further.