This 3D scene was created with the goal of closely replicating my image in a virtual environment, which required a thoughtful selection of geometric primitives to represent the real-world objects. To replicate the objects in my scene I used a cube to represent the ice cream box, multiple cylinders a torue and a pyramid for the hot sauce bottle, a flat plane for the wooden surface, and a sphere for the apple. These shapes not only align visually with their real-world counterparts but also maintain the simplicity necessary for 3D modeling as a beginner. The use of low-polygon models was a strategic decision to ensure rendering efficiency while retaining enough detail to satisfy the project requirements.

User navigation within the 3D scene is achieved through an intuitive camera control system, designed to mimic the ease of movement familiar to many from popular video gaming interfaces. The WASD keys provide lateral and forward movement control allowing the user to walk through the scene, while the QE keys offer vertical traversal, much like ascending or descending a set of stairs. The mouse movement has been utilized to control the orientation of the camera, allowing for smooth panning and tilting, which is essential for examining the objects from all angles. Additionally, the mouse scroll wheel adjusts the camera's movement speed, giving users precise control over their viewing experience, enhancing interactivity and engagement with the scene.

The shader software controls the intricate interaction between light and shadow using the diffuse, specular, and ambient elements of the Phong lighting model. This is an integral component to the scene's visual realism. The use of two different light sources, one that casts an orange hue and the other that emits a warm white glow, highlights the textures of the items in the picture and gives it depth and contrast. The textures used were taken from royalty-free, high-resolution photos, guaranteeing the most visually appealing 3D models possible.

To keep the code organized and maintainable, I developed custom functions for generating each of the primitive geometric shapes, loading and processing textures, and managing lighting effects. These functions were designed with reusability in mind, allowing for easy replication or alteration of scene elements without redundant code. This modular approach facilitates efficient updates and scalability, providing a robust framework for future enhancements or changes that may arise in further development of the project.