Todd Johnson  
  
CS-330 Computational Graphics and Visualization  
  
Date 09/17/2025

For my 3D scene, I have selected a 2D image of a desk setup featuring a coffee mug, computer monitor, keyboard, mouse, and desk surface. This depiction offers a straightforward environment comprising both fundamental and moderately complex shapes, making it a suitable and manageable choice for this project. The distinct placement of each object within the composition facilitates efficient replication in three dimensions. Additionally, capturing multiple photographs from various angles will enhance accuracy during the modeling process.

The objects designated for 3D replication include the coffee mug, computer monitor, keyboard, mouse, and the desk itself. The coffee mug is intended as the focal point of the scene, while the monitor provides a structured backdrop that contrasts with the mug. Incorporating the keyboard and mouse adds realism and detail, and the desk serves as a unifying plane for all elements. These selections offer a balance between simplicity and complexity and demonstrate the ability to construct intricate models from basic geometric forms while enabling realistic representation through materials, textures, and lighting.

Each item in the scene can be decomposed into its component shapes. The coffee mug will be modeled as a composite object, employing a tapered cylinder for the body, a scaled inner cylinder for the cavity, a torus for the handle, and a thin cylinder for the coffee surface. The computer monitor will similarly be constructed as a composite object using a box for the housing, a plane for the screen, and a combination of cylinder and box for the stand and base. The keyboard will be formed from a box representing the chassis, with keys indicated by textures and normal maps to streamline complexity. The mouse will utilize a scaled sphere or tapered cylinder for its curved form with an additional small cylinder for the scroll wheel. The desk surface will be depicted as a simple plane with a wood grain texture. This approach incorporates at least four distinct primitive shapes, including planes, boxes, cylinders, tapered cylinders, spheres, and a torus. Both the mug and monitor fulfill the requirement for composite construction using multiple forms.

In summary, these choices are well-conceived, practical, and in accordance with project requirements. The selected objects logically complement each other within the desk environment and allow for demonstration of advanced texturing, lighting, and material techniques. The coffee mug acts as the centerpiece, the monitor frames the background, and the keyboard and mouse provide balance and authenticity, while the desk ties together all components. Each object has been meticulously mapped to its corresponding 3D primitive, ensuring the project’s systematic execution.

Citation  
-(Microsoft Copilot, personal communication, September 17, 2025

-Images for test

