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CS-330

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Professor Scott Gray

2-3 Milestone One: Project Proposal

-Select a 2D image with objects to replicate in a 3D scene. You will need to have at least four objects in your scene. At least one of these objects needs to be made of two or more basic 3D shapes. Take your own photos of the 2D scene

I have been tasked with creating a 3D scene using OpenGL as a 3D graphics developer at Triangle and Cube Studios. I have picked 4 images that include various objects for this project, a car battery, a book, a candle, and a couch. There is a diverse set of items that can be broken down using basic 3D shapes. These shapes will show my ability to make a realistic virtual environment.

-Discuss which objects will be replicated in 3D. Select which items from your scene that you will be replicating in 3D. Then explain why these items are a good choice for your work.

- Explain which basic 3D shapes will be used to replicate the 2D objects. Break down each of the objects you chose into their component shapes.

A car battery is generally rectangular with a few additional features such as terminals and handles. The 3D shapes that are used are a box and cylinders. The main body of the car battery will be modeled using a box shape. This represents the battery’s rectangular form. The battery terminals on top will be represented by cylinders. The car battery is primarily a boxy shape, making it a straightforward object to replicate. Adding cylinders for the terminals provides an opportunity to practice combining shapes.

The book is a simple rectangular object that can be easily modeled. The 3D shapes used are a box. The book will be created using a single box shape to represent its rectangular form. The book's simple shape makes it an easy object to replicate while still helping the overall scene.

The candle is a cylinder with a rounded top. The 3D shapes used are a cylinder and a sphere. The main body of the candle will be modeled using a cylinder. The flame can be represented using a small sphere. The candle represents circular shapes, and it will give some variety to the 4 items.

A couch typically consists of multiple rectangular cushions and armrests. The 3D shapes used are a box and a plane. The main seat, back cushions, and armrests of the couch are multiple box shapes. The plane shape will be used to create the ground or floor where the couch rests. The couch has multiple components, and it uses several box shapes together. This will allow us to practice aligning and combining shapes to form a larger object.

The selection of a car battery, book, candle, and couch provides a balanced mix of shapes and complexities that are both achievable and interesting to model in OpenGL. I will be able to demonstrate a comprehensive understanding of OpenGL's modeling capabilities by breaking down these objects into basic 3D shapes. This scene will do the project requirements and be a realistic virtual environment that’s diverse.

Sources: APA

de Vries, J. (2020). *Learn OpenGL: Learn modern OpenGL graphics programming in a step-by-step fashion*. Joey de Vries.