Proposal

First of all, let us introduce the tool--OpenGL. Open Graphics Library(OpenGL) is a cross-language, cross-platform application programming interface for rendering 2D and 3D vector graphics. The API is typically used to interact with a graphics processing unit, to achieve hardware-accelerated rendering.

The OpenGL specification specifies exactly what the result/output of each function should be and how it should perform. It is then up to the developers implementing this specification to come up with a solution of how this function should operate. Since the OpenGL specification does not give us implementation details, the actual developed versions of OpenGL are allowed to have different implementations, as long as their results comply with the specification (and are thus the same to the user).

Because OpenGL is just a specification, we should have a library that implement the specification. After we search for a while in Google, we decide to use the GLFW library. The library is written in C, specifically targeted at OpenGL providing the bare necessities required for rendering goodies to the screen.

Because OpenGL is just a specification, it is necessary to retrieve the location of the function we need and store them in function pointer for later use. So we choose GLAD. GLAD is an open source library that can help us to manage functions.

Now let us talk about the 3D scene. 3D scene is very realistic. We think there are many products that use 3D scene. Computer games use 3D scenes to make the game more realistic, and movies use 3D scene to make viewer more immersive. So learning how to create a 3D scene is very useful for us.

Now let us talk about what kind of 3D scene we want to create. First, we want our 3D scene should be cool and realistic. Second, there should be several 3D models in our 3D scene. Third, every model should scale, translate and rotate. And we can observe our 3D scene from different viewpoints.

Finally, for achieving our goal, we decide to create a dormitory scene. There should be desks, chairs, desk lamps, books, clothes and cups.