# OpenGL SoC
# Assignment 2

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This assignment will be an individual assignment. Each of you has to make their own submission.

## 1 Third dimension's the charm

If we only wanted to generate 2D shapes, we could have used Paint for that couldn't we? It gets more exciting than that. Render a 3D *textured* cube using a *perspective camera*. Your program should implement the following features

1. Ability to change the camera position
2. Ability to change the camera view direction
3. Ability to change the camera up direction
4. Ability to change the camera field of view (zoom)

It is upto you on how to implement these interactive features. You can implement a WASD + Mouse (RPG) type camera too! Explore the capabilities of GLFW/GLUT.

## 2 Sky's the limit

At this point you must be bored with the boring old black background for your model. Implement a sky environment/background using a cubemap texture.

## 3 Light up your life

Enough with the unrealistic looking models! Bring some lighting to your model. Your cube in Q1 should now have the following features. The environment should still be there.

1. Ability to switch between Phong and Blinn-Phong shading models
2. Cube should have an albedo map
3. Cube should have a diffuse map
4. Cube should have a specular map
5. Cube should have a normal map
6. Ability to switch between a point light, directional light and spotlight. Attenuation should be implemented

All textures can either be made by either you or downloaded from the internet

## 4 Bonus: Performance is key

To check the performance of your program, implement an FPS counter and a Vertices count on the top left corner of your application. You'll have to read up on how to render text in OpenGL, because it is non trivial