

RECORD OF EXPERIMENTS

Computer Graphics Lab

(CSEG3103)

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1.	Introduction to OpenGL and initialize a Green color		
2.			

EXPERIMENT-1: Introduction to OpenGL and initialize a Green color

INTRODUCTION TO OPEN GL:

- What is OpenGL?

Answer: Open Graphics Library (OpenGL) is a cross-language, cross-platform application programming interface (API) for rendering 2D and 3D vector graphics. The API is typically used to interact with a graphics processing unit (GPU), to achieve hardware accelerated rendering.

- What is GLU/GLUT?

Answer: GLUT is the OpenGL Utility Toolkit, a window system independent toolkit for writing OpenGL programs. It implements a simple windowing application programming interface (API) for OpenGL. GLUT makes it considerably easier to learn about and explore OpenGL Programming.

What is OpenGL Architecture?

Answer: CPU-GPU Cooperation

The architecture of OpenGL is based on a client-server model. An application program written to use the OpenGL API is the "client" and runs on the CPU. The implementation of the OpenGL graphics engine (including the GLSL shader programs you will write) is the "server" and runs on the GPU. Geometry and many other types of attributes are stored in buffers called Vertex Buffer Objects (or VBOs). These buffers are allocated on the GPU and filled by your CPU program.

Modeling, rendering, and interaction is very much a cooperative process between the CPU client program and the GPU server programs written in GLSL.

CODE FOR INITILIZE A GREEN COLOUR:

OUTPUT:

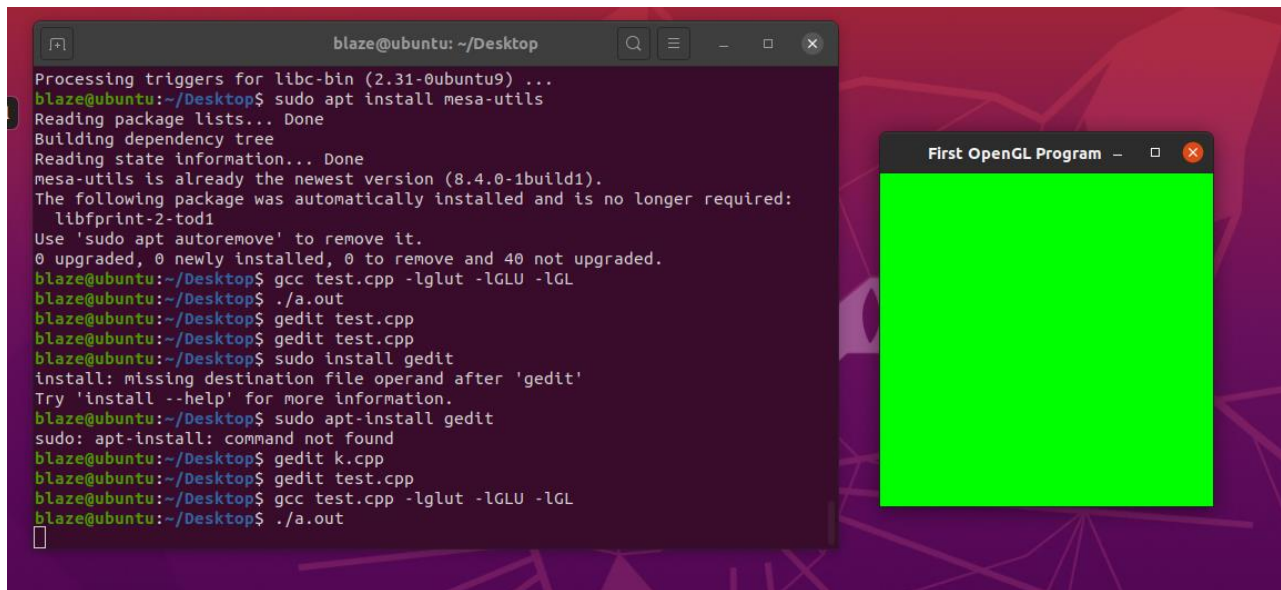
```
#include <GL/glut.h>
#include <GL/glu.h>
#include <GL/gl.h>
void display() {
    glClearColor(0.0, 1.0, 0.0,0.0); // Set background color to Green and opaque
    glClear(GL_COLOR_BUFFER_BIT); // Clear the color buffer (background)
    glFlush(); // Render now
}
int main(int argc, char** argv)
```

```

{
glutInit(&argc, argv); // Initialize GLUT
glutCreateWindow("First OpenGL Program"); // Create a window with the given title
glutInitWindowSize(320, 320); // Set the window's initial width & height
glutInitWindowPosition(50, 50); // Initial Position of the window
glutDisplayFunc(display); // Register display callback handler for window re-paint
glutMainLoop(); // Enter the event-processing loop
return 0;
}

```

OUTPUT



The screenshot shows a terminal window on the left and a small window titled "First OpenGL Program" on the right. The terminal window displays the output of various commands executed in a Linux environment. The commands include installing mesa-utils, compiling a C++ program with gcc, and attempting to install gedit. The OpenGL window on the right is a solid red rectangle, indicating a successful initialization of the OpenGL context.

```

blaze@ubuntu: ~/Desktop
Processing triggers for libc-bin (2.31-0ubuntu9) ...
blaze@ubuntu:~/Desktop$ sudo apt install mesa-utils
Reading package lists... Done
Building dependency tree
Reading state information... Done
mesa-utils is already the newest version (8.4.0-1build1).
The following package was automatically installed and is no longer required:
  libfprint-2-tod1
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 40 not upgraded.
blaze@ubuntu:~/Desktop$ gcc test.cpp -lglut -lGLU -lGL
blaze@ubuntu:~/Desktop$ ./a.out
blaze@ubuntu:~/Desktop$ gedit test.cpp
blaze@ubuntu:~/Desktop$ gedit test.cpp
blaze@ubuntu:~/Desktop$ sudo install gedit
install: missing destination file operand after 'gedit'
Try 'install --help' for more information.
blaze@ubuntu:~/Desktop$ sudo apt-install gedit
sudo: apt-install: command not found
blaze@ubuntu:~/Desktop$ gedit k.cpp
blaze@ubuntu:~/Desktop$ gedit test.cpp
blaze@ubuntu:~/Desktop$ gcc test.cpp -lglut -lGLU -lGL
blaze@ubuntu:~/Desktop$ ./a.out

```