Introduction to OpenGL

By

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Open GL

- **Open Graphics Library (OpenGL)**
- A cross-language
- A cross-platform (platform independent) API
- It rendes2D and 3D Vector Graphics(use of polygons to represent image).
- OpenGL API is designed mostly in hardware.

- **Design** :
  - This API is defined as a set of functions which may be called by the client program.
- **Development** :
  - It is an evolving API and Khronos Group regularly releases its new version having some extended feature compare to previous one.
  - GPU vendors may also provide some additional functionality in the form of extension.
- **Associated Libraries** :
  - OpenGL is quite a complex process. So in order to make it easier other library such as OpenGL Utility Toolkit is added which is later superseded by freeglut. Later included library were GLEE, GLEW and glbinding.
- **Implementation** :
  - Mesa 3D is an open source implementation of OpenGL.
  - It can do pure software rendering and it may also use hardware acceleration on BSD, Linux, and other platforms by taking advantage of Direct Rendering Infrastructure.

Install OpenGL on Ubuntu(C programming)

- **sudo apt-get install freeglut3-dev**

- **gcc filename.c -lGL -lGLU -lglut** where filename.c is the name of the file with which this program is saved.

```python
import OpenGL
import OpenGL.GL
import OpenGL.GLUT
import OpenGL.GLU

def showScreen():
    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT) # Remove everything
from screen (i.e. displays all white)


glutInit() # Initialize a glut instance which will allow us to customize our window
glutInitDisplayMode(GLUT_RGBA) # Set the display mode to be colored
glutInitWindowSize(500, 500)   # Set the width and height of your window
glutInitWindowPosition(0, 0)   # Set the position at which this windows should appear
wind = glutCreateWindow("OpenGL Coding Practice") # Give your window a title
glutDisplayFunc(showScreen)  # Tell OpenGL to call the showScreen method continuously
glutIdleFunc(showScreen)     # Draw any graphics or shapes in the showScreen function at
all times
glutMainLoop()  # Keeps the window created above displaying/running in a loop
```