Graphics Assignment No:- 1

1. Assignment description

OpenGL, short for **Open Graphics Library,** is an application programming interface (API) designed for rendering 2D and 3D graphics. It provides a common set of commands that can be used to manage graphics in different applications and on multiple platforms.

2. Procedure

1. Install Xcode, which is a suite of software development tools for Mac OS X
2. The steps to installing and running OpenGL on the Mac OS X are few because OpenGL is integrated into the operating system:

step 1: Install GLEW

```
Using brew install glew
Install GLEW by going to http://glew.sourceforge.net/index.html
and following instructions
```

3. **Using OpenGL and GLUT in source**

step 2: Link framework with openGL project

Start Xcode and choose File New project from the drop-down menu; create a new Cocoa Application by choosing it from the menu. Deselect main.m, and instead add your source codes in the Other Sources folder. From the top-left drop-down menu in the window, click on Add Existing Frameworks, and add three frameworks,Cocoa frameworks, OpenGL framework and GLUT framework,both from the Frameworks folder. (These frameworks are located in / System/ Library/Frameworks/.)

4. **Finally in your source include the files as needed**

step 3: C++ include header file

```
1.#include <OpenGL/gl.h>
2.#include <OpenGL/glu.h>
3.#include <GLUT/glut.h>
```

5. draw line using function glVertex2i,glEnd,glFlush,glBegin, glClear,etc .

3. Result

Line

4. Python

Drawing of circle , line ,rectangle,ellipse,polyline using OpenCv

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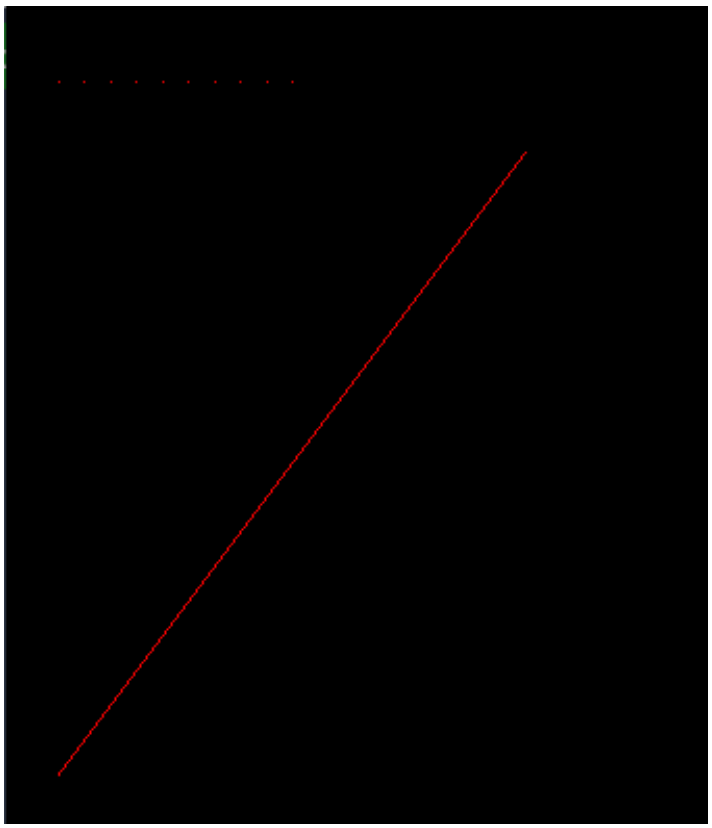

Figure 1: Using OpenGL(C++ library) line drawing

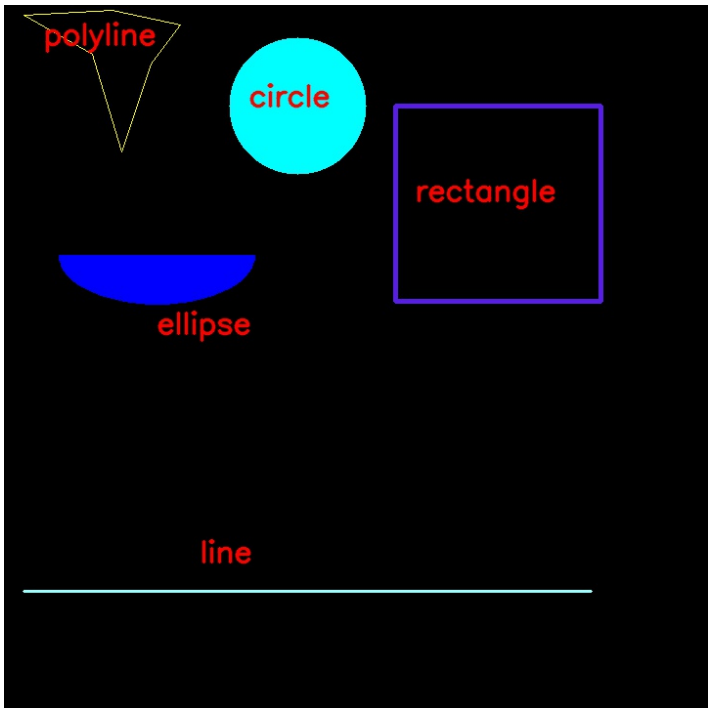

Figure 2: Using OpenCv(Python library) line,circle and rectangle etc.