

EXPERIMENT NO 1(extended.)**LINE DRAWING**

Aim: To write an option based program that draws Horizontal, Vertical and Diagonal Lines based on User Inputs

Option 1 : Horizontal Line – knowing X-coordinate range and specific Y-coordinate and plot the line.

Option 2 : Vertical Line – knowing X-coordinate and Y-coordinate range and plot the line

Option 3 : Diagonal Line - ask for inputs - for example : the input : 5, 10; should plot the line (5,5) (6,6) (7,7) (8,8) (9,9) (10,10).

Program:

```
import OpenGL

OpenGL.ERROR_ON_COPY = True

from OpenGL.GLUT import *
from OpenGL.GL import *
from OpenGL.GLU import *
w,h = 500,500

def init2D(r,g,b):
    glClearColor(r,g,b,0.0)
    glMatrixMode (GL_PROJECTION)
    gluOrtho2D (-500.0, 500.0, -500.0, 500.0)

def horizontal():
    glClear(GL_COLOR_BUFFER_BIT)
    glPointSize(4.0)
    glColor3f(0.0, 0.0, 1.0)
    glBegin(GL_POINTS)
    for x1 in range(x2):
        glVertex2i(x1,y)
    glEnd()
    glFlush()

def vertical():
```

```

glClear(GL_COLOR_BUFFER_BIT)
glPointSize(4.0)
glColor3f(0.0, 1.0, 0.0)
glBegin(GL_POINTS)
for y1 in range(y2):
    glVertex2i(x,y1)
glEnd()
glFlush()

```

```

def diagonal():
    glClear(GL_COLOR_BUFFER_BIT)
    glPointSize(4.0)
    glColor3f(1.0, 0.0, 0.0)
    glBegin(GL_POINTS)
    for d1 in range(d2):
        glVertex2i(d1,d1)
    glEnd()
    glFlush()

```

```

option = input('Enter 1 for horizontal line and 2 for verticle line and 3 for
diagonal line : ')

```

```

if option == '1':
    print('selected for horizontal line')
    x1 = int(input('Enter x1 value : '))
    x2 = int(input('Enter x2 value : '))
    y = int(input('Enter y value : '))
    glutInit(sys.argv)
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB)
    glutInitWindowSize(w, h)
    glutInitWindowPosition(100,100)
    glutCreateWindow(b'Horizontal line')
    init2D(0.0,0.0,0.0)
    glutDisplayFunc(horizontal)
    glutMainLoop()

```

```

if option == '2':
    print('selected for verticle line')
    x = int(input('Enter x value : '))
    y1 = int(input('Enter y1 value : '))
    y2 = int(input('Enter y2 value : '))
    glutInit(sys.argv)
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB)
    glutInitWindowSize(w, h)
    glutInitWindowPosition(100,100)
    glutCreateWindow(b'Vertical line')
    init2D(0.0,0.0,0.0)
    glutDisplayFunc(vertical)

```

```

glutMainLoop()

if option == '3':
    print('selected for diagonal line line')
    d1 = int(input('Enter value1 : '))
    d2 = int(input('Enter value2 : '))
    glutInit(sys.argv)
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB)
    glutInitWindowSize(w, h)
    glutInitWindowPosition(100,100)
    glutCreateWindow(b'Diagonal line')
    init2D(0.0,0.0,0.0)
    glutDisplayFunc(diagonal)
    glutMainLoop()

else:
    print('Invalid option')

```

Result: Successfully executed a python program to draw horizontal, vertical and diagonal lines

Input/Output(1/3):

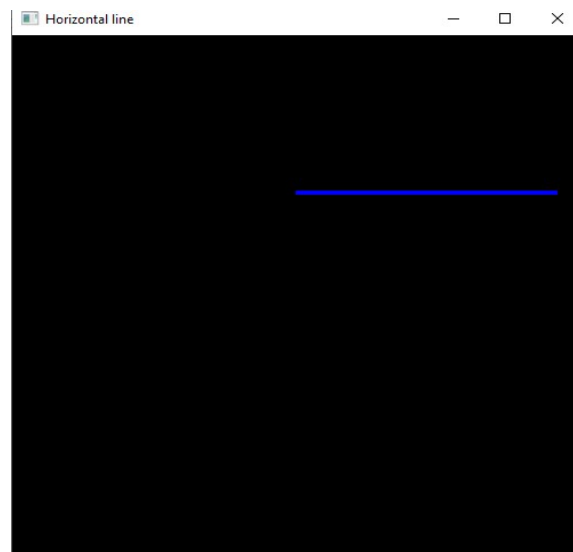
Enter 1 for horizontal line and 2 for vertical line and 3 for diagonal line : 1

selected for horizontal line

Enter x1 value : 150

Enter x2 value : 450

Enter y value : 200



Input/Output(2/3):

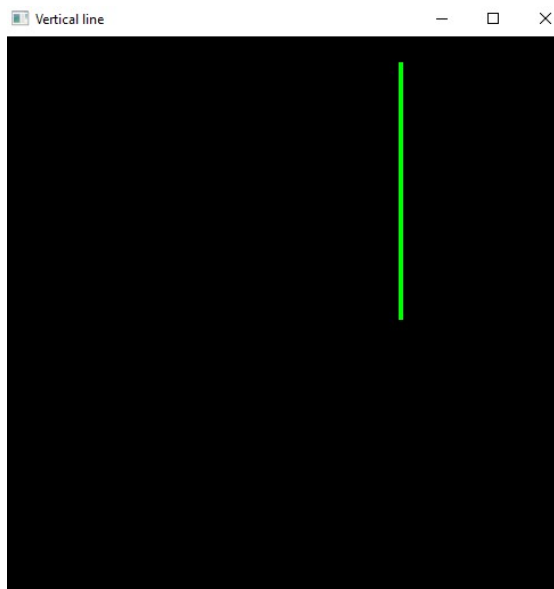
Enter 1 for horizontal line and 2 for vertical line and 3 for diagonal line : 2

selected for vertical line

Enter x value : 200

Enter y1 value : 150

Enter y2 value : 450



Input/Output(3/3):

Enter 1 for horizontal line and 2 for vertical line and 3 for diagonal line : 3

selected for diagonal line

Enter for value1: -450

Enter for value1: 150

