EXPERIMENT 2 **12.08.2021**

a) DDA ALGORITHM

Aim: Write a program to draw a line using the DDA algorithm

Algorithm :

1. Start
2. Function (x1,y1,x2,y2) given
3. Delta x = x2-x1, and Delta y = y2-y1
4. Declare steps equal 0
5. If |deltax| > |deltay| steps equals = |deltax| else ,steps equal |deltay|
6. Declare x-increment = deltax/steps and y-increment = deltay/steps
7. Plot (x1,y1) after rounding off
8. X1 = x1 + x-increment and y1 = y1+y-increment
9. Loop for steps number of times
10. stop

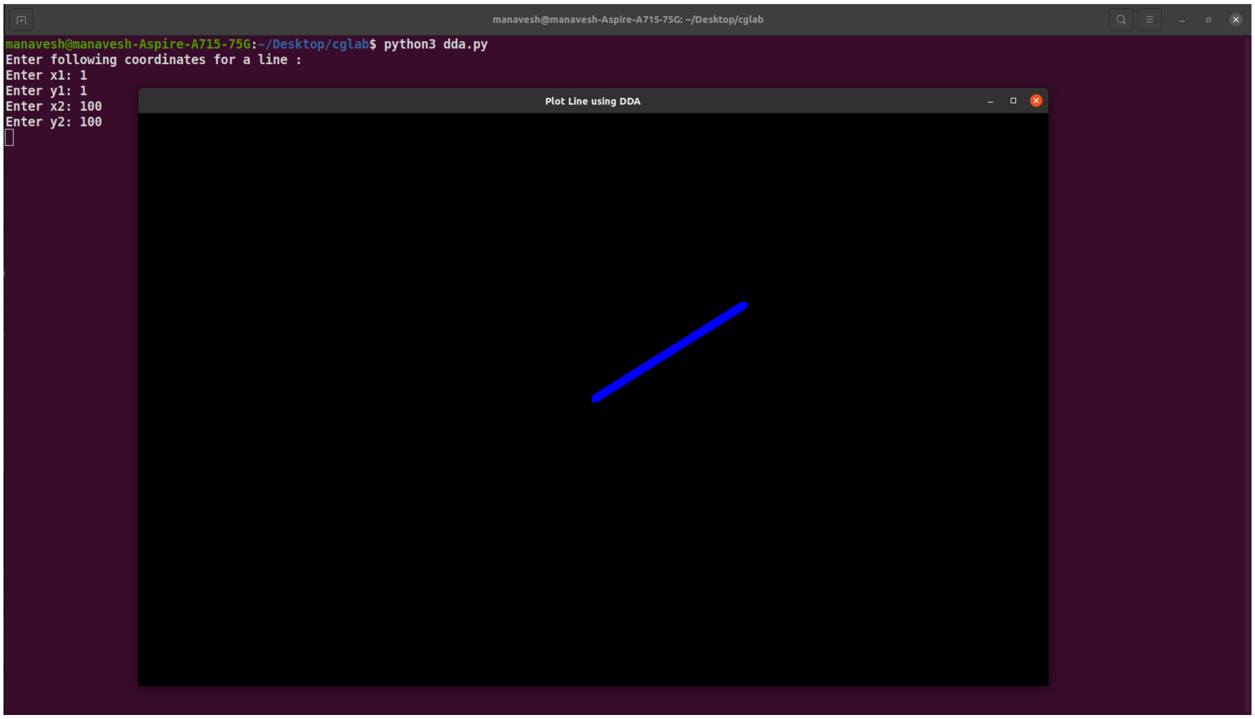
Program :

```
from OpenGL.GL import *
from OpenGL.GLUT import *
from OpenGL.GLU import *
def init():
    glClearColor(0.0, 0.0, 0.0, 1.0)
    gluOrtho2D(-300, 300, -300, 300)
def plotLine(x1, y1, x2, y2):
    deltaX = x2 - x1
    deltaY = y2 - y1
    steps = 0
    if (abs(deltaX) > abs(deltaY)):
        steps = abs(deltaX)
    else:
        steps = abs(deltaY)
    Xincrement = deltaX / steps
    Yincrement = deltaY / steps
    glClear(GL_COLOR_BUFFER_BIT)
    glColor3f(1.0, 0.0, 0.0)
    glPointSize(10.0)
    glBegin(GL_POINTS)

    for step in range(1, steps + 1):
        glVertex2f(round(x1), round(y1))
        x1 = x1 + Xincrement
        y1 = y1 + Yincrement
    glEnd()
    glFlush()


def main():
    print ("Enter following coordinates for a line :")
    x1 = int(input("Enter x1: "))
    y1 = int(input("Enter y1: "))
    x2 = int(input("Enter x2: "))
    y2 = int(input("Enter y2: "))
    glutInit(sys.argv)
    glutInitDisplayMode(GLUT_RGB)
    glutInitWindowSize(500, 500)
    glutInitWindowPosition(0, 0)
    glutCreateWindow("Plot Line using DDA")
    glutDisplayFunc(lambda: plotLine(x1, y1, x2, y2))
    glutIdleFunc(lambda: plotLine(x1, y1, x2, y2))
    init()
    glutMainLoop()
main()
```

RESULT

The program to draw a line using the DDA algorithm was implemented and executed successfully.

INPUT / OUTPUT (SNAPSHOTS)



```
manavesh@manavesh-Aspire-A715-75G:~/Desktop/cglab$ python3 dda.py
Enter following coordinates for a line :
Enter x1: 1
Enter y1: 1
Enter x2: 100
Enter y2: 100
```