Lab Assignment 2 : Task 1 :

from OpenGL.GL import \*  
from OpenGL.GLUT import \*  
  
  
def draw\_points(x, y):  
 glPointSize(2)  
 glBegin(GL\_POINTS)  
 glVertex2f(x, y)  
 glEnd()  
  
  
def find\_zones(dx, dy):  
 if abs(dx) > abs(dy):  
 if dx>0 and dy>=0:  
 return 0  
 elif dx<=0 and dy>=0:  
 return 3  
 elif dx>=0 and dy>=0:  
 return 7  
 elif dx<=0 and dy<=0:  
 return 4  
 else:  
 if dx>=0 and dy>=0:  
 return 1  
 elif dx <= 0 and dy >= 0:  
 return 2  
 elif dx<=0 and dy<=0:  
 return 5  
 elif dx>=0 and dy<=0:  
 return 6  
  
  
  
def convert\_to\_zone0(x1, y1, x2, y2, zone):  
 if zone == 0:  
 return x1, y1, x2, y2  
 elif zone == 1:  
 return y1, x1, y2, x2  
 elif zone == 2:  
 return y1, -x1, y2, -x2  
 elif zone == 3:  
 return -x1, y1, -x2, y2  
 elif zone == 4:  
 return -x1, -y1, -x2, -y2  
 elif zone == 5:  
 return -y1, -x1, -y2, -x2  
 elif zone == 6:  
 return -y1, x1, -y2, x2  
 elif zone == 7:  
 return x1, -y1, x2, -y2  
 return x1,y1,x2,y2  
  
  
def convert\_original\_zone(x, y, zone):  
 if zone == 0:  
 return x, y  
 if zone == 1:  
 return y, x  
 if zone == 2:  
 return -y, x  
 if zone == 3:  
 return -x, y  
 if zone == 4:  
 return -x, -y  
 if zone == 5:  
 return -y, -x  
 if zone == 6:  
 return y, -x  
 if zone == 7:  
 return x, -y  
  
  
def mid\_point\_count(x1, y1, x2, y2):  
 dx = x2 - x1  
 dy = y2 - y1  
 zone\_no = find\_zones(dx, dy)  
 x1, y1, x2, y2 = convert\_to\_zone0(x1, y1, x2, y2, zone\_no)  
 d0 = 2\*dy - dx  
 dNE = 2\*(dy - dx)  
 dE = 2\*dy  
 x = x1  
 y = y1  
  
 while x < x2:  
 p = x  
 q = y  
 p, q = convert\_original\_zone(x, y, zone\_no)  
 draw\_points(p, q)  
 x = x+1  
  
 if(d0 < 0):  
 d0 = d0 + dE  
 else:  
 d0 = d0 + dNE  
 y = y+1  
  
  
  
  
def iterate():  
 glViewport(0, 0, 500, 500)  
 glMatrixMode(GL\_PROJECTION)  
 glLoadIdentity()  
 glOrtho(0.0, 500, 0.0, 500, 0.0, 1.0)  
 glMatrixMode (GL\_MODELVIEW)  
 glLoadIdentity()  
  
  
def showScreen():  
 glClear(GL\_COLOR\_BUFFER\_BIT | GL\_DEPTH\_BUFFER\_BIT)  
 glLoadIdentity()  
 iterate()  
 glColor3f(1.0, 1.0, 1.0)  
  
  
 mid\_point\_count(100, 320, 250, 320) #For 5  
 mid\_point\_count(100, 320, 100, 250)  
 mid\_point\_count(100, 250, 250, 250)  
 mid\_point\_count(250, 250, 250, 150)  
 mid\_point\_count(100, 150, 250, 150)  
  
  
  
 mid\_point\_count(300, 320, 400, 320) #for 2  
 mid\_point\_count(400, 320, 400, 250)  
 mid\_point\_count(300, 250, 400, 250)  
 mid\_point\_count(300, 250, 300, 150)  
 mid\_point\_count(300, 150, 400, 150)  
  
  
 glutSwapBuffers()  
  
  
glutInit()  
glutInitDisplayMode(GLUT\_RGBA)  
glutInitWindowSize(650, 650)  
glutInitWindowPosition(0, 0)  
wind = glutCreateWindow(b"Assignment2\_Task1. ID: 19101652")  
glutDisplayFunc(showScreen)  
  
glutMainLoop()

from OpenGL.G

