ID : 20101113

from OpenGL.GL import \*

from OpenGL.GLUT import \*

from OpenGL.GLU import \*

def draw(x, y):

glPointSize(8)

glBegin(GL\_POINTS)

glVertex2f(x, y)

glEnd()

def FindZone(dx, dy):

dx1, dy1 = abs(dx), abs(dy)

if dx >= 0 and dy >= 0 and dy1 <= dx1:

return 0

elif dx >= 0 and dy >= 0 and dy1 >= dx1:

return 1

elif dx < 0 and dy > 0 and dy1 >= dx1:

return 2

elif dx < 0 and dy > 0 and dy1 <= dx1:

return 3

elif dx < 0 and dy < 0 and dx1 >= dy1:

return 4

elif dx < 0 and dy < 0 and dy1 >= dx1:

return 5

elif dx > 0 and dy < 0 and dy1 >= dx1:

return 6

elif dx > 0 and dy < 0 and dy1 <= dx1:

return 7

def ConvertToZone0(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, -x1

elif zone == 6:

return -y1, x1, -y2, x2

elif zone == 7:

return x1, -y1, x2, -y2

def OriginalZone(x, y, zone):

if zone == 0:

return x, y

elif zone == 1:

return y, x

elif zone == 2:

return -y, x

elif zone == 3:

return -x, y

elif zone == 4:

return -x, -y

elif zone == 5:

return -y, -x

elif zone == 6:

return y, -x

elif zone == 7:

return x, -y

def MidPointLine(x1, y1, x2, y2):

dx = x2 - x1

dy = y2 - y1

zone = FindZone(dx, dy)

x1, y1, x2, y2 = ConvertToZone0(x1, y1, x2, y2, zone)

nx = []

ny = []

d = []

dx = x2 - x1

dy = y2 - y1

d\_init = 2 \* dy - dx

d += [d\_init]

NE = 2 \* dy - 2 \* dx

E = 2 \* dy

x = x1

y = y1

while x <= x2:

nx += [x]

ny += [y]

sx, ex = OriginalZone(x, y, zone)

draw(sx, ex)

x = x + 1

if d\_init > 0:

y = y + 1

d\_init = d\_init + NE

else:

d\_init = d\_init + E

d += [d\_init]

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(0.0, 0.0, 2.0)

# Drawing the number 1

MidPointLine(160, 420, 250, 470)

MidPointLine(160, 140, 300, 140)

MidPointLine(250, 140, 250, 470)

# Drawing the number 3

MidPointLine(490, 140, 490, 470)

MidPointLine(350, 470, 490, 470)

MidPointLine(350, 140, 490, 140)

MidPointLine(350, 300, 490, 300)

glutSwapBuffers()

glutInit()

glutInitDisplayMode(GLUT\_RGBA)

glutInitWindowSize(720, 640)

glutInitWindowPosition(0, 0)

wind = glutCreateWindow(b"Lab 2 - 20101113")

glutDisplayFunc(showScreen)

glutMainLoop()

