CSE 423

Lab Assignment 1

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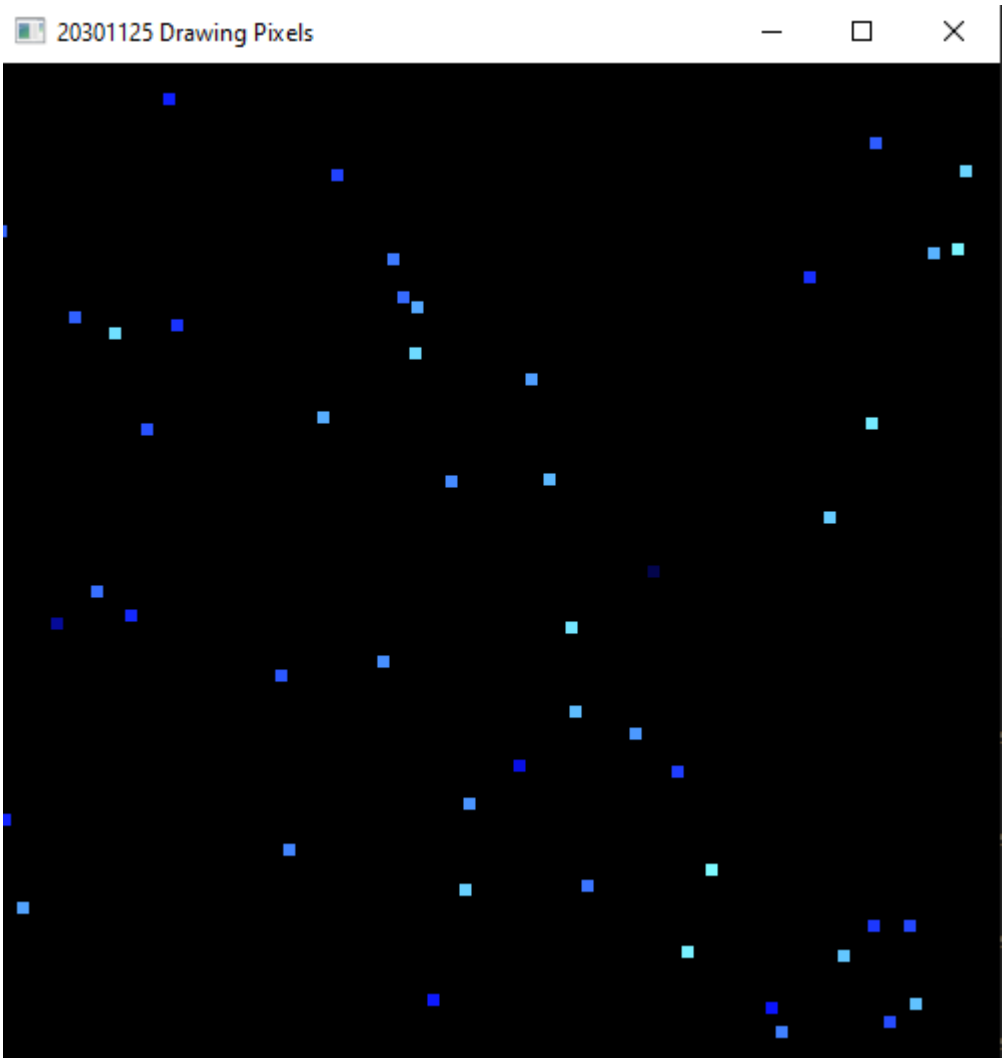
SEC: 05

Task 1

```
import random

from OpenGL.GL import *
from OpenGL.GLUT import *
from OpenGL.GLU import *



#def draw_points(x, y):

def draw_points(a, b):
    glPointSize(6) #pixel size. by default 1 thake
    glBegin(GL_POINTS)
    glVertex2f(a, b)
    glEnd()



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, 0.0, 0.0) #konokichur color set (RGB)
    #call the draw methods here
    #draw_points()
    for i in range(50):
        a = random.randint(1, 490)
        b = random.randint(1, 490)
        glColor3f(0.01*i, 0.02*i, 0.3*i)
        draw_points(a, b)
    glutSwapBuffers()



glutInit()
glutInitDisplayMode(GLUT_RGBA)
glutInitWindowSize(500, 500) #window size
glutInitWindowPosition(0, 0)
wind = glutCreateWindow(b"Drawing Pixels") #window name
glutDisplayFunc(showScreen)

glutMainLoop()
```


20301125 Drawing Pixels

Task 2

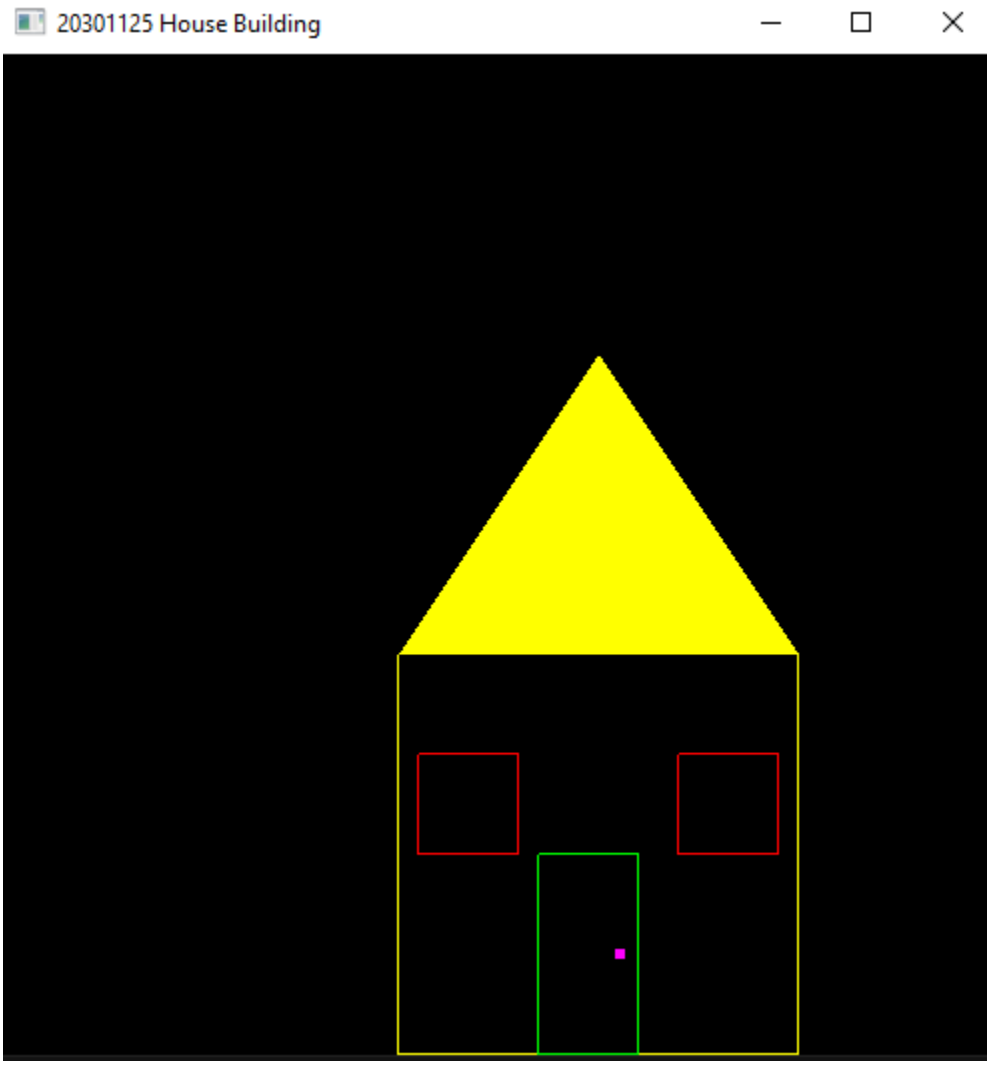
```
import random

from OpenGL.GL import *
from OpenGL.GLUT import *
from OpenGL.GLU import *

def draw_quads(a, b):      #200,0
        glPointSize(1) #pixel size. by default 1 thake
        glBegin(GL_LINES)
        glVertex2f(a, b)    # starting point of trunk     #200,0
        glVertex2f(a+200, b) #400, 0
        glVertex2f(a+200, b) #400, 0
        glVertex2f(a+200, a)     #400, 200
        glVertex2f(a+200, a)     #400, 200
        glVertex2f(a, a)      #200, 200
        glVertex2f(a, a)      #200, 200
        glVertex2f(a, b) #400, 0
        #glVertex2f(a+200, a)     #400, 200
        #glVertex2f(a+200, b) #400, 0
        glEnd()


def window(a, b):      #210, 100
        glPointSize(1) #pixel size. by default 1 thake
        glBegin(GL_LINES)
        glVertex2f(a, b)    # starting point of trunk      #210, 100
```

```
        glVertex2f(a+50, b)      #260, 100
        glVertex2f(a+50, b)      #260, 100
        glVertex2f(a+50, b+50)      #260, 150
        glVertex2f(a+50, b+50)      #260, 150
        glVertex2f(a, b+50)         #210, 150
        glVertex2f(a, b+50)         #210, 150
        glVertex2f(a, b)
        glEnd()


def door(a, b):      #270, 0
        glPointSize(1) #pixel size. by default 1 thake
        glBegin(GL_LINES)
        glVertex2f(a, b)    # starting point of trunk #270, 0
        glVertex2f(a+50, b)             #320, 0
        glVertex2f(a+50, b)             #320, 0
        glVertex2f(a+50, b+100)      #320, 100
        glVertex2f(a+50, b+100)      #320, 100
        glVertex2f(a, b+100)            #270, 100
        glVertex2f(a, b+100)            #270, 100
        glVertex2f(a, b)
        glEnd()
'''
def draw_triangle():
        glPointSize(10) #pixel size. by default 1 thake
        glBegin(GL_LINES)
        glVertex2f(200, 200)    # starting point of trunk
        glVertex2f(300, 350)
```

```
        glVertex2f(300, 350)
        glVertex2f(400, 200)
        glEnd()
'''
def draw_triangle():
        glPointSize(10) #pixel size. by default 1 thake
        glBegin(GL_TRIANGLES)
        glVertex2f(200, 200)    # starting point of trunk
        glVertex2f(400, 200)
        glVertex2f(300, 350)



        glEnd()

def draw_points(a, b):
        glPointSize(5) #pixel size. by default 1 thake
        glBegin(GL_POINTS)
        glVertex2f(a, b)
        glEnd()



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, 0.0) #konokichur color set (RGB)
    #call the draw methods here
    #draw_points()
    #for i in range(50):
    #    a = random.randint(0, 500)
    #    b = random.randint(0, 500)
    #    draw_points(a, b)
    draw_quads(200, 0)

    glColor3f(1.0, 0.0, 0.0)    # konokichur color set (RGB)
    window(210, 100)
    glColor3f(1.0, 0.0, 0.0)
    window(340, 100)
    glColor4f(1.0, 1, 0.0, 0.0)
    draw_triangle()
    glColor3f(0.0, 1.0, 0.0)
    door(270, 0)
    glColor3f(1.0, 0.0, 1.0)
    draw_points(310, 50)
    # call the draw methods here
    # draw_points()
```

```
    # for i in range(50):
    #     a = random.randint(0, 500)
    #     b = random.randint(0, 500)
    #     draw_points(a, b)
    #draw_quads(150, 250)
    #draw_triangle()
    #draw_points(300, 300)
    glutSwapBuffers()



glutInit()
glutInitDisplayMode(GLUT_RGBA)
glutInitWindowSize(500, 500) #window size
glutInitWindowPosition(0, 0)
wind = glutCreateWindow(b"20301125 House Building") #window name
glutDisplayFunc(showScreen)

glutMainLoop()
```


20301125 House Building

TASK 3

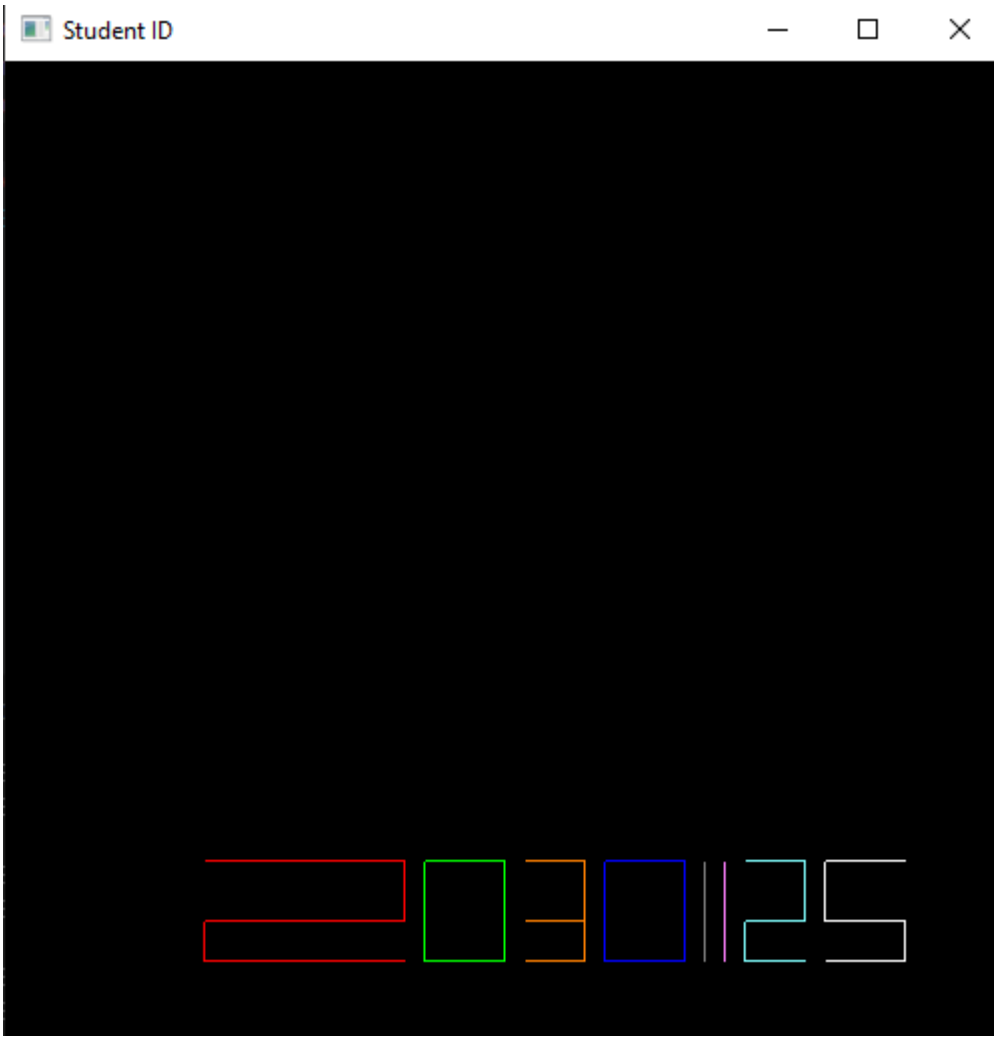
```
import random
from OpenGL.GL import *
from OpenGL.GLUT import *
from OpenGL.GLU import *
def draw_line():
    glPointSize(10) #pixel size. by default 1 thake
    glBegin(GL_LINES)
    glVertex2f(250, 150)    # starting point of trunk
    glVertex2f(150, 250)
    glVertex2f(250, 150)    # starting point of trunk
    glVertex2f(350, 150)
    glVertex2f(150, 250)    # starting point of trunk
    glVertex2f(250, 350)
    glVertex2f(250, 350)    # starting point of trunk
    glVertex2f(350, 350)
    glVertex2f(350, 350)
    glVertex2f(450, 250)
    glVertex2f(450, 250)
    glVertex2f(350, 150)
    glEnd()
def draw_two(x=100, a=100, b=200, c=70, d=50):
    glPointSize(10)
    glBegin(GL_LINES)
    glVertex2f(x, a)
    glVertex2f(b, a)
    glVertex2f(b, a)
```

```
        glVertex2f(b, c)
        glVertex2f(b, c)
        glVertex2f(x, c)
        glVertex2f(x, c)
        glVertex2f(x, d)
        glVertex2f(b, d)
        glVertex2f(x, d)
        glEnd()

def draw_zero(a=210, b=250, c=100, d=50):
        glPointSize(10)
        glBegin(GL_LINES)
        glVertex2f(a, c)
        glVertex2f(b, c)
        glVertex2f(b, c)
        glVertex2f(b, d)
        glVertex2f(b, d)
        glVertex2f(a, d)
        glVertex2f(a, d)
        glVertex2f(a, c)
        glEnd()

def draw_three(a=260, b=290, c=100, d=50):
        glPointSize(10)
        glBegin(GL_LINES)
        glVertex2f(a, c)
        glVertex2f(b, c)
```

```
        glVertex2f(b, c)
        glVertex2f(b, d)
        glVertex2f(a, c-30)
        glVertex2f(b, c-30)
        glVertex2f(b, d)
        glVertex2f(a, d)

        glEnd()

def draw_one(a=350, c=100, d=50):
        glPointSize(10)
        glBegin(GL_LINES)
        glVertex2f(a, c)
        glVertex2f(a, d)
        glEnd()

def draw_five(x=100, a=100, b=200, c=70, d=50):
        glPointSize(10)
        glBegin(GL_LINES)
        glVertex2f(x, a)
        glVertex2f(b, a)
        glVertex2f(x, a)
        glVertex2f(x, c)
        glVertex2f(b, c)
        glVertex2f(x, c)
        glVertex2f(b, c)
        glVertex2f(b, d)
```

```
        glVertex2f(b, d)
        glVertex2f(x, d)
        glEnd()


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, 0.0, 0.0) #konokichur color set (RGB)
        draw_two()
        glColor3f(0.0, 1.0, 0.0)
        draw_zero()
        glColor4f(1.0, 0.5, 0.0, 0.0)
        draw_three()
        glColor3f(0.0, 0.0, 1.0)
        draw_zero(300, 340)
        glColor3f(0.5, 0.5, 0.5)
        draw_one()
```

```
        glColor3f(2.0, 0.5, 1.0) #lillac
        draw_one(a=360)
        glColor3f(0.5, 1.0, 1.0)
        draw_two(x=370, b=400)
        glColor4f(1.0, 1.0, 1.0, 0.0) #CMYK
        draw_five(x=410, b=450)
        glutSwapBuffers()



glutInit()
glutInitDisplayMode(GLUT_RGBA)
glutInitWindowSize(500, 500) #window size
glutInitWindowPosition(0, 0)
wind = glutCreateWindow(b"Student ID") #window name
glutDisplayFunc(showScreen)

glutMainLoop()
```


Student ID
2030125