ICS2311 CAT on transformations and shapes – due 13th march 5pm

Send to JKUATnotes8@gmail.com with subject as MARCHCAT1:ICS2311: Your name

1. Ensure that all your drawings have coordinates (x.y) labelled and scaled
2. Zip all your OpenGL codes and for each program clearly label the codes even at the comment sections
3. Individual work is expected

QUESTION 1- Circle Drawing and triangle

a) Using OpenGL, write a program that draws a circle using Brensenham circle drawing algorithm: The parameters for the circle are as follows – the radius should be 4 Centimeters and the starting point coordinates are (1,1)

(i) write an OpenGL program to rotate the Circle 60 degrees clockwise and fill it with red shade (hint RGB # hex ff0000)

b) Using OpenGL, Write a program to draw a triangle with vertices (-1,6 ; 2,0; -4,9)

i)Draw a Circle round the triangle (Circumscribed)-the circle should be in red color

QUESTION 2- Ellipse drawing

a) Using Open GL and midpoint ellipse algorithm, draw an ellipse with centre as (1,2) given by

$$\frac{(x-2)^2}{36}+\frac{(y+1)^2}{25}=1$$

i) Apply the flood-fill algorithm in OpenGL to fill the interior of the above ellipse with orange color (#FFA500)

QUESTION 3- SQUARE drawing

a)Using OpenGL Draw a square with coordinate points A(0, 4), B(3, 4),

C(4, 0), D(0, 0).

(i) Apply the translation with distance 2 towards X axis and 2 towards Y axis. Obtain the new coordinates of the square.

(ii) write an OpenGL program to rotate the translated figure with rotation angle = θ = 55º

QUESTION 4- Polygon drawing

a) Using OpenGL draw a filled polygon with the following dimensions (8,4;2,4;0,8;3,12;7,12;10,8) hint (GL POLYGON function) might be useful

(i). Write a function in OpenGL to fill the polygon above in Red color

(#FF0000.)

(ii). Write OpenGL program to scale up (scaling) the polygon by a factor of 2

(ii) Write a procedure in OpenGL to fill the interior of the given polygon above with shades of green asterisks

QUESTION 5-PARABOLA Drawing

a) Use the midpoint method and symmetry considerations to scan convert the parabola

x=y2 for the interval - 10 ≤ y ≤10

Show the working of the method and implement it using OpenGL