COMPUTER GRAPHICS & VISUAL COMPUTING

ASSIGNMENT 1

Attn : Students of BE (CSE) VI Semester

Last Date : 06-May-2017

Q1. Draw various shapes using library functions available in programming language.

Q2. Write a program to implement DDA and Bresenham's Algorithm to draw straight line.

Q3. Implement line drawing algorithm to generic line function which can support to draw following attributes.

The prototype of proposed functions is

MyLine(X1, Y1, X2, Y2, *Type*, *Color*)

Type: Dotted, Dashed, Center-Line etc.

Width: single, double, three times, five times

Color: color1, color2, color3 etc

Q4. Write a program to visualize the given data set(s) using various types of graphs

Example: Line, Bar, Pie

Note:

Your program should able to appropriately scale automatically.

Find value of unknown parameter using graph method and verify by computation method and show by visual method.

Extend the program such that the scales of x-axis and y-axis are chosen automatically

Q5. Implement circle drawing algorithm to user defined function to display generic circle or part of the circle i.e. Half circle, Quarter Circle, or any part of circle.

CIRCLE(x, y, r, peremeter_color, theta1, theta2, peremeter_type, fill_or_hollow)

Q6. Write a program to show a moving wheel, the speed and direction shall be customized i.e. Fast/Slow and Clockwise/Anticlockwise.

(Rajesh Purohit)

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ASSIGNMENT 2

Last Date : 20-May, 2017

Attn : Students of BE (CSE) VI Semester

Q1. Write a program to check whether a given point is inside or outside the polygon.

Q2. Write a program to find relation between two polygons. The relation can be
i. Intersecting ii. Non-intersecting iii. Surrounding

Q3. Write a program to implement scan-line filling algorithm for filling a polygon.

Q4. Write a program to fill a polygon using boundary fill method.(4-connected and 8-connected)
To understand the recursive behavior observe the order in which the filling takes place

Q5. Write a program to fill a polygon using flood-fill method.(4-connected and 8-connected)

Q6. Write a program to clip points w.r.t. a given window.

Q7. Write a program to clip a line w.r.t. a given rectangular window using Sutherland Conhen method.

Q8. Write a program to perform following transformations a given polygon(triangle with pts (20,20), (40,40), (60,20)) using module for matrix multiplication. Draw four equal quadrants on monitor and display original polygon using white color and transformed polygon using red color.

i. Translation
ii. Scaling
   a. Double in both directions w.r.t. origin.
   b. 3 times in x and 4 time in y direction w.r.t. centroid..
iii, Rotation
   a. By 90° in anticlockwise direction w.r.t. (0, 0).
   b. By 90° in anticlockwise direction w.r.t. (40, 40).
   c. With respect to an arbitrary pivot point (x, y)
iv. Reflection
   a. With respect to x-axis
   b. With respect to y-axis
   c. With respect to an arbitrary line.
v. Shearing
   a. With respect to (0,0).
   b. With respect to (20,20).

(Rajesh Purohit)