****RV COLLEGE OF ENGINEERING**

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**PROGRAM 4**

Write a program to fill any given polygon using scan-line area filling algorithm

#include <GL/glut.h>

#include<Windows.h>

float x1, x2, x3, x4, y1, y2, y3, y4;

void edgedetect(float x1, float y1, float x2, float y2, int\* le, int\* re)

{

float mx, x, temp;

int i;

if ((y2 - y1) < 0)

{

temp = y1;y1 = y2;y2 = temp;

temp = x1;x1 = x2;x2 = temp;

}

if ((y2 - y1) != 0)

mx = (x2 - x1) / (y2 - y1);

else mx = x2 - x1;

x = x1;

for (i = y1;i <= y2;i++)

{

if (x < (float)le[i])

le[i] = (int)x;

if (x > (float)re[i])

re[i] = (int)x;

x += mx;

}

}

void draw\_pixel(int x, int y)

{

glColor3f(1.0, 0.0, 0.0);

Sleep(10); // To set the delay time

glBegin(GL\_POINTS);

glVertex2i(x, y);

glEnd();

glFlush();

}

void scanfill(float x1, float y1, float x2, float y2, float x3, float y3, float x4, float y4)

{

int le[500], re[500], i, y;

for (i = 0;i < 500;i++)

{

le[i] = 500;

re[i] = 0;

}

edgedetect(x1, y1, x2, y2, le, re);

edgedetect(x2, y2, x3, y3, le, re);

edgedetect(x3, y3, x4, y4, le, re);

edgedetect(x4, y4, x1, y1, le, re);

for (y = 0;y < 500;y++)

{

if (le[y] <= re[y])

for (i = (int)le[y];i < (int)re[y];i++)

draw\_pixel(i, y);

}

}

void display()

{

x1 = 200.0;y1 = 200.0;x2 = 100.0;y2 = 300.0;x3 = 200.0;y3 = 400.0;x4 = 300.0;y4 = 300.0;

glClear(GL\_COLOR\_BUFFER\_BIT);

glColor3f(0.0, 0.0, 1.0);

glBegin(GL\_LINE\_LOOP);

glVertex2f(x1, y1);

glVertex2f(x2, y2);

glVertex2f(x3, y3);

glVertex2f(x4, y4);

glEnd();

scanfill(x1, y1, x2, y2, x3, y3, x4, y4);

glFlush();

}

void myinit()

{

glClearColor(1.0, 1.0, 1.0, 1.0);

glColor3f(1.0, 0.0, 0.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(0.0, 499.0, 0.0, 499.0);

}

void main(int argc, char\*\* argv)

{

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);

glutInitWindowSize(500, 500);

glutCreateWindow("Filling a Polygon using Scan-line Algorithm");

glutDisplayFunc(display);

myinit();

glutMainLoop();

}

Output:

