

UCS1712 – GRAPHICS AND MULTIMEDIA LAB

Ex. No. 2 DDA Line Drawing Algorithm in C++ using OpenGL

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Question:

To plot points that make up the line with endpoints (x_0, y_0) and (x_n, y_n) using DDA line drawing algorithm.

Case 1: +ve slope Left to Right line

Case 2: +ve slope Right to Left line

Case 3: -ve slope Left to Right line

Case 4: -ve slope Right to Left line Each case has two subdivisions (i) $|m| \leq 1$ (ii) $|m| > 1$

Note that all four cases of line drawing must be given as test cases.

Code:

```
#include<GL/glut.h>
#include<stdio.h>
#include<iostream>

using namespace std;

float x1_arr, y1_arr, x2_arr, y2_arr;

void myInit()
{
    glClearColor(1.0,1.0,1.0,0.0);
    gluOrtho2D(-100,100,-100,100);
}

void myDisplay()
{
    glClear(GL_COLOR_BUFFER_BIT);
    float dy,dx,step,x,y,k,Xin,Yin;
    float x1, y1, x2, y2;

    x1 = x1_arr;
    y1 = y1_arr;
    x2 = x2_arr;
    y2 = y2_arr;
```

```

dx=x2-x1;
dy=y2-y1;

if(abs(dx)> abs(dy))
{
step = abs(dx);
}
else
step = abs(dy);

Xin = dx/step;
Yin = dy/step;

x= x1;
y=y1;

glColor3f(0.0,0.0,0.0);
glBegin(GL_POINTS);
glVertex2f(x,y);
glEnd();

for (k=1 ;k<=step;k++)
{
x= x + Xin;
y= y + Yin;

glColor3f(0.0,0.0,0.0);
glBegin(GL_POINTS);
glVertex2i(x,y);
glEnd();
}

glFlush();

}

int main(int argc,char* argv[])
{
int temp1,temp2,temp3,temp4;
cin>>temp1;
cin>>temp2;
cin>>temp3;
cin>>temp4;
x1_arr = temp1;

```

```
y1_arr = temp2;  
x2_arr = temp3;  
y2_arr = temp4;  
  
glutInit(&argc,argv);  
glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);  
glutInitWindowSize (500, 500);  
glutInitWindowPosition (100,100);  
glutCreateWindow("check");  
glutDisplayFunc(myDisplay);  
myInit();  
glutMainLoop();  
return 1;  
}
```

Output:

