**//DDA on OpenGL**

**#include <stdio.h>**

**#include <math.h>**

**#include <GL/glut.h>**

**double X1, Y1, X2, Y2;**

**float round\_value(float v)**

**{**

**return floor(v + 0.5);**

**}**

**void LineDDA(void)**

**{**

**double dx=(X2-X1);**

**double dy=(Y2-Y1);**

**double steps;**

**float xInc,yInc,x=X1,y=Y1;**

**/\* Find out whether to increment x or y \*/**

**steps=(abs(dx)>abs(dy))?(abs(dx)):(abs(dy));**

**xInc=dx/(float)steps;**

**yInc=dy/(float)steps;**

**/\* Clears buffers to preset values \*/**

**glClear(GL\_COLOR\_BUFFER\_BIT);**

**/\* Plot the points \*/**

**glBegin(GL\_POINTS);**

**/\* Plot the first point \*/**

**glVertex2d(x,y);**

**int k;**

**/\* For every step, find an intermediate vertex \*/**

**for(k=0;k<steps;k++)**

**{**

**x+=xInc;**

**y+=yInc;**

**/\* printf("%0.6lf %0.6lf\n",floor(x), floor(y)); \*/**

**glVertex2d(round\_value(x), round\_value(y));**

**}**

**glEnd();**

**glFlush();**

**}**

**void Init()**

**{**

**/\* Set clear color to white \*/**

**glClearColor(1.0,1.0,1.0,0);**

**/\* Set fill color to black \*/**

**glColor3f(0.0,0.0,0.0);**

**/\* glViewport(0 , 0 , 640 , 480); \*/**

**/\* glMatrixMode(GL\_PROJECTION); \*/**

**/\* glLoadIdentity(); \*/**

**gluOrtho2D(0 , 640 , 0 , 480);**

**}**

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

**{**

**printf("Enter two end points of the line to be drawn:\n");**

**printf("\n\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");**

**printf("\nEnter Point1( X1 , Y1):\n");**

**scanf("%lf%lf",&X1,&Y1);**

**printf("\n\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");**

**printf("\nEnter Point1( X2 , Y2):\n");**

**scanf("%lf%lf",&X2,&Y2);**

**/\* Initialise GLUT library \*/**

**glutInit(&argc,argv);**

**/\* Set the initial display mode \*/**

**glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);**

**/\* Set the initial window position and size \*/**

**glutInitWindowPosition(0,0);**

**glutInitWindowSize(640,480);**

**/\* Create the window with title "DDA\_Line" \*/**

**glutCreateWindow("DDA\_Line");**

**/\* Initialize drawing colors \*/**

**Init();**

**/\* Call the displaying function \*/**

**glutDisplayFunc(LineDDA);**

**/\* Keep displaying untill the program is closed \*/**

**glutMainLoop();**

**}**