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//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 */
```

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      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();
}
```