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//Bresenhams line drawing algorithm

#include<GL/glut.h>
#include<iostream>
#include<stdlib.h>
using namespace std;

int x1,x2,y1,y2;
void simpleline();
void Dashedline();
void Dottedline();

float dy,dx,e,i,x,y;
void display()
{
	cout<<"\nSimple Line\n";
	simpleline();
	cout<<"\nDashed Line\n";
	Dashedline();
	cout<<"\nDotted Line\n";
	Dottedline();
}
void simpleline ()
{
	cout<<"Enter the value of x1,y1:";
	cin>>x1>>y1;
	cout<<"Enter the value of x2,y2:";
	cin>>x2>>y2;

	dx=x2-x1;
	dy=y2-y1;
	e = 2*dy - dx;
	x=x1;
	y=y1;

	glClear (GL_COLOR_BUFFER_BIT);
	glColor3f (0.0, 1.0, 0.0);
	glBegin(GL_POINTS);
	glVertex2i(x,y);
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        int i;
        for(i=0;i<dx;i++)
        {
                if(e>0)
                {
                        y = y+1;
                        e=e-2*dx;
                }
                x = x+1;
                e=e+2*dy;
                glVertex2i(x,y);

        }

        glEnd();
        glFlush();
}
void Dottedline ()
{
        cout<<"Enter the value of x1,y1:";
        cin>>x1>>y1;
        cout<<"Enter the value of x2,y2:";
        cin>>x2>>y2;

        dx=x2-x1;
        dy=y2-y1;
        e = 2*dy - dx;
        x=x1;
        y=y1;

        glClear (GL_COLOR_BUFFER_BIT);
        glColor3f (0.0, 1.0, 0.0);
        glBegin(GL_POINTS);
        glVertex2i(x,y);

        int i;
        for(i=0;i<dx;i++)
        {
                if(e>0)
                {
                        y = y+1;
                        e=e-2*dx;
                }
                x = x+1;
                e=e+2*dy;
                if(i%2==0)
                        glVertex2i(x,y);

        }

        glEnd();
        glFlush();
}
void Dashedline ()
{
        cout<<"Enter the value of x1,y1:";
        cin>>x1>>y1;
        cout<<"Enter the value of x2,y2:";
        cin>>x2>>y2;

        dx=x2-x1;
        dy=y2-y1;
        e = 2*dy - dx;
        x=x1;
        y=y1;

        glClear (GL_COLOR_BUFFER_BIT);
        glColor3f (0.0, 1.0, 0.0);
        glBegin(GL_POINTS);
        glVertex2i(x,y);

        int i;
        for(i=0;i<dx;i++)
        {
                if(e>0)
                {
                        y = y+1;
                        e=e-2*dx;
                }
                x = x+1;
                e=e+2*dy;
                if(i%5==0)
                glVertex2i(x,y);

        }

        glEnd();
        glFlush();
}
void init(void)
{
        glClearColor (0.0, 0.0, 0.0, 0.0);
        glMatrixMode(GL_PROJECTION);
        glLoadIdentity();
        gluOrtho2D(-100.0, 100.0, -100.0, 100.0);
}

int main(int argc, char** argv)
{
        glutInit(&argc, argv);
        glutInitDisplayMode (GLUT_SINGLE | GLUT_RGB);
        glutInitWindowSize (500, 500);
        glutInitWindowPosition (100, 100);
        glutCreateWindow ("Breshanman Line Algorithm ");
        init ();
        glutDisplayFunc(display);
        glutMainLoop();
        return 0;
}
```