#include<GL/glut.h>

#include<string.h>

#include<stdio.h>

#include<iostream>

using namespace std;

int count=0, x1=0, y1=0, y2=0, x2=0;

bool flag=true;

int cohen\_xmin, cohen\_xmax, cohen\_ymin, cohen\_ymax;

int code(float x,float y)

{

int c=0;

if(y>cohen\_ymax)c=8;

if(y<cohen\_ymin)c=4;

if(x>cohen\_xmax)c=c|2;

if(x<cohen\_xmin)c=c|1;

return c;

}

void ScreenClear()

{

glClear(GL\_COLOR\_BUFFER\_BIT);//clearing Screen

glBegin(GL\_LINE\_LOOP);

glColor3f(1.000, 1.000, 0.000);

glVertex2f(100,100);

glVertex2f(500,100);

glVertex2f(500,300);

glVertex2f(100,300);

glEnd();

glFlush();

}

void clipLine (float x1, float y1, float x2, float y2)

{

float x\_1=x1, x\_2=x2, y\_1=y1, y\_2=y2;

float xd1=x1, xd2=x2, yd1=y1, yd2=y2;

float m = (y2-y1)/(x2-x1);

if(x1<100)

{

x1=100;

y1=y2-(m\*(x2-x1));

}

if(x2<100)

{

x2=100;

y2=(m\*(x2-x1))+y1;

}

if(y1<100)

{

y1=100;

x1=x2-((1/m)\*(y2-y1));

}

if(y2<100)

{

y2=100;

x2=((1/m)\*(y2-y1))+x1;

}

if(x1>500)

{

x1=500;

y1=y2-(m\*(x2-x1));

}

if(x2>500)

{

x2=500;

y2=(m\*(x2-x1))+y1;

}

if(y1>300)

{

y1=300;

x1=x2-((1/m)\*(y2-y1));

}

if(y2>300)

{

y2=300;

x2=((1/m)\*(y2-y1))+x1;

}

glBegin(GL\_LINES);//Drawing clipped Line

glColor3f(0.2,0.2,0.8);

glVertex2f(x1,y1);

glVertex2f(x2,y2);

glEnd();

glFinish();

glBegin(GL\_LINES);//Drawing clipped Line

glColor3f(0.0,0.0,1.0);

glVertex2f(x1,y1);

glVertex2f(x2,y2);

glEnd();

glFinish();

}

void mouse\_click(int button, int state, int x, int y)

{

if(button == GLUT\_LEFT\_BUTTON && state == GLUT\_DOWN)

{

if (flag==true)

{

x1=x;

y1=y;

flag=false;

count++;

}

else

{

x2=x;

y2=y;

flag =true;

count++;

}

if(count==2)

{

glBegin(GL\_LINES);

glColor3f(1.0,0.0,0.0);

glVertex2f(x1,y1);

glVertex2f(x2,y2);

glEnd();

glFinish();

clipLine(x1,y1,x2,y2);

count=0;

}

}

}

void Keypress(unsigned char key, int x, int y)

{

if(key==32)

{

ScreenClear();

}

}

void display()

{

glClear(GL\_COLOR\_BUFFER\_BIT);//clearing Screen

glBegin(GL\_LINE\_LOOP);

glColor3f(1.000, 1.000, 0.000);

glVertex2f(100,100);

glVertex2f(500,100);

glVertex2f(500,300);

glVertex2f(100,300);

glEnd();

glFlush();

}

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

{

glutInit(&argc, argv);

glutInitDisplayMode(GLUT\_SINGLE | GLUT\_RGB);

glutInitWindowPosition(80, 80);

glutInitWindowSize(600, 600);

glutCreateWindow("Cohen Sutherland");

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(0,600,600,0);

glutDisplayFunc(display);

glutMouseFunc(mouse\_click);

glutKeyboardFunc(Keypress);

glutMainLoop();

}