#include <windows.h>

#include <GL/glut.h>

#include <stdio.h>

void initGL() {

glClearColor(1.0f, 1.0f, 1.0f, 1.0f);

}

void idle() {

glutPostRedisplay();

}

void rectangle(int x0, int y0, int x1, int y1){

glBegin(GL\_LINES);

glColor3f(1.0f, 0.0f, 0.0f);

glVertex2d(x0, y0);

glVertex2d(x0, y1);

glVertex2d(x0, y1);

glVertex2d(x1, y1);

glVertex2d(x1, y1);

glVertex2d(x1, y0);

glVertex2d(x1, y0);

glVertex2d(x0, y0);

glEnd();

}

void line(int x0, int y0, int x1, int y1, int c){

glBegin(GL\_LINES);

glColor3f(c/2, c, 1.0f);

glVertex2d(x0, y0);

glVertex2d(x1, y1);

glEnd();

}

void display() {

glClear(GL\_COLOR\_BUFFER\_BIT);

int i;

int x1,y1,x2,y2,xmin,xmax,ymin,ymax,xx1,xx2,yy1,yy2,dx,dy;

float t1,t2,p[4],q[4],temp;

x1=150;

y1=300;

x2=300;

y2=300;

xmin=100;

ymin=100;

xmax=350;

ymax=250;

rectangle(xmin,ymin,xmax,ymax);

line(x1, y1, x2, y2, 1);

dx=x2-x1;

dy=y2-y1;

p[0]=-dx;

p[1]=dx;

p[2]=-dy;

p[3]=dy;

q[0]=x1-xmin;

q[1]=xmax-x1;

q[2]=y1-ymin;

q[3]=ymax-y1;

for(i=0;i<4;i++){

if(p[i]==0){

if(q[i]>=0){

if(i<2){

if(y1<ymin){

y1=ymin;

}

if(y2>ymax){

y2=ymax;

}

}

else{

if(x1<xmin){

x1=xmin;

}

if(x2>xmax){

x2=xmax;

}

}

}

}

}

t1=0;

t2=1;

for(i=0;i<4;i++){

temp=q[i]/p[i];

if(p[i]<0){

if(t1<=temp)

t1=temp;

}

else{

if(t2>temp)

t2=temp;

}

}

if(t1<t2){

xx1 = x1 + t1 \* p[1];

xx2 = x1 + t2 \* p[1];

yy1 = y1 + t1 \* p[3];

yy2 = y1 + t2 \* p[3];

line(xx1, yy1, xx2, yy2, 0);

}

glFlush();

}

void reshape(GLsizei width, GLsizei height) {

glViewport(0, 0, width, height);

glLoadIdentity();

gluOrtho2D(0, width, 0, height);

}

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

glutInit(&argc, argv);

glutInitWindowSize(400, 400);

glutInitWindowPosition(100, 100);

glutCreateWindow("Assignment 6 - Question 1");

glutDisplayFunc(display);

glutReshapeFunc(reshape);

glutIdleFunc(idle);

initGL();

glutMainLoop();

return 0;

}