#include <iostream>

// https://www.youtube.com/watch?v=QHuhr9JKHlE

#include <graphics.h>

// #include<math.h>

int main()

{

int a[4], b[4];

float m, xnew, ynew;

float xl = 100, yl = 100, xh = 300, yh = 300, xa = 10, ya = 200, xb = 250, yb = 150;

int gd = DETECT, gm;

initgraph(&gd, &gm, NULL);

setcolor(5);

line(xa, ya, xb, yb);

setcolor(12);

rectangle(xl, yl, xh, yh);

m = (yb - ya) / (xb - xa);

//checking outcodes

if (xa < xl)

a[3] = 1;

else

a[3] = 0;

if (xa > xh)

a[2] = 1;

else

a[2] = 0;

if (ya < yl)

a[1] = 1;

else

a[1] = 0;

if (ya > yh)

a[0] = 1;

else

a[0] = 0;

if (xb < xl)

b[3] = 1;

else

b[3] = 0;

if (xb > xh)

b[2] = 1;

else

b[2] = 0;

if (yb < yl)

b[1] = 1;

else

b[1] = 0;

if (yb > yh)

b[0] = 1;

else

b[0] = 0;

printf("press a key to continue");

getch();

if (a[0] == 0 && a[1] == 0 && a[2] == 0 && a[3] == 0 && b[0] == 0 && b[1] == 0 && b[2] == 0 && b[3] == 0)

{

printf("no clipping");

line(xa, ya, xb, yb);

}

else if (a[0] && b[0] || a[1] && b[1] || a[2] && b[2] || a[3] && b[3])

{

// clrscr();

printf("line discarded");

rectangle(xl, yl, xh, yh);

}

else

{

if (a[3] == 1 && b[3] == 0)

{

ynew = (m \* (xl - xa)) + ya;

setcolor(12);

rectangle(xl, yl, xh, yh);

setcolor(0);

line(xa, ya, xb, yb);

setcolor(15);

line(xl, ynew, xb, yb);

}

else if (a[2] == 1 && b[2] == 0)

{

ynew = (m \* (xh - xa)) + ya;

setcolor(12);

rectangle(xl, yl, xh, yh);

setcolor(0);

line(xa, ya, xb, yb);

setcolor(15);

line(xl, ynew, xb, yb);

}

else if (a[1] == 1 && b[1] == 0)

{

xnew = xa + (yl - ya) / m;

setcolor(0);

line(xa, ya, xb, yb);

setcolor(15);

line(xnew, yh, xb, yb);

}

else if (a[0] == 1 && b[0] == 0)

{

xnew = xa + (yh - ya) / m;

setcolor(0);

line(xa, ya, xb, yb);

setcolor(15);

line(xnew, yh, xb, yb);

}

}

getch();

closegraph();

return 0;

}