

**Department of Computer Science & Engineering(CSE)**

**Lab -10**

Name : Jabed Iqbal Joy

Student ID : C193049

Semester : 7th

Section : 7BM

Email : c193049@ugrad.iiuc.ac.bd

Contact : 01837844828

Course Code : CSE-4742

Course Title : Computer Graphics Lab

Name of the course Teacher :

**Mahadi Hassan**

Assistant Professor

Department of CSE, IIUC

Date of Submission **:** 15/05/23

- Liang-Barskey algorithm.

Code:

#include <stdio.h>

#include <conio.h>

#include <graphics.h>

void liangBarsky(int x1, int y1, int x2, int y2, int xmin, int ymin, int xmax, int ymax) {

int dx = x2 - x1, dy = y2 - y1;

float t1 = 0, t2 = 1;

int p[4] = {-dx, dx, -dy, dy};

int q[4] = {x1 - xmin, xmax - x1, y1 - ymin, ymax - y1};

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

if (p[i] == 0 && q[i] < 0) {

printf("Line is outside the window. No clipping required.");

return;

}

float t = (float) q[i] / p[i];

if (p[i] < 0) {

if (t > t1) t1 = t;

} else if (p[i] > 0) {

if (t < t2) t2 = t;

}

}

if (t1 > t2) {

printf("Line is outside the window. No clipping required.");

return;

}

int newX1 = x1 + (int) (t1 \* dx);

int newY1 = y1 + (int) (t1 \* dy);

int newX2 = x1 + (int) (t2 \* dx);

int newY2 = y1 + (int) (t2 \* dy);

setcolor(YELLOW);

line(newX1, newY1, newX2, newY2);

}

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

int x1 = 50, y1 = 50, x2 = 250, y2 = 150;

line(x1,y1,x2,y2);

int xmin = 100, ymin = 100, xmax = 300, ymax = 200;

rectangle(xmin, ymin, xmax, ymax);

delay(1000);

liangBarsky(x1, y1, x2, y2, xmin, ymin, xmax, ymax);

getch();

closegraph();

return 0;

}