Title: Lab Work 6

Course title: Computer Graphics Laboratory
Course code: CSE-304
3rd Year 1st Semester Examination 2022

Date of Submission: 13-08-2023

Submitted to-

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Name of the Experiment: Line clipping using Liang-Barsky Algorithm

Code:

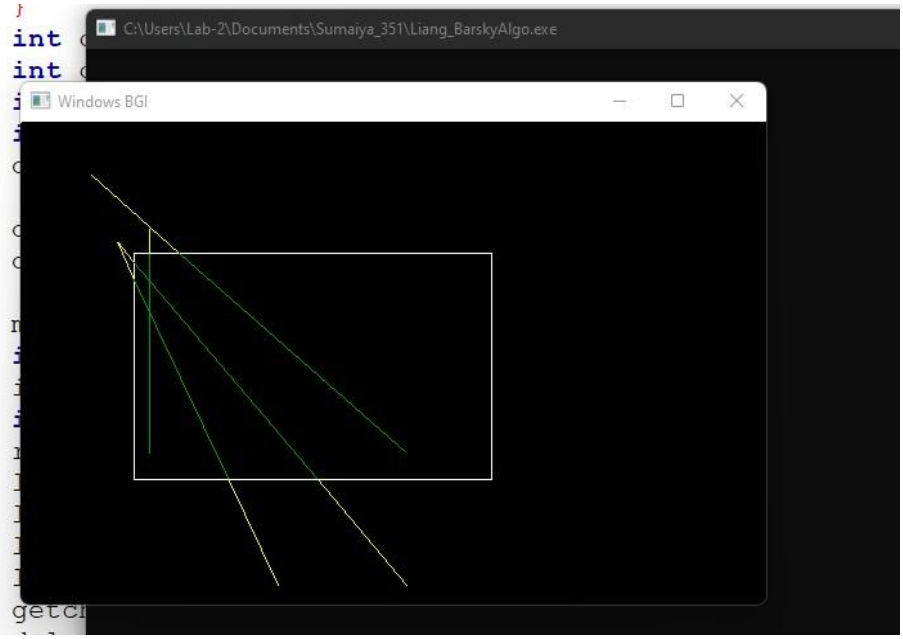
```
#include <iostream>
#include <graphics.h>
using namespace std;
void drawColoredLine(int x1, int y1, int x2, int y2, int color) {
    setcolor(color);
    line(x1, y1, x2, y2);
    setcolor(WHITE);
}
void liangBarsky(int x1, int y1, int x2, int y2, int xmin, int ymin, int xmax, int ymax) {
    int p[4], q[4];
    int dx = x2 - x1, dy = y2 - y1;
    p[0] = -dx; q[0] = x1 - xmin;
    p[1] = dx; q[1] = xmax - x1;
    p[2] = -dy; q[2] = y1 - ymin;
    p[3] = dy; q[3] = ymax - y1;
    float u1 = 0, u2 = 1;
    for (int i = 0; i < 4; i++) {
        if (p[i] == 0) {
            if (q[i] < 0) {
                return;
            }
        } else {
            float t = (float)q[i] / p[i];
            if (p[i] < 0) {
                u1 = max(u1, t);
            } else {
                u2 = min(u2, t);
            }
        }
    }
    if (u1 > u2) {
        return;
    }
    int clippedX1 = x1 + u1 * dx;
    int clippedY1 = y1 + u1 * dy;
    int clippedX2 = x1 + u2 * dx;
    int clippedY2 = y1 + u2 * dy;

drawColoredLine(x1, y1, clippedX1, clippedY1, YELLOW);

    drawColoredLine(clippedX1, clippedY1, clippedX2, clippedY2, GREEN);
    drawColoredLine(clippedX2, clippedY2, x2, y2, YELLOW);
}
int main() {
    int gd = DETECT, gm;
    initgraph(&gd, &gm, "");
    int xmin = 88, ymin = 99, xmax = 366, ymax = 270;
    rectangle(xmin, ymin, xmax, ymax);
    liangBarsky(55, 40, 300, 250, xmin, ymin, xmax, ymax);
    liangBarsky(200,350,75,90,xmin,ymin,xmax,ymax);
    liangBarsky(100,250,100,80,xmin,ymin,xmax,ymax);
    liangBarsky(300,350,75,90,xmin,ymin,xmax,ymax);

//liangBarsky(368,350,400,400,xmin,ymin,xmax,ymax);
    getch();
    delay(50000000000);
    closegraph();
    return 0;
}
```

Output:


C:\Users\Lab-2\Documents\Sumaiya_351\Liang_BarskyAlgo.exe
Windows BGI