

## Lab report 6

Course title: Computer Graphics Lab

Course code: CSE-304

3 rd Year 1st Semester 2022

**Date of Submission:** 13/08/2023



### Submitted to-

Dr. Mohammad Shorif Uddin

*Professor*

Dr. Morium Akter

*Associate professor*

Department of Computer Science and Engineering

Jahangirnagar University

Savar, Dhaka-1342

Class roll	Exam roll	Name
404	202216	Md. Mahfuzur Rahman

**code:**

```
#include <iostream>
#include <cmath>
#include <graphics.h>

using namespace std;

const int LEFT = 1, RIGHT = 2, BOTTOM = 4,
TOP = 8;
int x_min, y_min, x_max, y_max;
int computeCode(int x, int y) {
    int code = 0;
    if (x < x_min)
        code |= LEFT;
    if (x > x_max)
        code |= RIGHT;
    if (y < y_min)
        code |= BOTTOM;
    if (y > y_max)
        code |= TOP;
    return code;
}

void liangBarsky(int x1, int y1, int x2, int y2) {
    int code1 = computeCode(x1, y1);
    int code2 = computeCode(x2, y2);
    bool accept = false;
    while (true) {
        if (!(code1 | code2)) {
            accept = true;
            break;
        } else if (code1 & code2) {
            break;
        } else {
            int codeOut = code1 ? code1 : code2;
            int x, y;

            if (codeOut & TOP) {
                x = x1 + (x2 - x1) * (y_max - y1) /
(y2 - y1);
                y = y_max;
            } else if (codeOut & BOTTOM) {
                x = x_max;
            } else if (codeOut & LEFT) {
                y = y1 + (y2 - y1) * (x_min - x1) /
(x2 - x1);
                x = x_min;
            }
            if (codeOut == code1) {
                x1 = x;
                y1 = y;
                code1 = computeCode(x1, y1);
            } else {
                x2 = x;
                y2 = y;
                code2 = computeCode(x2, y2);
            }
        }
    }
    if (accept) {
        line(x1, y1, x2, y2);
    }
}

int main() {
    int gd = DETECT, gm;
    initgraph(&gd, &gm, "");
    cout << "Enter the coordinates of the
clipping window (x_min y_min x_max y_max):
";
    cin >> x_min >> y_min >> x_max >>
y_max;
    rectangle(x_min, y_min, x_max, y_max);
    int numLines;
    cout << "Enter the number of lines to clip: ";
    cin >> numLines;
    for (int i = 0; i < numLines; i++) {
        int x1, y1, x2, y2;
        cout << "Enter endpoints of line " << (i +
1) << " (x1 y1 x2 y2): ";
        cin >> x1 >> y1 >> x2 >> y2;
        liangBarsky(x1, y1, x2, y2);
    }
    delay(10000);
}
```

<pre>         x = x1 + (x2 - x1) * (y_min - y1) / (y2 - y1);         y = y_min;         } else if (codeOut &amp; RIGHT) {             y = y1 + (y2 - y1) * (x_max - x1) / (x2 - x1); </pre>	<pre> closegraph(); return 0; } </pre>
---	--

## Output:

```

F:\395\Lab4\Liam.exe
Enter the coordinates of the clipping window (x_min y_min x_max y_max): 12 20 65 95
Enter the number of lines to clip: 3
Enter endpoints of line 1 (x1 y1 x2 y2): 12 13 19 85
Enter endpoints of line 2 (x1 y1 x2 y2): 19 56 18 95
Enter endpoints of line 3 (x1 y1 x2 y2): 65 35 48 22

```

