**Lab Report-03**

*Course Title: Computer Graphics Laboratory*

*Course code: CSE-304*

*3rd Year 1st Semester 2022*

**Date of Submission**: 28-05-2023

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**Source 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, RED);

drawColoredLine(clippedX1, clippedY1, clippedX2, clippedY2, WHITE);

drawColoredLine(clippedX2, clippedY2, x2, y2, RED);

}

int main() {

int gd = DETECT, gm;

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

int xmin = 100, ymin = 100, xmax = 400, ymax = 300;

rectangle(xmin, ymin, xmax, ymax);

liangBarsky(50, 50, 300, 250, xmin, ymin, xmax, ymax);

liangBarsky(150,150,75,90,xmin,ymin,xmax,ymax);

liangBarsky(200,350,100,80,xmin,ymin,xmax,ymax);

liangBarsky(500,550,75,90,xmin,ymin,xmax,ymax);

getch();

delay(50000);

closegraph();

return 0;

}

**Output:**

