আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম

الجامعة الإسلامية العالمية شيتاغونغ

International Islamic University Chittagong

Department of Computer Science &Engineering(CSE)

LAB - 9

Name : Shah Ibne Fahad

Student ID : C193048

Semester : 7th

Section : 7BM

Email : c193048@ugrad.iiuc.ac.bd

Contact : 01860793742

Course Code : CSE-4742

Course Title : Computer Graphics Lab

Name of the course Teacher :

Mahadi Hassan

Associate Professor

Dept of Computer Science and Engineering,IIUC

Cohen-Sutherland algorithm for line clipping :

```
#include <bits/stdc++.h>
#include <conio.h>
#include <graphics.h>
using namespace std;

#define LEFT 1
#define RIGHT 2
#define BOTTOM 4
#define TOP 8

int xmin, ymin, xmax, ymax;
int draw(int x, int y)
{
   int code = 0;
   if (x < xmin)
   {
      code |= LEFT;
   }
   else if (x > xmax)
   {
      code |= RIGHT;
```

```
    }
    if (y < ymin)
    {
        code |= BOTTOM;
    }
    else if (y > ymax)
    {
        code |= TOP;
    }
    return code;
}
void cohenSutherland_algo(int x0, int y0, int x1, int y1)
{
    int code0 = draw(x0, y0);
    int code1 = draw(x1, y1);
    int accept = 0;

    while (1)
    {
        if ((code0 | code1)==0)
        {
            accept = 1;
```

```
    break;
}
else if (code0 & code1)
{
    break;
}
else
{
    int codeOut;
    int x, y;
    if (code0)
    {
        codeOut = code0;
    }
    else
    {
        codeOut = code1;
    }
    if (codeOut & TOP)
    {
        x = x0 + (x1 - x0) * (ymax - y0) / (y1 - y0);
        y = ymax;
```

```
}
else if (codeOut & BOTTOM)
{
   x = x0 + (x1 - x0) * (ymin - y0) / (y1 - y0);
   y = ymin;
}
else if (codeOut & RIGHT)
{
   y = y0 + (y1 - y0) * (xmax - x0) / (x1 - x0);
   x = xmax;
}
else
{
   y = y0 + (y1 - y0) * (xmin - x0) / (x1 - x0);
   x = xmin;
}

if (codeOut == code0)
{
   setcolor(BLACK);
   line(x0, y0, x, y);
   putpixel(x,y,WHITE);
```

```
            x0 = x;
            y0 = y;
            code0 = draw(x0, y0);
         }
         else
         {
            setcolor(BLACK);
            line(x1, y1, x, y);
            putpixel(x,y,WHITE);
            x1 = x;
            y1 = y;
            code1 = draw(x1, y1);
         }
      }
   }
}
int main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "");

   cout << "Enter the size of window : ";
```

```
    cin >> xmin >> ymin >> xmax>>ymax;

    rectangle(xmin, ymin, xmax, ymax);
    int x1,y1,x2,y2;
    cout << "Enter the size of line : ";
    cin >> x1>>y1>>x2>>y2;
    line(x1, y1, x2, y2);
    int n;
    cin>>n;
    cohenSutherland_algo(x1, y1, x2, y2);

    getch();
    closegraph();
    return 0;
}
```