```
#include <iostream>
#include <conio.h>
#include <graphics.h>
#include <direct.h>
using namespace std;

class data
{
    int gd, gmode, x, y, xmin, ymin, ymax, xmax;
    int a1, a2;
    float x1, y1, x2, y2, x3, y3;
    int xs, ys, xe, ye;
    float maxx, maxy;

public:
    void getdata();
    void find();
    void clip();
    void display(float, float, float, float);
    void checkonof(int);
    void showbit(int);
};

void data::getdata()
{
    cout << "Enter the minimum and maximum coordinate of window (x, y) ";
    cin >> xmin >> ymin >> xmax >> ymax;
    cout << "Enter the end points of the line to be clipped: ";
    cin >> xs >> ys >> xe >> ye;
    display(xs, ys, xe, ye);
}

void data::display(float xs, float ys, float xe, float ye)
{
    int gd = DETECT;
    initgraph(&gd, &gmode, "");
    maxx = getmaxx();
    maxy = getmaxy();
    line(maxx / 2, 0, maxx / 2, maxy);
    line(0, maxy / 2, maxx, maxy / 2);
    rectangle(maxx / 2 + xmin, maxy / 2 - ymax, maxx / 2 + xmax, maxy / 2 - ymin);
    line(maxx / 2 + xs, maxy / 2 - ys, maxx / 2 + xe, maxy / 2 - ye);
    getch();
}

void data::find()
{
    a1 = 0;
    a2 = 0;
    if ((ys - ymax) > 0)
        a1 += 8;
    if ((ymin - ys) > 0)
        a1 += 4;
    if ((xs - xmax) > 0)
        a1 += 2;
```

```
    if ((xmin - xs) > 0)
        a1 += 1;
    if ((ye - ymax) > 0)
        a2 += 8;
    if ((ymin - ye) > 0)
        a2 += 4;
    if ((xe - xmax) > 0)
        a2 += 2;
    if ((xmin - xe) > 0)
        a2 += 1;
    cout << "\nThe area code of 1st point is ";
    showbit(a1);
    getch();
    cout << "\nThe area code of 2nd point is ";
    showbit(a2);
    getch();
}

void data::showbit(int n)
{
    int i, k, an;
    for (i = 3; i >= 0; i--)
    {
        an = 1 << i;
        k = n & an;
        k == 0 ? cout << "0" : cout << "1";
    }
}

void data::clip()
{
    int j = a1 & a2;
    if (j == 0)
    {
        cout << "\nLine is perfect candidate for clipping";
        if (a1 == 0)
        {
            checkonof(a1);
            x2 = x1;
            y2 = y1;
        }
        if (a2 == 0)
        {
            x3 = xe;
            y3 = ye;
        }
        else
        {
            checkonof(a2);
            x3 = x1;
            y3 = y1;
        }
        xs = x2;
        ys = y2;
        xe = x3;
```

```
        ye = y3;
        cout << endl;
        display(xs, ys, xe, ye);
        cout << "Line after clipping";
        getch();
    }
    else if ((a1 == 0) && (a2 == 0))
    {
        cout << "\nLine is in the visible region";
        getch();
    }
}

void data::checkonof(int i)
{
    int j, k, l, m;
    l = i & 1;
    x1 = 0;
    y1 = 0;
    if (l == 1)
    {
        x1 = xmin;
        y1 = ys + ((x1 - xs) / (xe - xs)) * (ye - ys);
    }
    j = i & 8;
    if (j > 0)
    {
        y1 = ymax;
        x1 = xs + ((y1 - ys) / (ye - ys)) * (xe - xs);
    }
    k = i & 4;
    if (k == 4)
    {
        y1 = ymin;
        x1 = xs + ((y1 - ys) / (ye - ys)) * (xe - xs);
    }
    m = i & 2;
    if (m == 2)
    {
        x1 = xmax;
        y1 = ys + ((x1 - xs) / (xe - xs)) * (ye - ys);
    }
}

int main()
{
    data s;
    // clrscr();
    s.getdata();
    s.find();
    s.clip();
    getch();
    closegraph();
    return 0;
}
```