

## Assignement No. 2

**Aim:** Polygon Clipping using Cohen Sutherland line clipping algorithm.

**Code:**

```
#include<iostream>

#include<graphics.h>
typedef unsigned int outcode;
enum{TOP=0x1,BOTTOM=0x2,RIGHT=0x4,LEFT=0x8};

using namespace std;

outcode CompOutCode(double ,double ,double ,double ,double ,double );
void CSLCAD(double x0,double y0,double x1,double y1,double xmin,double xmax,double
ymin,double ymax)
{

    outcode outcode0,outcode1,outcodeout;
    boolean accept=FALSE, done=FALSE;
    outcode0=CompOutCode(x0,y0,xmin,xmax,ymin,ymax);
    outcode1=CompOutCode(x1,y1,xmin,xmax,ymin,ymax);
    cout<<"outcode0="<<outcode0<<endl;
    cout<<"outcode1="<<outcode1<<endl;
    do
    {
        if(outcode0==0 && outcode1==0)
        {
            accept=TRUE;
            done=TRUE;
        }
        else if(outcode0 & outcode1)
        {
            done=TRUE;
        }
        else
        {
            double x,y;
            int ocd=outcode0 ? outcode0:outcode1;
            if(ocd & TOP)
            {
                x=x0+(x1-x0)*(ymax-y0)/(y1-y0);
                y=ymax;
            }
            else if(ocd & BOTTOM)
```

```

        {
            x=x0+(x1-x0)*(ymin-y0)/(y1-y0);
            y=ymin;
        }
        else if(ocd & LEFT)
        {
            y=y0+(y1-y0)*(xmin-x0)/(x1-x0);
            x=xmin;
        }
        else
        {
            y=y0+(y1-y0)*(xmax-x0)/(x1-x0);
            x=xmax;
        }
        if(ocd==outcode0)
        {
            x0=x;
            y0=y;
            outcode0=CompOutCode(x0,y0,xmin,xmax,ymin,ymax);
        }
        else
        {
            x1=x;
            y1=y;
            outcode1=CompOutCode(x1,y1,xmin,xmax,ymin,ymax);
        }
    }

}while(done==FALSE);

if(accept==TRUE)
{
    line(x0,y0,x1,y1);
}
}

outcode CompOutCode(double x,double y,double xmin,double xmax,double ymin,double ymax)
{
    outcode code=0;
    if(y>ymax)
        code|=TOP;
    if(y<ymin)
        code|=BOTTOM;
    if(x>xmax)
        code|=RIGHT;

```

```

    if(x<xmin)
        code|=LEFT;
    return code;
}

int main()
{
    string ch;
    double xmin,xmax,ymin,ymax,x0,y0,x1,y1;

    initwindow(500,600);

    cout<<"Enter the bottom co-ordinates of window:";
    cin>>xmin;
    cout<<"Enter the left coordinates of the window:";
    cin>>ymin;
    cout<<"Enter the right coordinates of the window:";
    cin>>xmax;
    cout<<"Enter the top coordinates of the window:";
    cin>>ymax;
    rectangle(xmin,ymin,xmax,ymax);

    cout<<"Enter the coordinates(Terminal Points) of the line: ";
    cin>>x0>>y0;
    cin>>x1>>y1;
    line(x0,y0,x1,y1);

    delay(5000);
    cleardevice();
    CSLCAD(x0,y0,x1,y1,xmin,xmax,ymin,ymax);
    rectangle(xmin,ymin,xmax,ymax);
    delay(50000);

    closegraph();
}

//Input:

//Enter the bottom co-ordinates of window:100
//Enter the left coordinates of the window:100
//Enter the right coordinate of the window:250
//Enter the top coordinate of the window:250
//Enter the coordinates<Terminal Points> of the line:150
//350
//120

```

//220

//outcode0=1

//outcode1=0

**Output:**

