Cohen Sutherland Line Clipping

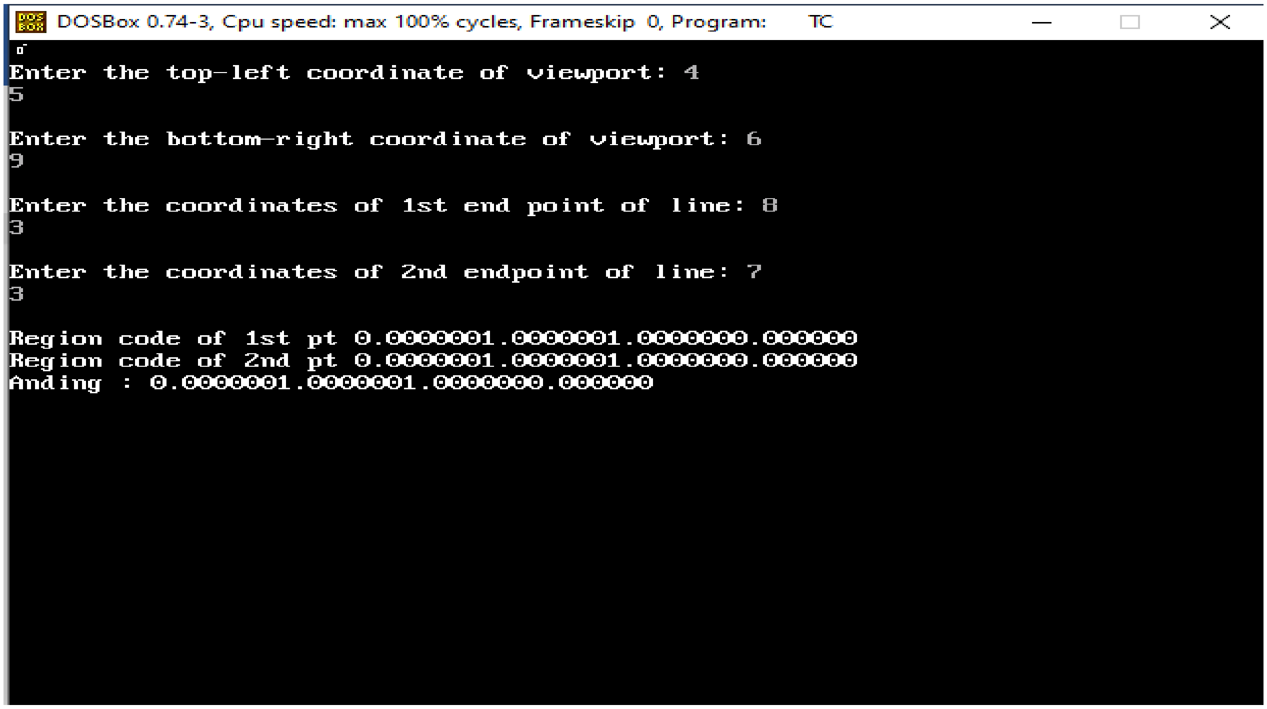
```
#include<stdio.h>
#include<graphics.h>
void main()
{
int gd=DETECT, gm;
float i,xmax,ymax,xmin,ymin,x11,y11,x22,y22,m;
float a[4],b[4],c[4],x1,y1;
clrscr();
initgraph(&gd,&gm,"c:\\turboc3\\bgi");
printf("\nEnter the top-left coordinate of viewport: ");
scanf("%f %f",&xmin,&ymin);
printf("\nEnter the bottom-right coordinate of viewport: ");
scanf("%f %f",&xmax,&ymax);
rectangle(xmin,ymin,xmax,ymax);
printf("\nEnter the coordinates of 1st end point of line: ");
scanf("%f %f",&x11,&y11);
printf("\nEnter the coordinates of 2nd endpoint of line: ");
scanf("%f %f",&x22,&y22);
line(x11,y11,x22,y22);
for(i=0;i<4;i++)
{
a[i]=0;
b[i]=0;
}
m=(y22-y11)/(x22-x11);
if(x11<xmin) a[3]=1;
if(x11>xmax) a[2]=1;
if(y11<ymin) a[1]=1;
if(y11>ymax) a[0]=1;
if(x22<xmin) b[3]=1;
if(x22>xmax) b[2]=1;
if(y22<ymin) b[1]=1;
if(y22>ymax) b[0]=1;
printf("\nRegion code of 1st pt ");
for(i=0;i<4;i++)
{
	printf("%f",a[i]);
}
printf("\nRegion code of 2nd pt ");
```

```
for(i=0;i<4;i++)
{
        printf("%f",b[i]);
}
printf("\nAnding : ");
for(i=0;i<4;i++)
{
        c[i]=a[i]&&b[i];
}
for(i=0;i<4;i++)
        printf("%f",c[i]);
getch();
if((c[0]==0)&&(c[1]==0)&&(c[2]==0)&&(c[3]==0))
{
if((a[0]==0)&&(a[1]==0)&&(a[2]==0)&&(a[3]==0)&&(b[0]==0)&&(b[1]==0)&&(b[2]==0)&
&(b[3]==0))
{
clrscr();
clearviewport();
printf("\nThe line is totally visible\nand not a clipping candidate");
rectangle(xmin,ymin,xmax,ymax);
line(x11,y11,x22,y22);
getch();
}
else
{
clrscr();
clearviewport();
printf("\nLine is partially visible");
rectangle(xmin,ymin,xmax,ymax);
line(x11,y11,x22,y22);
getch();
if((a[0]==0)&&(a[1]==1))
{
        x1=x11+(ymin-y11)/m;
        x11=x1;
        y11=ymin;
}
else if((b[0]==0)&&(b[1]==1))
{
        x1=x22+(ymin-y22)/m;
        x22=x1;
        y22=ymin;
}

if((a[0]==1)&&(a[1]==0))
{
        x1=x11+(ymax-y11)/m;
        x11=x1;
        y11=ymax;
}
else if((b[0]==1)&&(b[1]==0))
{
        x1=x22+(ymax-y22)/m;
        x22=x1;
        y22=ymax;
}
if((a[2]==0)&&(a[3]==1))
{
        y1=y11+m*(xmin-x11);
        y11=y1;
        x11=xmin;
}
else if((b[2]==0)&&(b[3]==1))
{
        y1=y22+m*(xmin-x22);
        y22=y1;
        x22=xmin;
}
if((a[2]==1)&&(a[3]==0))
{
        y1=y11+m*(xmax-x11);
        y11=y1;
        x11=xmax;
}
else if((b[2]==1)&&(b[3]==0))
{
        y1=y22+m*(xmax-x22);
        y22=y1;
        x22=xmax;
```

```
}
clrscr();
clearviewport();
printf("\nAfter clippling:");
rectangle(xmin,ymin,xmax,ymax);
line(x11,y11,x22,y22);
getch();
}
}
else
{
clrscr();
clearviewport();
printf("\nLine is invisible");
rectangle(xmin,ymin,xmax,ymax);
getch();
}
closegraph();
getch();
}
```

Output -:



DOSBox 0.74-3, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

```
Enter the top-left coordinate of viewport: 4
5

Enter the bottom-right coordinate of viewport: 6
9

Enter the coordinates of 1st end point of line: 8
3

Enter the coordinates of 2nd endpoint of line: 7
3

Region code of 1st pt 0.0000001.0000001.0000000.000000
Region code of 2nd pt 0.0000001.0000001.0000000.000000
Anding : 0.0000001.0000001.0000000.000000
```