

// Sutherland Hodgeman Polygon Clipping

```
#include<stdio.h>

#include<conio.h>

#include<graphics.h>

#include<math.h>

void clip(float,float,float);

int i,j=0,n;

int rx1,rx2,ry1,ry2;

float x1[8],y1[8];

void main()

{

int gd=DETECT,gm;

int i,n;

float x[8],y[8],m;

clrscr();

initgraph(&gd,&gm,"c:\\turbo3\\bgi");

printf("coordinates for rectangle : ");

scanf("%d%d%d%d",&rx1,&ry1,&rx2,&ry2);

printf("no. of sides for polygon : ");

scanf("%d",&n);

printf("coordinates : ");

for(i=0;i<n;i++)

{

scanf("%f%f",&x[i],&y[i]);

}

cleardevice();

outtextxy(10,10,"Before clipping");
```

```

outtextxy(10,470,"Press any key....");

rectangle(rx1,ry1,rx2,ry2);

for(i=0;i<n-1;i++)

line(x[i],y[i],x[i+1],y[i+1]);

line(x[i],y[i],x[0],y[0]);

getch();

cleardevice();

for(i=0;i<n-1;i++)

{

m=(y[i+1]-y[i])/(x[i+1]-x[i]);

clip(x[i],y[i],m);

clip(x[i+1],y[i+1],m);

}

m=(y[i]-y[0])/(x[i]-x[0]);

clip(x[i],y[i],m);

clip(x[0],y[0],m);

outtextxy(10,10,"After clipping");

outtextxy(10,470,"Press any key....");

rectangle(rx1,ry1,rx2,ry2);

for(i=0;i<j-1;i++)

line(x1[i],y1[i],x1[i+1],y1[i+1]);

getch();

}

void clip(float e,float f,float m)

{

while(e<rx1||e>rx2||f<ry1||f>ry2)

```

```

{
if(e<rx1)

{
f+=m*(rx1-e);
e=rx1;
}

else if(e>rx2)

{
f+=m*(rx2-e);
e=rx2;
}

if(f<ry1)

{
e+=(ry1-f)/m;
f=ry1;
}

else if(f>ry2)

{
e+=(ry2-f)/m;
f=ry2;
}

}

}

x1[j]=e;
y1[j]=f;
j++;
}

```