# **5) Polygon Clipping**

#include<iostream>

#include<graphics.h>

#include<conio.h>

using namespace std;

typedef unsigned int outcode;

enum

{

TOP=1,

BOTTOM=2,

RIGHT=4,

LEFT=8

};

float xmin,xmax,ymin,ymax;

outcode CompOutCode(float x,float y)

{

outcode code = 0;

if(y>ymax)

code|=TOP;

else if(y<ymin)

code|=BOTTOM;

if(x>xmax)

code|=RIGHT;

else if(x<xmin)

code|=LEFT;

return code;

}

void clip(float x0,float y0,float x1,float y1)

{

outcode outcode0,outcode1,outcodeOut;

int accept = false,done = false;

outcode0 = CompOutCode(x0,y0);

outcode1 = CompOutCode(x1,y1);

do{

if(!(outcode0|outcode1))

{

accept = true;

done = true;

}

else

if(outcode0 & outcode1)

done = true;

else

{

float x,y;

outcodeOut = outcode0?outcode0:outcode1;

if(outcodeOut & TOP)

{

x = x0+(x1-x0)\*(ymax-y0)/(y1-y0);

y = ymax;

}

else

if(outcodeOut & BOTTOM)

{

x = x0+(x1-x0)\*(ymin-y0)/(y1-y0);

y = ymin;

}

else

if(outcodeOut & RIGHT)

{

y = y0+(y1-y0)\*(xmax-x0)/(x1-x0);

x = xmax;

}

else

{

y = y0+(y1-y0)\*(xmin-x0)/(x1-x0);

x = xmin;

}

if(outcodeOut==outcode0)

{

x0 = x;

y0 = y;

outcode0 = CompOutCode(x0,y0);

}

else

{

x1 = x;

y1 = y;

outcode1 = CompOutCode(x1,y1);

}

}

}

while(done==false);

if(accept)

line(x0,y0,x1,y1);

rectangle(xmin,ymin,xmax,ymax);

}

int main( )

{

float x1,y1,x2,y2;

/\* request auto detection \*/

int n,poly[14],i;

cout<<"Enter the no of sides of polygon:";

cin>>n;

cout<<"Enter the coordinates of polygon"<<endl;

for(i=0;i<2\*n;i++)

{

cin>>poly[i];

}

poly[2\*n]=poly[0];

poly[2\*n+1]=poly[1];

cout<<"Enter the rectangular coordinates of clipping window"<<endl;

cin>>xmin;

cin>>ymin;

cin>>xmax;

cin>>ymax;

initwindow(800,800);

drawpoly(n+1,poly);

rectangle(xmin,ymin,xmax,ymax);

getch();

cleardevice();

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

clip(poly[2\*i],poly[(2\*i)+1],poly[(2\*i)+2],poly[(2\*i)+3]);

getch();

closegraph();

return 0;

}

**OUTPUT:**





