Midpoint Algorithm(Line Clipping):

#include stdio.h  
#include conio.h  
#include graphics.h  
#include math.h  
#include dos.h  
#include stdlib.h

typedef struct coordinates  
{  
int x;  
int y;  
char code[4];  
}pt;

pt p1,p2,ptemp;

void drawwindow();  
void drawline(pt p1,pt p2, int c1);  
pt setcode(pt p);  
int visibility(pt p1,pt p2);  
pt resetendpt(pt p1,pt p2);  
void midsub(pt p1,pt p2);

void main()  
{  
int gd=DETECT,gm,v;  
detectgraph(&gd,&gm);  
initgraph(&gd,&gm,”c:\\tc\\bgi”);  
cleardevice();  
printf(“Enter the endpoint 1\t”);  
scanf(“%d %d”,&p1.x,&p1.y);  
printf(“\nEnter the endpoint 2\t”);  
scanf(“%d %d”,&p2.x,&p2.y);  
cleardevice();  
drawwindow();  
getch();  
drawline(p1,p2,15);  
getch();  
cleardevice();  
drawwindow();  
midsub(p1,p2);  
getch();  
closegraph();  
}

void midsub(pt p1,pt p2)  
{  
pt mid;  
int v;  
p1=setcode(p1);  
p2=setcode(p2);  
v=visibility(p1,p2);  
delay(100);  
switch(v)  
{  
case 0:  
{  
drawline(p1,p2,15);  
break;  
}  
case 1:  
{  
break;  
}  
case 2:  
{  
mid.x=p1.x+(p2.x-p1.x)/2;  
mid.y=p1.y+(p2.y-p1.y)/2;  
midsub(p1,mid);  
mid.x=mid.x+1;  
mid.y=mid.y+1;  
midsub(mid,p2);  
break;  
}  
}  
}

void drawwindow()  
{  
setcolor(RED);  
line(150,100,450,100);  
line(450,100,450,400);  
line(450,400,150,400);  
line(150,400,150,100);  
}

void drawline(pt p1,pt p2,int c1)  
{  
setcolor(c1);  
line(p1.x,p1.y,p2.x,p2.y);  
}

pt setcode(pt p)  
{  
pt ptemp;  
if(p.y>400)  
ptemp.code[0]=’1′;  
else  
ptemp.code[0]=’0′;  
if(p.y<100) ptemp.code[1]=’1′; else ptemp.code[1]=’0′; if(p.x>450)  
ptemp.code[2]=’1′;  
else  
ptemp.code[2]=’0′;  
if(p.x<150)  
ptemp.code[3]=’1′;  
else  
ptemp.code[3]=’0′;  
ptemp.x=p.x;  
ptemp.y=p.y;  
return(ptemp);  
}  
int visibility(pt p1,pt p2)  
{  
int i,flag=0;  
for(i=0;i<4;i++)  
{  
if((p1.code[i]!=’0′)||(p2.code[i]!=’0′))  
flag=1;  
}  
if(flag==0)  
return(0);  
for(i=0;i<4;i++)  
{  
if((p1.code[i]==p2.code[i])&&(p1.code[i]==’1′))  
flag=0;  
}  
if(flag==0)  
return(1);  
return(2);  
}