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#include<stdio.h>
#include<stdlib.h>
#include<math.h>
#include<graphics.h>
#include<dos.h>

typedef struct coordinate
{
        int x,y;
        char code[4];
}PT;

void drawwindow();
```

```
void drawline(PT p1,PT p2);
PT setcode(PT p);
int visibility(PT p1,PT p2);
PT resetendpt(PT p1,PT p2);

void main()
{
        int gd=DETECT,v,gm;
        PT p1,p2,p3,p4,ptemp;

        printf("\nEnter x1 and y1\n");
        scanf("%d %d",&p1.x,&p1.y);
        printf("\nEnter x2 and y2\n");
        scanf("%d %d",&p2.x,&p2.y);

        initgraph(&gd,&gm,"c:\\turboc3\\bgi");
        drawwindow();
        delay(500);

        drawline(p1,p2);
        delay(500);
        cleardevice();

        delay(500);
        p1=setcode(p1);
        p2=setcode(p2);
        v=visibility(p1,p2);
        delay(500);

        switch(v)
        {
        case 0: drawwindow();
                        delay(500);
                        drawline(p1,p2);
```

```
                        break;
        case 1: drawwindow();
                        delay(500);
                        break;
        case 2: p3=resetendpt(p1,p2);
                        p4=resetendpt(p2,p1);
                        drawwindow();
                        delay(500);
                        drawline(p3,p4);
                        break;
        }

        delay(5000);
        closegraph();
}

void drawwindow()
{
        line(150,100,450,100);
        line(450,100,450,350);
        line(450,350,150,350);
        line(150,350,150,100);
}

void drawline(PT p1,PT p2)
{
        line(p1.x,p1.y,p2.x,p2.y);
}

PT setcode(PT p)        //for setting the 4 bit code
{
        PT ptemp;

        if(p.y<100)
```

```
                ptemp.code[0]='1';      //Top
        else
                ptemp.code[0]='0';

        if(p.y>350)
                ptemp.code[1]='1';      //Bottom
        else
                ptemp.code[1]='0';

        if(p.x>450)
                ptemp.code[2]='1';      //Right
        else
                ptemp.code[2]='0';

        if(p.x<150)
                ptemp.code[3]='1';      //Left
        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);
}

PT resetendpt(PT p1,PT p2)
{
        PT temp;
        int x,y,i;
        float m,k;

        if(p1.code[3]=='1')
                x=150;

        if(p1.code[2]=='1')
                x=450;

        if((p1.code[3]=='1') || (p1.code[2]=='1'))
        {
                m=(float)(p2.y-p1.y)/(p2.x-p1.x);
                k=(p1.y+(m*(x-p1.x)));
```

```
                temp.y=k;
                temp.x=x;

                for(i=0;i<4;i++)
                        temp.code[i]=p1.code[i];

                if(temp.y<=350 && temp.y>=100)
                        return (temp);
        }

        if(p1.code[0]=='1')
                y=100;

        if(p1.code[1]=='1')
                y=350;

        if((p1.code[0]=='1') || (p1.code[1]=='1'))
        {
                m=(float)(p2.y-p1.y)/(p2.x-p1.x);
                k=(float)p1.x+(float)(y-p1.y)/m;
                temp.x=k;
                temp.y=y;

                for(i=0;i<4;i++)
                        temp.code[i]=p1.code[i];

                return(temp);
        }
        else
                return(p1);
}
```