Practical No:-3

Roll No:-65

INPUT-

```
#include<iostream>
#include<stdlib.h>
#include<math.h>
#include<graphics.h>
using namespace std;

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

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

int main()
{
	int v;
	int gd,gm;gd=DETECT;
	PT p1,p2,ptemp;
	cout<<"\n---The size of Clipping Window---";
	cout<<"\n\nLeft-Top:150,150 \nRight-Bottom:350,350";
	cout<<"\n-----------------------------------";
	cout<<"\nEnetr the endpoint 1 of line to be clipped";
	cout<<"\nEnter the x coordinate::";
	cin>>p1.x;
	cout<<"\nEnter the y coordinates::";
	cin>>p1.y;
	cout<<"\nEnetr the endpoint 2 of line to be clipped";
```

```
        cout<<"\nEnter the x coordinate::";
        cin>>p2.x;
        cout<<"\nEnter the y coordinates::";
        cin>>p2.y;

        initgraph(&gd,&gm,NULL);
        cleardevice();
        drawwindow();
        getch();
        drawline(p1,p2,15);
        getch();
        p1=setcode(p1);
        p2=setcode(p2);
        v=visibility(p1,p2);
        switch(v)
        {
                case 0:
                        cleardevice();
                        drawwindow();
                        drawline(p1,p2,15);
                        break;

                case 1:
                        cleardevice();
                        drawwindow();
                        break;

                case 2:
                        cleardevice();
                        p1=resetendpt(p1,p2);
                        p2=resetendpt(p2,p1);
                        drawwindow();
                        drawline(p1,p2,15);
                        break;
        }
        getch();
        closegraph();
        return(0);
}
```

```
/*Function to draw window*/
void drawwindow()
{
	setcolor(RED);
	line(150,150,350,150);
	line(350,150,350,350);
	line(150,350,350,350);
	line(150,150,150,350);
}

/*Function to draw line between two points*/
void drawline(PT p1,PT p2,int cl)
{
	setcolor(cl);
	line(p1.x,p1.y,p2.x,p2.y);
}

/*function to set code of the coordinates */
PT setcode(PT p)
{
	PT ptemp;
	if(p.y<150)
	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>350)
	ptemp.code[2]='1';//right;
	else
	ptemp.code[2]='0';
	if(p.x<150)
	ptemp.code[3]='1';//right;
	else
	ptemp.code[3]='0';
	ptemp.x=p.x;
```

```
        ptemp.y=p.y;
        return(ptemp);
}

/*Function to determine visibility of line*/
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);
}

/*Function to find new endpoints*/
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=350;
        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>=150)
            return(temp);
        }
        if(p1.code[0]=='1')
        y=150;
        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);
}
```

OUTPUT-

```
jaihind@jaihind-ThinkCentre-E73:~$ g++ samiksha3.cpp -lgraph
jaihind@jaihind-ThinkCentre-E73:~$ ./a.out

---The size of Clipping Window---

Left-Top:150,150
Right-Bottom:350,350
---------------------------------
Enetr the endpoint 1 of line to be clipped
Enter the x coordinate::100

Enter the y coordinates::200

Enetr the endpoint 2 of line to be clipped
Enter the x coordinate::380

Enter the y coordinates::370
```