



Lab Report 2
Computer Graphics

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Computer Graphics

Bresenham's Line Algorithm

Step 1: Input the two lines endpoints and store the left endpoint in (x_0, y_0) .

Step 2: Load (x_0, y_0) into the frame buffer; that is, plot the first point.

Step 3: Calculate constants dx , dy and obtain the starting value for the decision parameter as

$$P_k = 2 * dy - dx$$

Step 4: At each x_k , along the line, starting at $k=0$, perform the following test: If $P_k < 0$, the next point to plot is (x_{k+1}, y_k) and

$$P_{k+1} = P_k + 2 * dy$$

Otherwise, the next point to plot is (x_{k+1}, y_{k+1}) and

$$P_{k+1} = P_k + 2 * dy - 2 * dx;$$

Step 5: Repeat step 4 dx times.

Source code:

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>

void main()
{
    int gm, gd;
    int x0,y0,x1,y1,dx,dy,pk,k;
    float slope;
    clrscr();
    detectgraph(&gd,&gm);
    initgraph(&gd,&gm,"c:\\turboc3\\bgi");
    printf("Enter 1st point (x0,y0):");
    scanf("%d%d",&x0,&y0);
    printf("Enter end point (x1,y1):");
    scanf("%d%d",&x1,&y1);
    printf("Enter slope:");
    scanf("%f",&slope);
    clrscr();
```

```
dx=x1-x0;  
dy=y1-y0;  
pk= 2*dy-dx;  
  
for(k=0;k<dx;k++)  
{  
    putpixel(x0,y0,WHITE);  
    if(pk<0)  
    {  
        x0=x0+1;  
        pk=pk+2*dy;  
    }  
    else  
    {  
        x0=x0+1;  
        y0=y0+1;  
        pk=pk+2*dy-2*dx;  
    }  
}
```

```
}

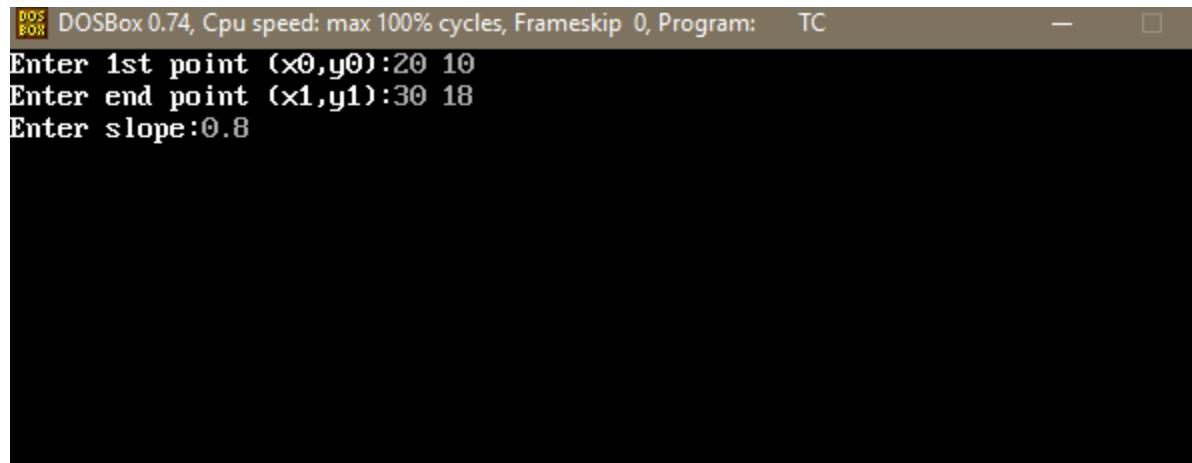
getch();

closegraph();

}

}
```

Output:



DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

```
Enter 1st point (x0,y0):20 10
Enter end point (x1,y1):30 18
Enter slope:0.8
```

