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Subject :- Computer graphics

Subject Code :- PBC-602

Q1 :- Write an algorithm and program to implement bresenham line drawing algorithm.

→ Algorithm

Step1 :- Start

Step2 :- Declare variable $x_1, x_2, y_1, y_2, d, i_1, i_2, dx, dy$

Step3 :- Enter value of x_1, x_1, x_2, y_2

Step4 :- Calculate $dx = x_2 - x_1$

Calculate $dy = x_2 - x_1$

Calculate $i_1 = 2 * dy$

Calculate $d = i_1 - dx$

Step5 :- Consider (x, y) as starting point and xend as maximum possible value of x.

if $dx < 0$

then $x = x_2$

$y = y_2$

$x_{end} = x_1$

if $dx > 0$

then $x = x_1$

Sign :- Shubham

$y = y_1$

$x_{end} = x_2$

Step 6 → Generate point at (x,y) coordinates.

Step 7 → Check if whole line is generated

if $x >= x_{end}$

Stop.

Step 8 :- Calculate co-ordinates of the next pixel

if $d < 0$

then $d = d + i$

if $d \geq 0$

then $d = d + j$,

increment $y = y + 1$

Step 9 :- increment $x = x + 1$

Step 10 :- Draw a point of latest (x,y) coordinates

Step 11 :- Go to Step - 7

Step 12 → End.

Program :-

```
#include <stdio.h>
#include <graphics.h>
void drawline (int x0, int y0, int x1, int y1)
{
  int dx, dy, p, x, y;
  dx = x1 - x0;
  dy = y1 - y0;
```

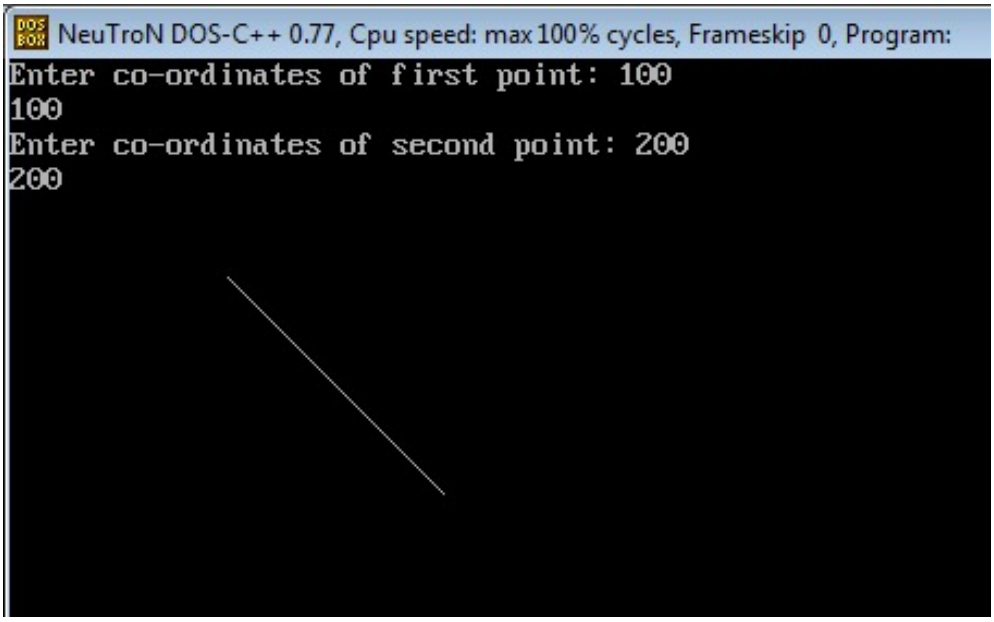
Sign :-

```
        x = x0;
        y = y0;
        p = 2 * dy - dx;
        while (x < x1)
        {
        if (p >= 0)
          {
          putpixel (x, y, 7);
          y = y + 1;
          p = p + 2 * dy - 2 * dx;
        }
        else {
          putpixel (x, y, 7);
          p = p + 2 * dy;
        }
      x = x + 1
    }
}
int main ()
  {
    int gd = DETECT, gm, x0, y0, x1, y1;
    init graph (&gd, &gm, "");
      x0 = 100;
      y0 = 100;
      x1 = 300;
      y1 = 200;
```

Sign:

```
printf("Enter Coordinates of first point");
scanf("%d %d",&x0,&y0);
printf("Enter Coordinates of second points");
scanf("%d %d",&x1,&x1);
drawline(x0,y0,x1,x1);
return 0;
}
```

Sign :


NeuTroN DOS-C++ 0.77, Cpu speed: max 100% cycles, Frameskip 0, Program:
Enter co-ordinates of first point: 100
100
Enter co-ordinates of second point: 200
200