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SET-C

Roll NO. = 1121153

SUBJECT = COMPUTER GRAPHIC

DATE = 16-6-2021

Q1.

Ans. Step1 - Start Algorithm

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

Step3 : Enter value of x_1, y_1, x_2, y_2 Where x_1, y_1 are coordinates of starting point And x_2, y_2 are coordinates of Ending point

Step4 : Calculate $dx = x_2 - x_1$

Calculate $dy = y_2 - y_1$

Calculate $i_1 = 2*dy$

Calculate $i_2 = 2*(dy - dx)$

Calculate $d = i_1 - dx$

Step5 : Consider (x, y) as starting point and x_{end} as maximum possible value of x.

If $dx < 0$

Then $x = x_2$

$y = y_2$

$x_{end} = x_1$

If $dx > 0$

Then $x = x_1$

$y = y_1$

$x_{end} = x_2$

Step6 : 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 $d = d + i_1$

If $d \geq 0$

Then $d = d + i_2$

Increment $y = y + 1$

Step 9: Increment $x = x + 1$

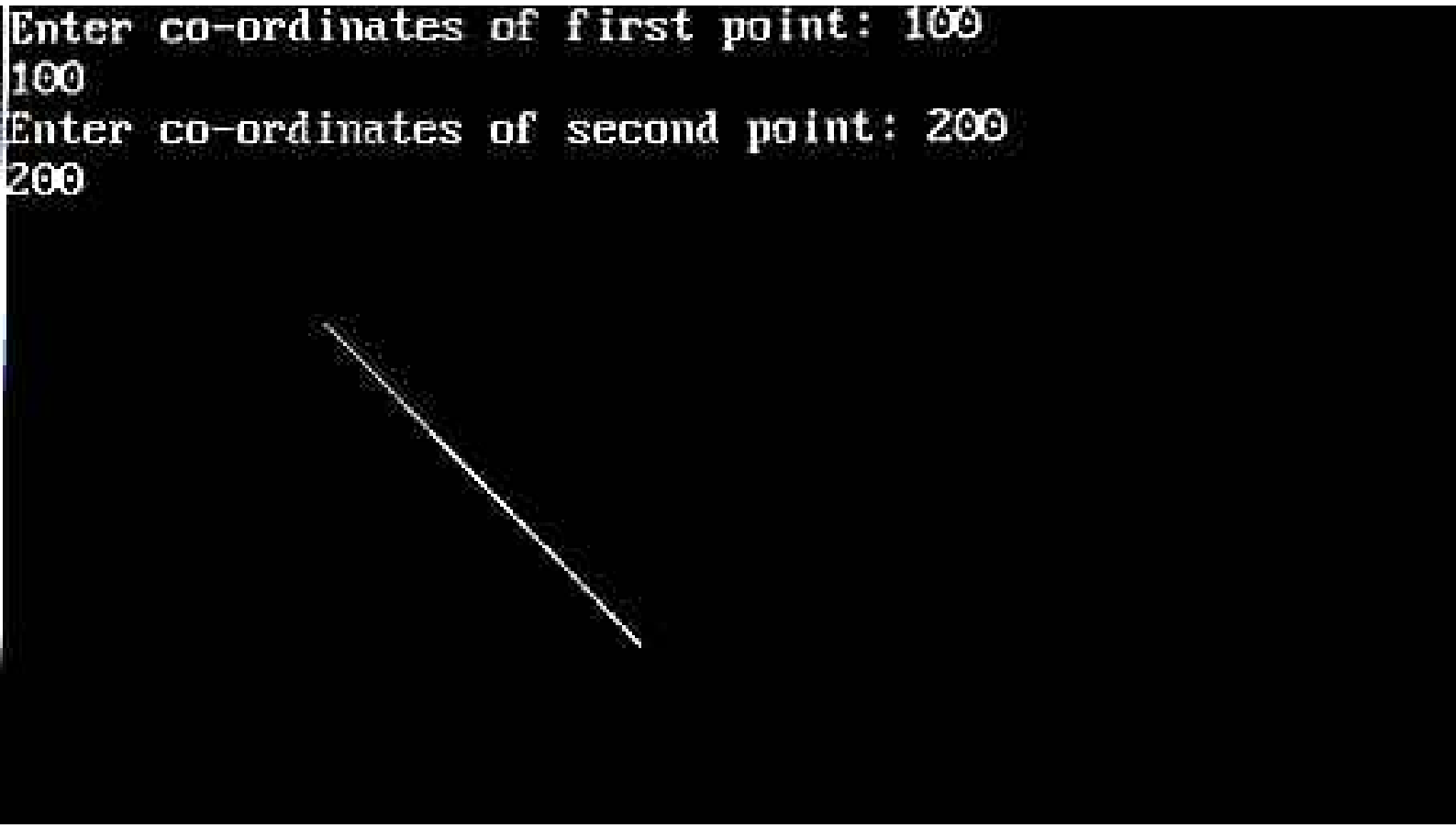
Step 10: Draw a point of latest (x, y) coordinates

Step 11: Go to step 7

Step 12: End of Algorithm

```
#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;
 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 gdrive=DETECT, gmode, error, x0, y0, x1, y1;
  initgraph(&gdrive, &gmode, "C:\\turboc3\\bgi");
  printf("Enter co-ordinates of first point:");
 scanf("%d%d", &x0, &y0);
printf("Enter co-ordinates of second point:");
scanf("%d%d", &x1, &y1);
drawline(x0, y0, x1, y1);
 return 0;
}
```


Enter co-ordinates of first point: 100
100
Enter co-ordinates of second point: 200
200

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Q2.

Ans. Algorithm for Midpoint Circle.

Step 1. Get radius and coordinates from the user.

Step 2. Find out the decision parameter that decides the nearest point to select using:

$$d = 5/4 - r$$

Step 3. While Y is greater than X do

- if d is smaller than 0, then
  $y = y$
  $n = n + 1$
  $d = 2x + 1$
- else
  $y = y - 1$
  $x = x + 1$
  $d = d + 2x - 2y + 1$

Step 4. Determine and plot the symmetry point for all eight octants.

Step 5. Repeat step 3 and 4, till $y > n$

```
#include <stdio.h>
#include <graphic.h>
#include <conio.h>
void main()
{
  int x,y,x_mid,y_mid,radius,dp;
   int g_mode, g_driver = DETECT;
   clrscr();
   initgraph (&g_driver, &g_mode, "C:\\TURROC3\\BGI");
  printf ("***** MID POINT circle drawing algorithm *****\n\n");
   printf ("\nenter the coordinates = ");
  scanf ("%d%d", &x_mid, &y_mid);
  printf ("\n now enter the radius = ");
   scanf ("%d", &radius);
     x = 0;
     y = radius;
    dp = 1 - radius;
    do
    {
     putpixel (x_mid+x, y_mid+y, YELLOW);
     putpixel (x_mid+y, y_mid+x, YELLOW);
     putpixel (x_mid-y, y_mid+x, YELLOW);
    putpixel (x_mid-x, y_mid+y, YELLOW);
    put pixel (x_mid-x, y_mid-y, YELLOW);
    putpixel (x_mid-Y, y_mid-x, YELLOW);
    putpixel (x_mid+Y, y_mid-x, YELLOW);
    putpixel (x_mid+x, y_mid-y, YELLOW);
    if (dp<0) {
      dp+= (2*x)+1;
    }
```

```
    else{
    y=y-1;
    dp+=(2*x)-(2*y)+1;
    }
    x=x+1;
  }while(y>x);
   getch();
}
```

********** MID POINT Circle drawing algorithm *********

enter the coordinates= 250 250

now enter the radius =100