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Subject : Computer Graphics

Set - B

Program 3) Bresenham's Circle Algorithm

Step 1 : Start Algorithm

Step 2 : Declare p, q, r, y, r, d variables

p, q are coordinates of the centre of circle

r is the radius of the circle

Step 3 : Enter the value of r

Step 4 : Calculate $d = 3 - 2r$

Step 5 : Initialize $x = 0$

and $r = y$

Step 6 : Check if the whole circle is scan converted if $x >= y$

Stop

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Step 7 : Plot eight points by using concept of eight-way symmetry. The center is at (p,q). Current active pixel is (x,y).

putpixel (x+p, y+q)
putpixel (y+p, x+q)
putpixel (-y+p, x+q)
putpixel (-x+p, y+q)
putpixel (-x+p, -y+q)
putpixel (-y+p, -x+q)
putpixel (y+p, -x+q)
putpixel (x+p, -y-q)

Step 8 : Find location of next pixel to be scanned

If $d < 0$

then $d = d + 4x + 6$

increment $x = x + 1$

If $d \geq 0$

then $d = d + 4(x-y) + 10$

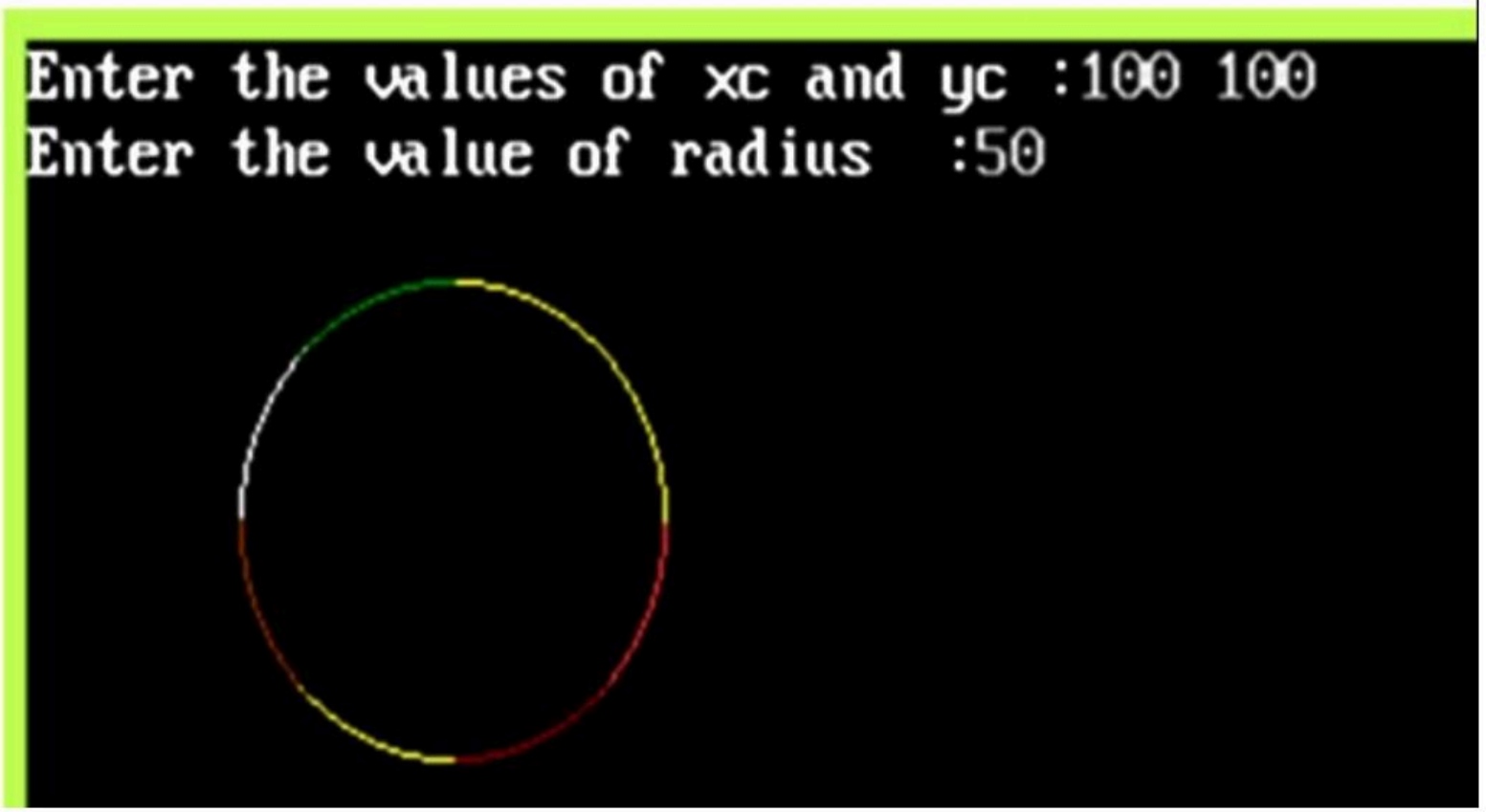
increment $x = x + 1$

and decrement $y = y - 1$

Step 9 : Go to Step 6

Step 10 : Stop Algorithm

Output:


Enter the values of xc and yc :100 100
Enter the value of radius :50

Program 1)

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

void floodfill (int x, int y, int old, int newcol)
{
    delay (5);
    putpixel (x,y, newcol);
    floodfill ( x+1, y, old, newcol);
    floodfill (x-1, y, old, newcol);
    floodfill (x, y+1), old, newcol);
    floodfill ( x, y-1, old, newcol);
    floodfill (x+1, y+1, old, newcol);
    floodfill (x-1, y+1, old, newcol);
    floodfill (x+1, y-1, old newcol);
    floodfill (x-1, y-1, old, newcol);
    }
}
    void main ()
    {
      int gd = DETECT, gm;
      initgraph (& gd, &gm, " C:\\ TURBOC3 \\ BGI");
```

```
rectangle (50, 50, 150, 150)
floodfill (70, 70, 0, 15);
  getch();

  closegraph();
  }
```

Algorithm :

floodfill (x, y, oldcolor, newcolor)

1) If x or y is outside the screen, then return
2) If color of getpixel (x, y) is same as old color, then
3) Recur for

```
floodfill(x, y, oldcolor, newcolor)
floodfill(x+1, y, oldcolor, newcolor)
floodfill(x-1, y, oldcolor, newcolor)
floodfill(x, y-1, oldcolor, newcolor)
floodfill(x+1, y+1, oldcolor, newcolor)
floodfill(x-1, y+1, oldcolor, newcolor)
floodfill(x+1, y-1, oldcolor, newcolor)
floodfill(x-1, y-1, oldcolor, newcolor)
```

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