END TERM PRACTICALS EXAM

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Course - BCA (B) VI Sem

Roll No - 1121130 (49)

Subject - Computer Graphics

Exam Type - Regular

Saurav

Q3 Bresenham's Circle drawing algorithm (1)

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
#include <math.h>
void SymmetricPlot(int xc, int yc, int x, int y)
{
putpixel(x+xc, y+yc, RED);
putpixel(x+xc, -y+yc, YELLOW);
putpixel(-x+xc, -y+yc, GREEN);
putpixel(-x+xc, y+yc, BLACK);
putpixel(y+xc, x+yc, 12);
putpixel(y+xc, -x+yc, 14);
putpixel(-y+xc, -x+yc, 15);
putpixel(-y+xc, x+yc, 6);
}
void bresenham_circle(int xc, int yc, int r)
{
int x=0, y=r, d=3-(2*r)
SymmetricPlot(xc, yc, x, y);
while(x<=y)
{
if(d<=0)
{
d=d+(4*x)+6;
}
```

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```
else
  {
    d = d + (4 * x) - (4 * y) + 10;
    y = y - 1;
  }
  x = x + 1;
  Symmetric_Plot(xc, yc, x, y);
  }
}
int main(void)
{
 int xc, yc, r, gdriver = DETECT, gmode, errorcode;
 initgraph(&gdriver, &gdmode, "\");
 errorcode = graphresult();
 if (errorcode != grOK)
   {printf("graphics error: %s\n", grapherrormsg
                                    (errorcode));
    printf("press any key to stop");
    getch()
    exit(1);
   }
   printf("Enter the value of xc and yc:");
   scanf("%d %d", &xc, &yc);
   printf("Enter the value of radius:");
   scanf("%d", &r);
   Bresenham_Circle(xc, yc, r);
   getch();
   closegraph();
  } return();
```

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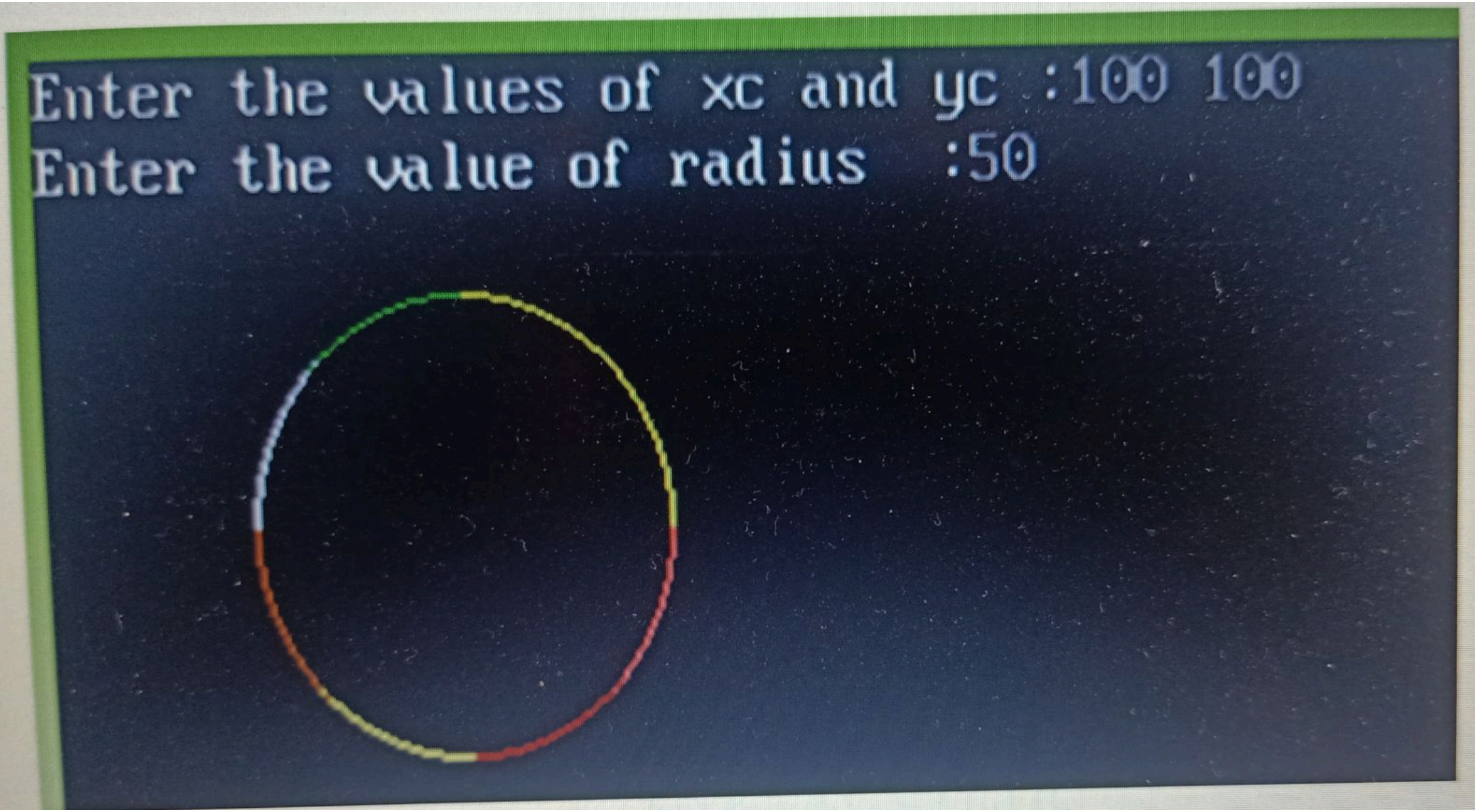
Enter the values of xc and yc :100 100
Enter the value of radius :50

Algorithm For Bresenham's Circle drawing Algorithm

Step 1 - Start

Step 2 - Declare xc, yc, x, y, r, d variables

Step 3 - Enter the value of r

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

Step 5 - Initialize $x = 0$ & $y = r$

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

Step 7 - Put eight points by using concepts of eight way symmetry
Putpixel (x+xc, y+yc)
Putpixel (y+xc, x+yc)
Putpixel (-y+xc, x+yc)
Putpixel (-x+xc, y+yc)
Putpixel (-x+xc, -y+yc)
Putpixel (-y+xc, -x+yc)
Putpixel (y+xc, -x+yc)
Putpixel (x+xc, -y-yc)

Step 8 - Find locations of next pixel to be scanned
if $d < 0$
then $d = d + 4x + 6$
$x = x + 1$

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if $d \geq 0$

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

$x = x + 1$

$y = y - 1$

Step-9 Now ~~repeat~~ go to step 6

Step -10 Stop