Algorithm :

Step1 : Start Algorithm

Step2 : Declare p, q, x, y, r, d variables
p,q are coordinates of the centre of circle
r is radius of the circle

Step3 : Enter the value of r

Step4 : Calculated $d = 3 - 2r$

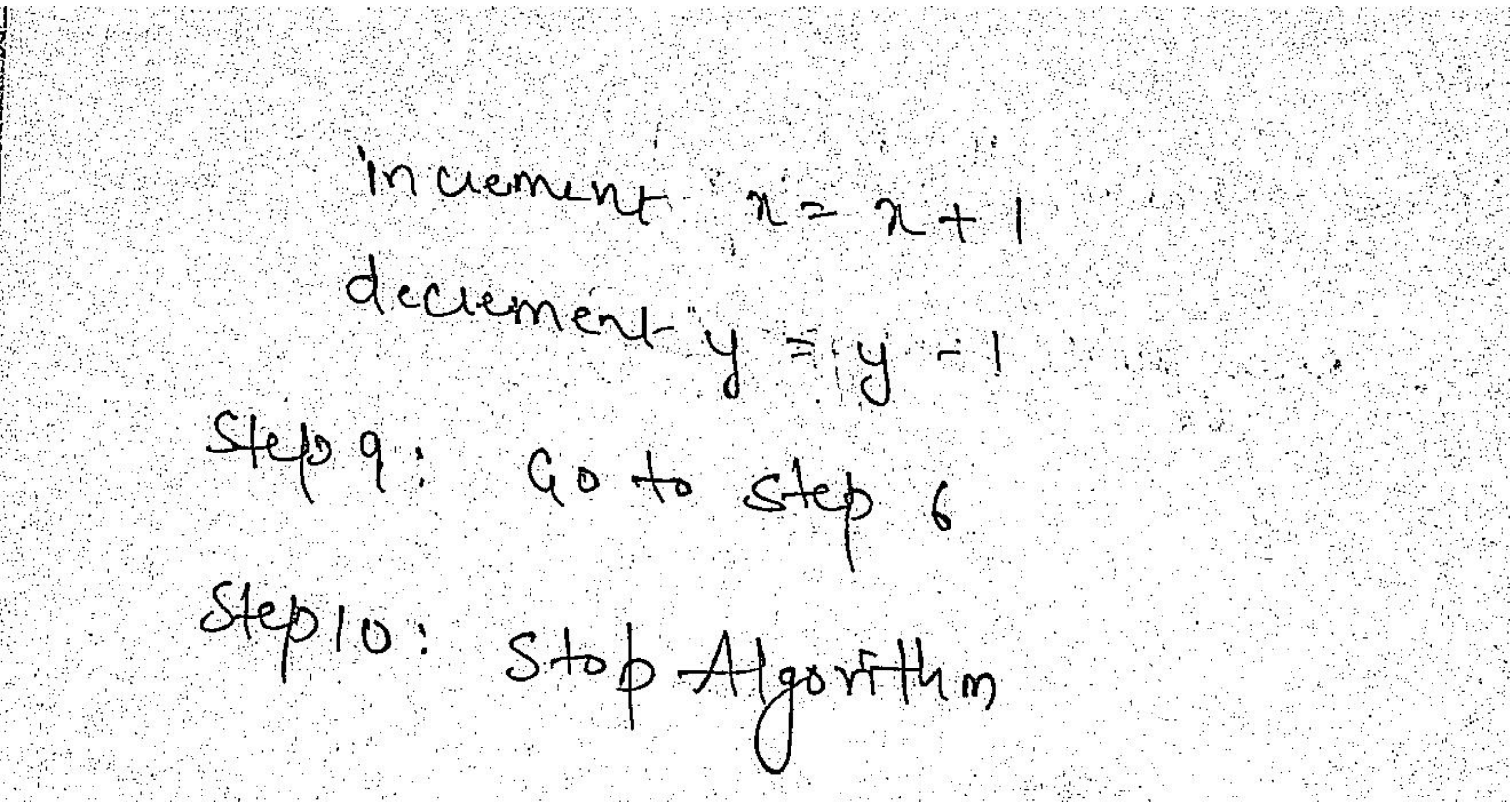
Step5 : Initialize $x = 0$ & nbs $y = r$

Step6 : Check if the whole circle is scan converted If $x \geq y$
Stop

Step7 : Plot eight points by using concepts of eight-way symmetry. The centre is at (p, q) current active pixel is (x, y).

putpixel (x+p, y+q)
put pixel (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)

Step8 : find location of next pixels to be scanned
If $d < 0$
then $d = d + 4x + 6$
increment $x = x + 1$
If $d \geq 0$
then $d = d + 4(x - y) + 10$

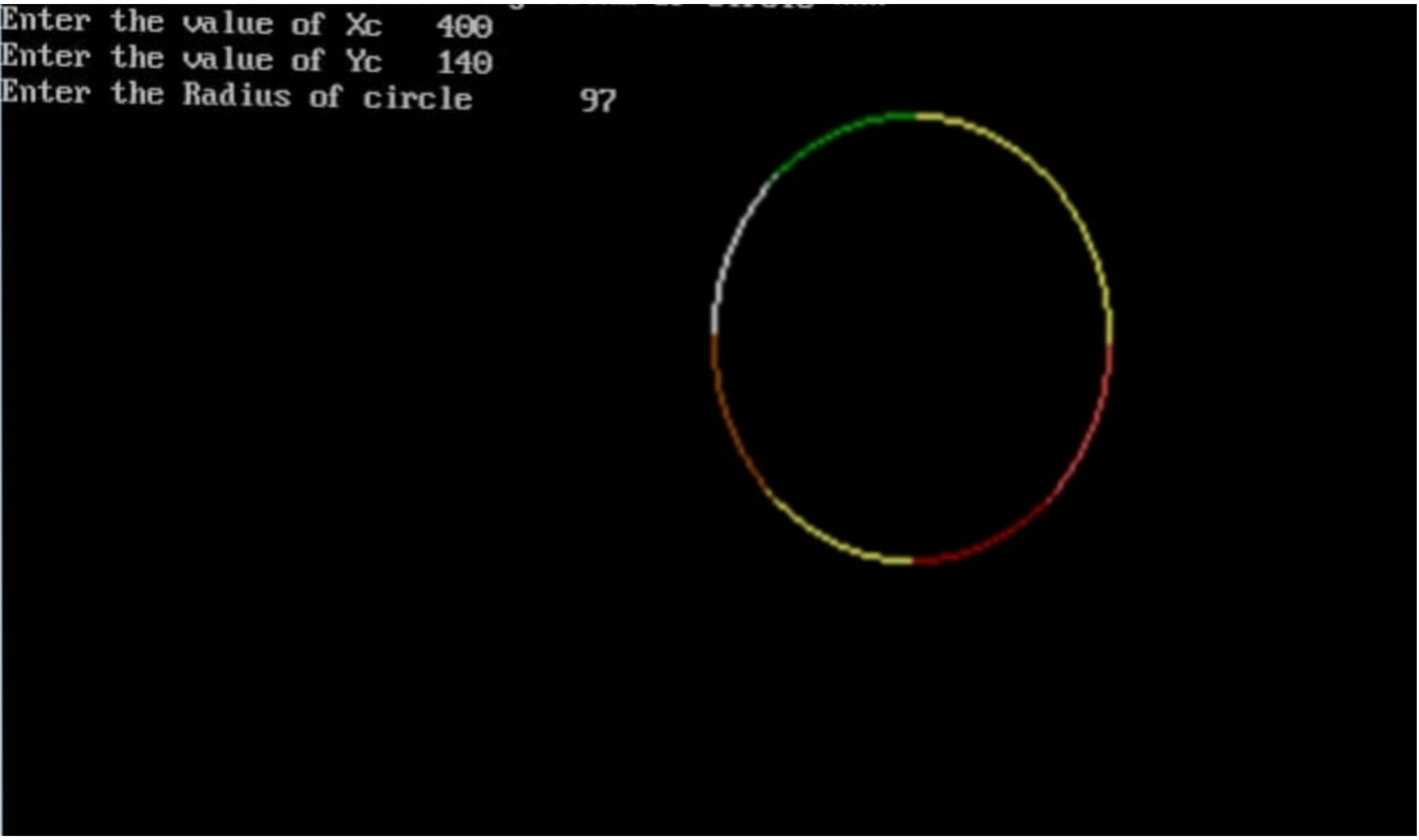


```
    increment $x = x + 1$
    decrement $y = y - 1$
Step 9 : Go to Step 6
Step 10 : Stop Algorithm
```

Name- Pawan Singh Bhakuni

Ans 3

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
#include <math.h>
void Eightway symmetric Plot (int xc, int yc, int x, int y)
{
 put pixel (x+xc, y+yc, RED);
 put pixel (x+xc, -y+yc, YELLOW);
 put pixel (-x+xc, -y+yc, GREEN);
 ~~put pixel (y+xc, x+yc,~~
 put pixel (-x+xc, y+yc, YELLOW);
 put pixel (y+xc, x+yc, 12);
 put pixel (y+xc, -x+yc, 14);
 put pixel (-y+xc, -x+yc, 15);
 put pixel (-y+xc, x+yc, 6);
}
void Bresenhamcircle (int xc, int yc, int r)
{
   int x=0, y=r, d=3-(2*r);
   Eightway Symmetric Plot (xc, yc, x, y);
   while (x<=y)
   { if (d<=0)
       {
   d=d+(4*x)+6;
   }
else
{ d = d+(4*x)-(4*y)+10;
  y= y-1;
}
 x=x+1;
 Eightwaysymmetric Plot (xc,yc,x,y);
}
} int main (void)
{
  int / * requestauto detection */
  int xc, yc, r, gdriver = DETECT , gmode, errorcode ;
/* initialize graphics and local variables */
  initgraph (&gdriver , &gmode," C:\\TURBOC3\\BGI");
/* read result of initialization */
   errorcode = graphresult ();
  if (errorcode != grOK) /* an error occured */
  {
    printf(" Graphics error : %s \n",
  grapherrormsg (errorcode));
   printf(" Press any key to halt");
    getch ();
   exit (1); /* terminate with an error code */
  printf("Enter the values 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 0 ;
  }
```



```
Enter the value of Xc   400
Enter the value of Yc   140
Enter the Radius of circle      97
```