

NAME - SUBHAM

ROUND - 1121147

SUBJECT - COMPUTER GRAPHICS

SUBJECT CODE - PBC-602

Ans 2

Algorithm:

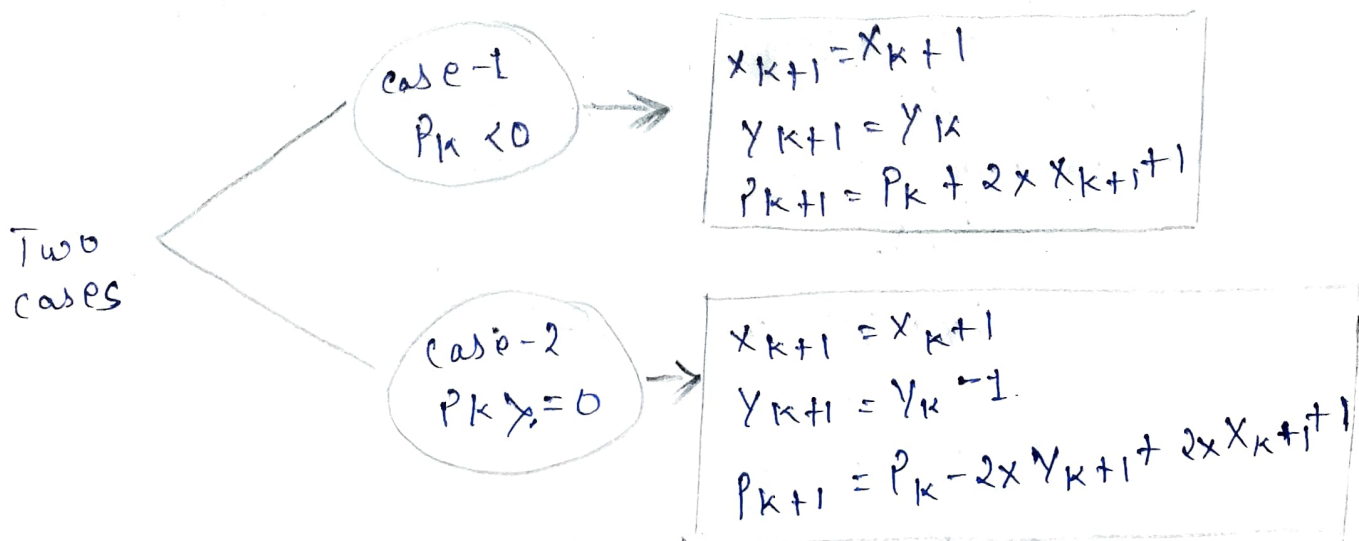
step 1. ~~Put $x=0, y=r$~~ Assign the starting point coordinates (x_0, y_0) as

- $x_0 = R$
- $y_0 = 0$

step 2. Calculate the value of initial decision parameter P_0 as -
 $P_0 = 1 - R$

step 3. Suppose the current point is (x_k, y_k) and the next point is (x_{k+1}, y_{k+1})

Find the next point of the first octant depending on the value of decision parameter P_k .



step 4. If the given centre point (x_0, y_0) is not $(0, 0)$, then do the following and plot the point -

- $x_{plot} = x_c + x_0$

- $y_{plot} = y_c + y_0$

Here (x_c, y_c) denotes the current value of x and y coordinates

step 5. keep repeating step 3 and step 4 until $x_{plot} \neq y_{plot}$

step 6. step 5 generates all the points for one octant. To find the points for other seven octants, follow the eight symmetry property of circle.

This is depicted by the following program.

prog:

```
#include <iostream.h>
#include <graphics.h>
void drawcircle (int x0, int y0, int radius)
{
    int x = radius;
    int y = 0;
    int per = 0;
    while (x > y)
    {
        putpixel (x0 + x, y0 + y, 7);
        putpixel (x0 + y, y0 + x, 7);
        putpixel (x0 - y, y0 + x, 7);
        putpixel (x0 - x, y0 + y, 7);
        putpixel (x0 - x, y0 - y, 7);
    }
}
```

```
putpixel(x0-y, y0-x, 7);  
putpixel(x0+y, y0-x, 7);  
putpixel(x0+x, y0-y, 7);
```

```
if (err <= 0)
```

```
{
```

```
    y += 1;
```

```
    err += 2 * y + 1;
```

```
}
```

```
if (err > 0)
```

```
{
```

```
    x -= 1;
```

```
    err = 2 * x + 1;
```

```
}
```

```
}
```

```
}
```

```
int main()
```

```
{
```

```
int gdriver = DETECT, gmode, esum, x, y, r;
```

```
initgraph(&gdriver, &gmode, "c:\\turbo3\\bg1");
```

```
cout << "Enter radius of circle ;";
```

```
cin >> r;
```

```
cout << "Enter co-ordinates of centre (x and y) :";
```

```
cin >> x >> y;
```

```
drawcircle(x, y, r);
```

```
return 0;
```

```
}
```

Enter radius of circle: 100

Enter co-ordinates of center(x and y): 150
150

