Name - Siddharth Rawat Course - BCA Sem - 6th 'C'
University Roll-No - 11211493 Subject: CG Practical [PBC-602]

P2. Algorithm :-

Given,

Centre point of Circle = (x_0, y_0)

Radius of Circle = R

Step 1: Assign the starting point Co-ordinates (x_0, y_0) as
- $x_0 = 0$
- $y_0 = R$

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 ~~point is~~ on the value of decision parameter P_k.

two cases:-

1) $P_k < 0 \rightarrow x_{k+1} = x_{k+1}$

$y_{k+1} = y_k$

$P_{k+1} = P_k + 2 * x_{k+1} + 1$

2) $P_k >= 0 \rightarrow x_{k+1} = x_{k+1}$

$y_{k+1} = y_{k-1}$

$P_{k+1} = P_k - 2 * y_{k+1} + 2 * x_{k+1} + 1$ Sid. R

Step 4:- If the Given Centre point (x_0, y_0) is not $(0,0)$, then do the following and plot the point

$$x_{plot} = x_c + x_0$$

$$y_{ploat} = y_c + y_0$$

Here, (x_c, y_c) denotes the current value of X and Y co-ordinates

Step5: Keep repeating Step3 and Step4 until $x_{plot} >= y_{plot}$

Step6: Step5 generates all the points for one octant To find the point of other seven octants, Follow the eight Symmetry property of circle.

Program

```
# include <stdio.h>
# include <graphics.h>
void drawCircle (int x0, int y0, int radius)
{
    int x = radius;
    int y = 0;
    int error = 0;
    while (x >= y)
    {
        putpixel (x0 + x, y0 + y, 7);
        putpixel (x0 + y, y0 + x, 7);
        putpixel (x0 - y, y0 + x, 7);
```

Scanned by TapScanner

```
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, error, x, y, r;
printf("Enter radius: ");
scanf("%d", &r);
PrintF("Enter co-ordinates of center(x and y):");
Scanf("%d %d", &x, &y);
```

SIDR

```
initgraph (&gdriver, &gmode, "");
drawcircle (x, y, r);
delay(99999999);
return 0;
}
```

NeuTroN DOS-C++ 0.77, Cpu speed: max 100% cycles, Frameskip 0, Program:

```
Enter radius of circle: 100
Enter co-ordinates of center(x and y): 150
150
```