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FATHER NAME - DURGA UNIYAL

UNIVERSITY ROLL NO - 1121082

CLASS ROLL NO - 03

COURSE - BCA (VI) B

PAPER NAME - COMPUTER GRAPHICS AND ANIMATION (PBC-602)

PROGRAM 3 -

ALGORITHM -

Step 1: Start Algorithm

Step 2: Declare r, x, y, p variables
xc, yc are coordinates of center of the circle
r is the radius of the circle

Step 3: Enter the value of r

Step 4: Initialize $x = 0$
$y = r$

Step 5: Calculate the value of initial decision parameter -
$P = 3 - 2r$

Step 6: ~~Case~~ To Location of Next pixel can be determined by -

Case 1: $P < 0$

$x_{K+1} = x_K + 1$

$y_{K+1} = y_K$

$P_{K+1} = P_K + 4 \times X_{K+1} + 6$

Case 2: $P >= 0$

$X_{K+1} = X_K + 1$

$y_{K+1} = y_K - 1$

$P_{K+1} = P_K + 4 \times (X_{K+1} - y_{K+1}) + 10$

Mansi

Step 7:- Plot eight points by using concept of eight way symmetry. Centre at (x_c, y_c). Current active pixel - (x, y)

putpixel $(x_c+x, y_c-y, 1)$
putpixel $(x_c-x, y_c-y, 2)$
putpixel $(x_c+x, y_c+y, 3)$
putpixel $(x_c-x, y_c+y, 4)$
putpixel $(x_c+y, y_c-x, 5)$
putpixel $(x_c-y, y_c-x, 6)$
putpixel $(x_c+y, y_c+x, 7)$
putpixel $(x_c-y, y_c+x, 8)$

Step 8: Continue until x is greater than equal to y

Step 9: Stop algorithm

SOURCE CODE –

```
# include <stdio.h>
# include <graphics.h>
  int main()
  {
  int gd = DETECT, gm;
  int r, x, y, p, xc=320, yc=240;
  printf("Enter the Radius");
  Scanf("%d", &r);
  initgraph(&gd, &gm, "");
  x=0;
  y=r;
  putpixel (xc+x, yc-y, 1);
  P=3-(2*r);
  for(x=0; x<=y; x++);
  {
  if (p<0)
  {
  y=y;
  p=(p+(4*x)+6);
  }
  else
  {
  y=y-1;
  p= p+((4*(x-y)+10));
  }
  putpixel (xc+x, yc-y, 1);
  putpixel (xc-x, yc-y, 2);
  putpixel (xc+x, yc+y, 3);
  putpixel (xc-x, yc+y, 4);
```

```
putpixel (xc+y, yc-x, 5);
putpixel (xc-y, yc-x, 6);
putpixel (xc+y, yc+x, 7);
putpixel (xc-y, yc+x, 8);
}
getch();
closegraph()
}
```

```
Enter the radius 100
```