Name : Shivani Patwal
Roll no: 1121134

Answer 3

Bresenham's circle algorithm

step 1 : start

step 2 : Declare p, q, x, y, r, d variables
p,q are coordinates of the circle
r is the radius of the circle.

step 3 : Enter the value of r

step 4 : Calculate d = 3 - 2r

step 5 : Initialize x = 0 & nbsy = r

step 6 : Check if the whole circle is scan converted
if x >= y
stop

step 7 : plot eight points by using concepts of eight way symmetry. The center is at (p, q).

Current active pixel is (x, y).
putpixel (x+p, y+q)
putpixel (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)

Step 8: 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 $y = y - 1$

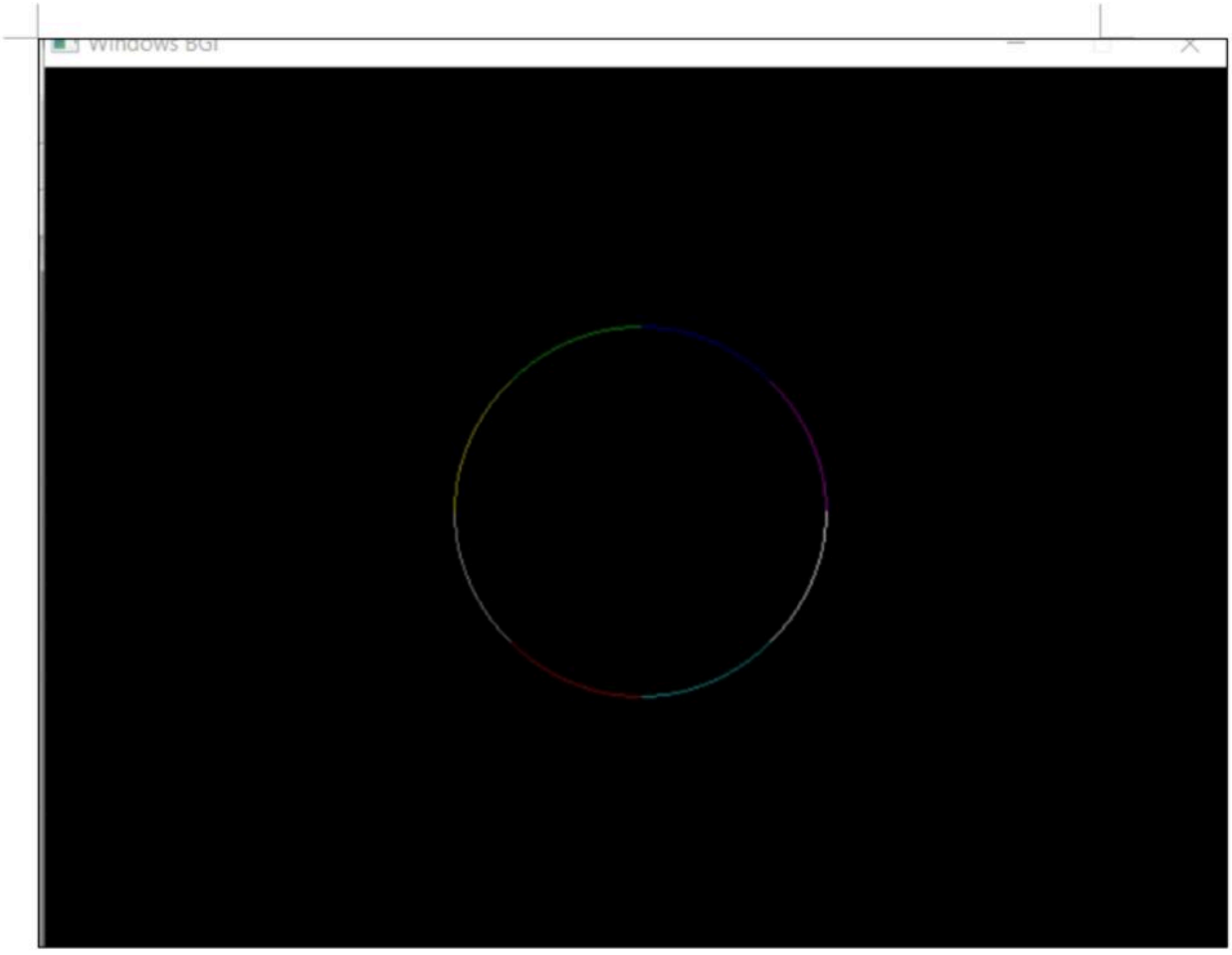
Step 9: Go to step 6

Step 10: Stop Algorithm

Program

```
#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();
}
```


Windows BGI