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Course ⇒ BCA VIth sem

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section ⇒ B

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(3) Bresenham's Circle Algorithm:

Step 1: Start Algorithm

Step 2: Delare p, q, x, y, r, d variables p,q are coordi-nates of the center 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 and nbsy = r.

Step 6: Check if the whole circle is Scan converted check whether y less then equal to x ~~end~~ 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, y+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)~~ PutPixel (x+P, -y+Q)

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Step 8:- Find location of next pixels to be scanned

check whether $d < 0$,

then addition of d, $4x$, 6 assign to d.

increment in x by 1.

check wather d is grater or equal to 0,

then calculate $d + 4(x-y) + 10$ and assign to d.

increment x by 1

decrement y in y by 1

Step 9: Go to step 6.

Step 10: Stop algorithm

Program:-

```
#include<graphics.h>
#include<stdio.h>
#include<stdlib.h>
#include<math.h>

void eightWaySymmetricPlot(int xc, int yc, int x, int y)
{
    putpixel(x+xc, y+yc, RED);
    putpixel(x+xc, -y+yc, YELLOW);
    putpixel(-x+xc, -y+yc, GREEN);
    putpixel(-x+xc, y+yc, YELLOW);
    putpixel(y+xc, x+yc, 12);
    putpixel(y+xc, -y+yc, 14);
```

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```
putpixel(-y+xc, -x+yc, 15);
putpixel(-y+xc, x+yc, 6);
}
void BresenhamCricle(int xc, int yc, int r)
{ int x=0, y=r, d=3-(2*r);
  EightWaySymmetricPlot(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;
    EightWaysymmetricPlot(xc, yc, x, y)
  }
}
int main(void)
int main()
{
    int xc, yc, r, gdriver=DETECT, gmode, errorcode;
    initgraph(&gdriver, &gmode, "C:\\TC\\BGI");
    errorcode = graphresult();
```

```
if(errorcode != grOk)
{
    printf("Graphics error: %s\n", grapherrormsg(
    getch();                                errorcode));
    exit(1);
}
printf("Enter the value of xc and yc:");
scanf("%d%d", &xc, &yc);
printf("Enter the value of radius:");
scanf("%d", &r);
Brepenham circle(xc, yc, r);
getch();
closegraph();
}
```

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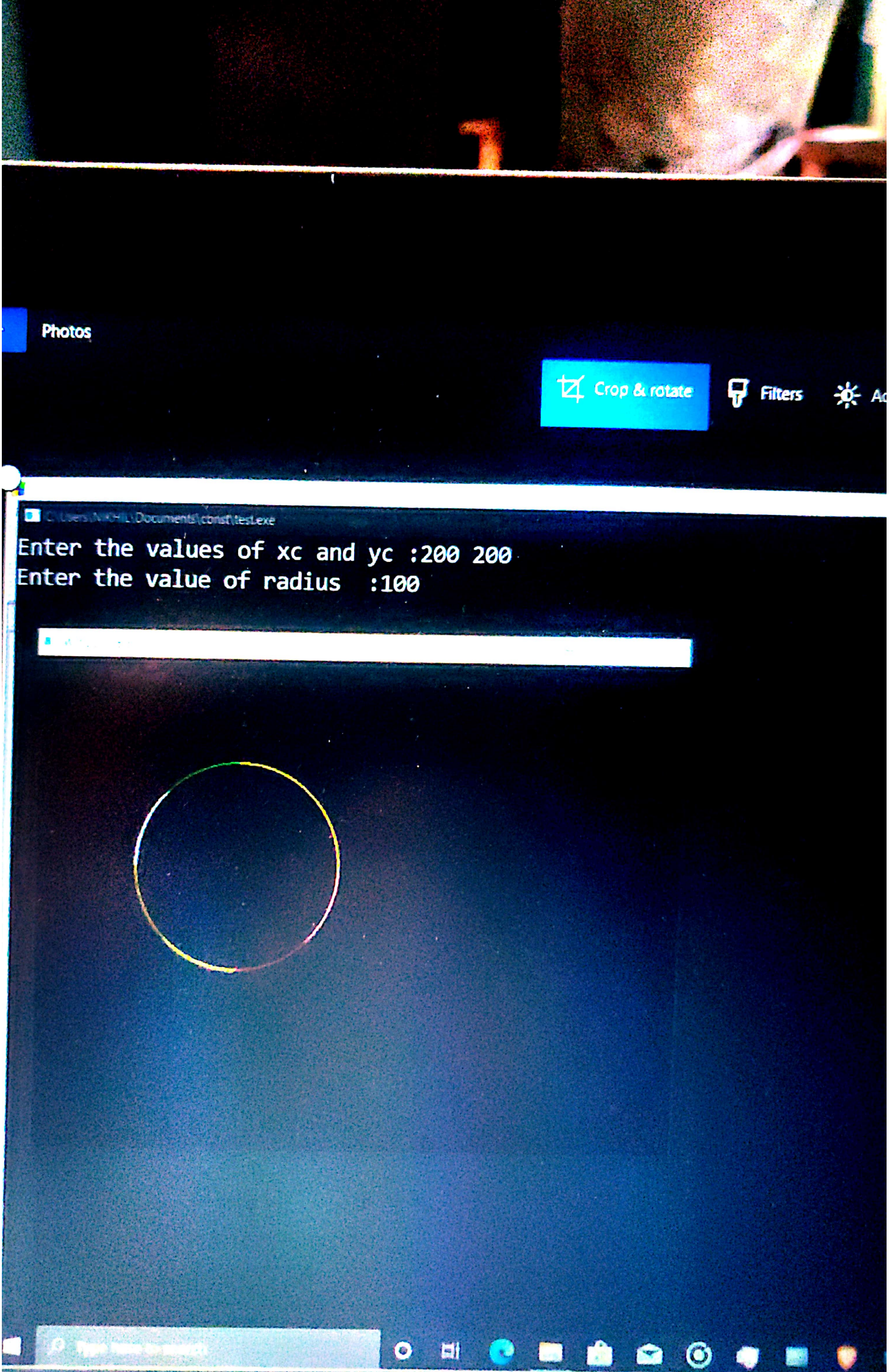
Photos
Crop & rotate
Filters
Enter the values of xc and yc :200 200
Enter the value of radius :100