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Que.2

```
#include<graphics.h>
#include<stdlib.h>
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    int gm;
    int gd = DETECT;
    int
x1, x2, x3, y1, y2, y3, nx1, nx2, nx3, ny1, ny2, ny3, c;
 int sx, sy, xt, yt, r;
 float t
initgraph (&gd, &gm, "c:\tc\bg:");
printf ("\t program for basic transactions");
printf ("\n\t Enter the points of triangle");
 setcolor (1);
scanf ("%d %d %d %d %d %d", &x1, &y1, &x2, &y2,
      &x3, &y3);
     line (x1, y1, x2, y2);
     line (x2, y2, x3, y3);
     line (x3, y3, x1, y1);
     getch();
printf("\n 1. Transaction\n 2. Rotation \n. 3.
          Scaling\n . 4. exit");
printf ("Enter your choice:");
scanf ("%d", &c);
switch (c)
{
```

Case 1:

```
printf("\n Enter the translation factor");
scan("%d %d", &xt, &yt);
                    nx1 = x1 + xt;
                    ny1 = y1 + yt;
                    nx2 = x2 + xt;
                    ny2 = y2 + yt;
                    nx3 = x3 + xt;
                    ny3 = y3 + yt;
line (nx1, ny1, nx2, ny2);
line (nx2, ny2, nx3, ny3);
line (nx3, ny3, nx1, ny1);
                    getch();
```

Case 2:

```
printf("\n Enter the angle of rotation");
scanf("%d", &r); t = 3.14 * r / 180;
  nx1 = abs (x1* cos (t) - y1* sin (t));
ny1 = abs (x1* sin (t) + y1* cos (t));
nx2 = abs (x2* cos (t) - y2* sin (t));
ny2 = abs (x2* sin (t) + y2* cos (t));
nx3 = abs (x3 * cos (t) - y3* sin (t));
ny3 = abs (x3 * sin (t) + y3* cos (t));
line (nx1, ny1, nx2, ny2);
line (nx2, ny2, nx3, ny3);
line (nx3, ny3, nx1, ny1);
  getch();
```

Case 3:

```
printf ("\n Enter the scalling factor ");
scanf ("%d %d", &sx, &sy);
nx1 = x1 * sx;
ny1 = y2 * sy;
nx2 = x2 * sx;
ny2 = y2 * sy;
nx3 = x3 * sx;
ny3 = y3 * sy;
line (nx1, ny1, nx2, ny2);
line (nx2, ny2, nx3, ny3);
line (nx3, ny3, nx1, ny1);
                getch ();
```

Case 4:

```
  break;
  default :
  printf (" Enter the correct choice");
    }
    closegraph ();
    }
```

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Que-3 This can be decided by the decision parameter d

- If $d <= 0$, then N_{x+1}, Y_{x+1}, Y is to be chosen as next pixel.

Algorithms :-

Step 1 - Get the coordinates of the center of the circle and radius, and store them in x, y. and R respectively. Set P = 0 and Q = R.

Step 2 - Set decision parameter D = 3 - 2R.

Step 3 Repeat through step 8 while $P \leq Q$.

Step 4 Call Draw Circle X, Y, P, Q, X, Y, P, Q.

Step 5 - Increment the value of P.

Step 6 If $D < 0$ then $D = D + 4P + 6$

Step 7 Else set $R = R - 1$, $D = D + 4P - 8P - Q + 10$

Step 8 - Call Draw Circle X, Y, P, Q, X, Y, P, Q.

Source Code:-

```
# include<stdio.h>
# include<graphics.h>
void 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);
}
ge
cl
}
```