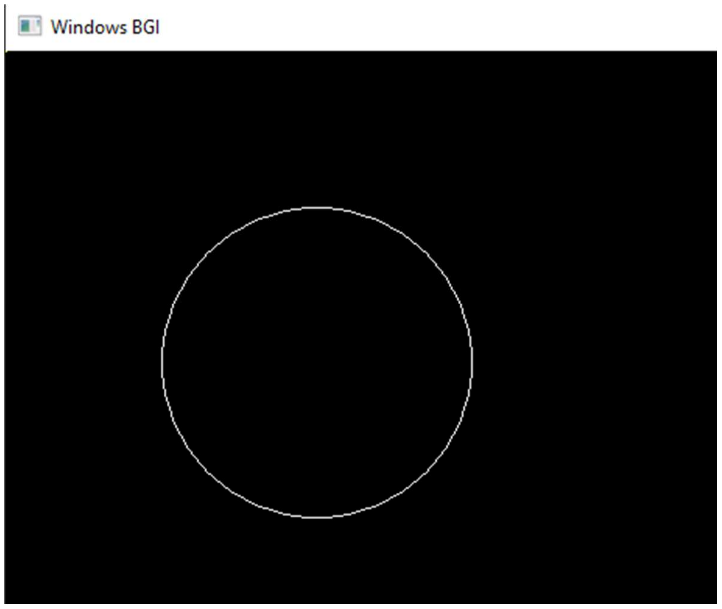
1. Write a C++ program to draw a circle.

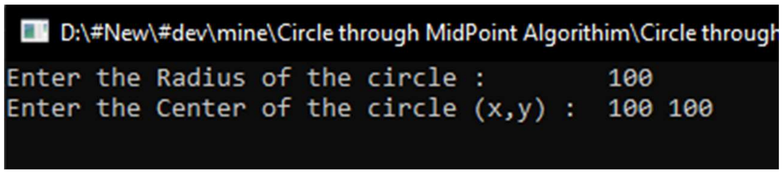
```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
int main(void)
{
  /* request auto detection */
  int gdriver = DETECT, gmode, errorcode;
  int midx, midy;
  /* initialize graphics and local variables */
  initgraph(&gdriver, &gmode, "C:\\TURBOC3\\BGI");
  /* read result of initialization */
  errorcode = graphresult();
  if (errorcode != grOk)  /* an error occurred */
  {
    printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1); /* terminate with an error code */
  }
  setcolor(getmaxcolor());
  /* draw the circle */
  circle(200,200, 100);
  /* clean up */
  getch();
  closegraph();
  return 0;
```



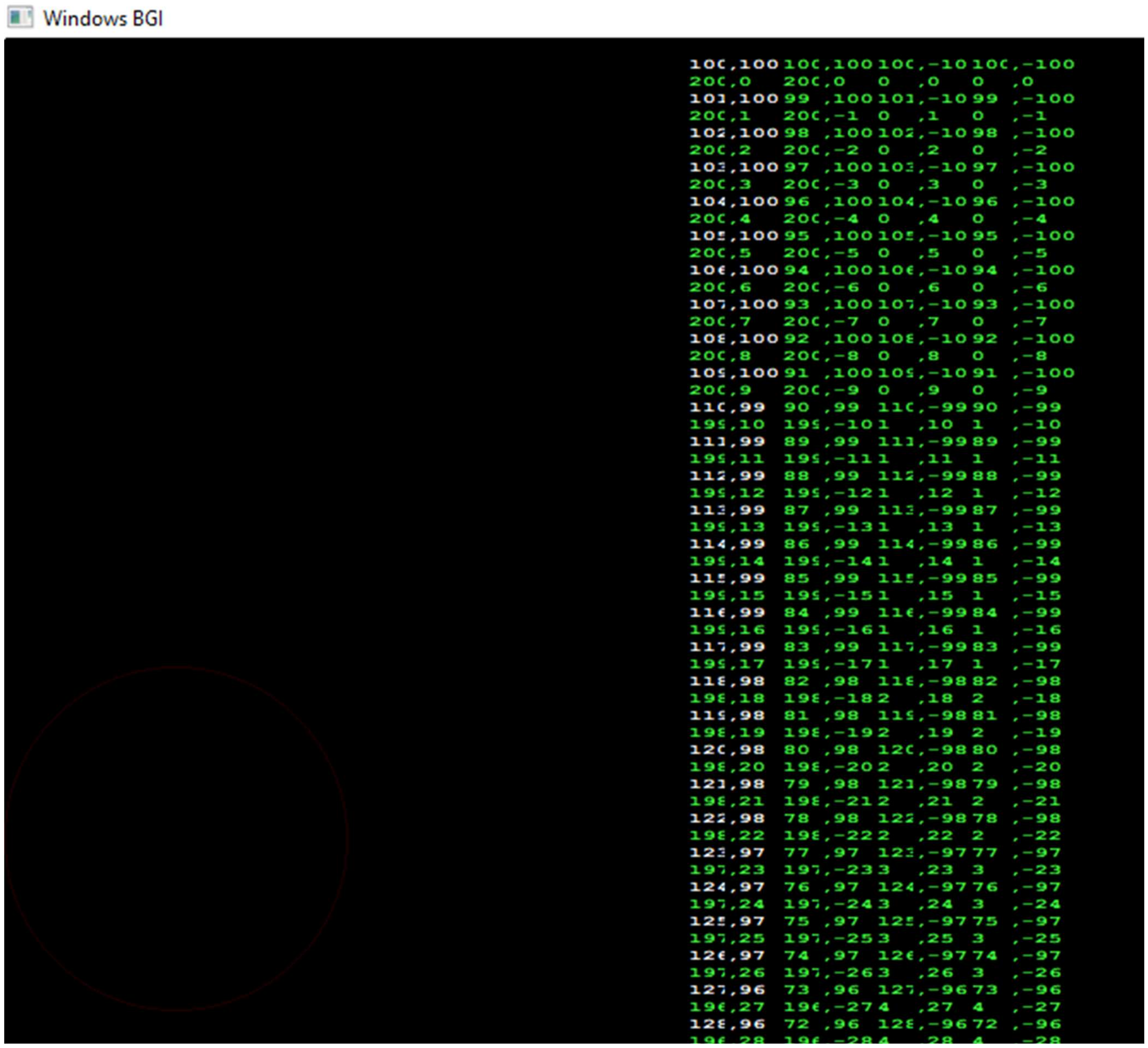
2. Circle through Midpoint Algorithm

```
#include <stdlib.h>
#include <graphics.h>
#include <math.h>
#include <conio.h>
#include <iostream>
using namespace std;
int xc, yc, showat=10;
char ruf[10];
void tellpoint(int *num1, int *num2)
{
  int color; color=getcolor();
  int a,b;
  a = xc+*num1; b = getmaxy()-yc+*num2;
  outtextxy(400,showat,itoa(a,ruf,10));  outtextxy(422,showat,",");  outtextxy(429,showat,itoa(b,ruf,10));
  a=xc-*num1; b=getmaxy()-yc+*num2; setcolor(10);
  outtextxy(455,showat,itoa(a,ruf,10));  outtextxy(477,showat,",");  outtextxy(484,showat,itoa(b,ruf,10));
  a=xc+*num1; b=getmaxy()-yc-*num2; setcolor(20);
  outtextxy(510,showat,itoa(a,ruf,10));  outtextxy(532,showat,",");  outtextxy(539,showat,itoa(b,ruf,10));
  a=xc-*num1; b=getmaxy()-yc-*num2; setcolor(30);


 outtextxy(565,showat,itoa(a,ruf,10));  outtextxy(587,showat,",");  outtextxy(594,showat,itoa(b,ruf,10));
  showat+=10;
  a = xc+*num2; b = getmaxy()-yc+*num1; setcolor(110);


  outtextxy(400,showat,itoa(a,ruf,10));  outtextxy(422,showat,",");  outtextxy(429,showat,itoa(b,ruf,10));
  a=xc+*num2; b=getmaxy()-yc-*num1; setcolor(70);
  outtextxy(455,showat,itoa(a,ruf,10));  outtextxy(477,showat,",");  outtextxy(484,showat,itoa(b,ruf,10));
  a=xc-*num2; b=getmaxy()-yc+*num1; setcolor(140);
  outtextxy(510,showat,itoa(a,ruf,10));  outtextxy(532,showat,",");  outtextxy(539,showat,itoa(b,ruf,10));
  a=xc-*num2; b=getmaxy()-yc-*num1; setcolor(150);
  outtextxy(565,showat,itoa(a,ruf,10));  outtextxy(587,showat,",");  outtextxy(594,showat,itoa(b,ruf,10));
  setcolor(color); showat+=10;
```

```
}
void drawpoint(int x, int y)
{
  putpixel (xc+x, yc+y, 30);        putpixel (xc-x, yc+y, 30);       putpixel (xc+x, yc-y, 30);
  putpixel (xc-x, yc-y, 30);        putpixel (xc+y, yc+x, 30);       putpixel (xc-y, yc+x, 30);
  putpixel (xc+y, yc-x, 30);        putpixel (xc-y, yc-x, 30);
}
int main()
{
            int gdriver=DETECT, gmode, ecode;
            initgraph(&gdriver, &gmode, "c:\\Turboc3\\bgi");
            ecode = graphresult();
            if (ecode != grOk)
    {
               cout << "Graphic error ...";
        cout << "Press any key ...";
                     getch();
                     exit(1);
            }
int x,y,r, Pk;
char comma;
cout <<"Enter the Radius of the circle :\t";
cin >> r;
cout << "Enter the Center of the circle (x,y) :\t";
cin >>xc >>comma >>yc;
yc = getmaxy()-yc;
x=0;
y=r;
drawpoint(x,y);
tellpoint(&x, &y);
Pk = 1 - r;
while (x<y)
 {
       if (Pk<0)
       x +=1;
              else
       {
            x +=1;
                            y -=1;
            }
             drawpoint(x,y);
             tellpoint(&x, &y);



if (Pk<0)
 Pk = Pk + 2*x +1;
 else
     Pk = Pk + 2*(x-y) +1;


}
            getch();
            return 0;
}
```



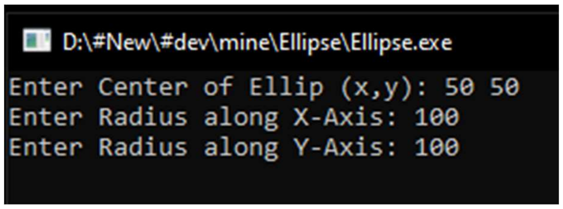
```
D:\#New\#dev\mine\Circle through MidPoint Algorithim\Circle through
Enter the Radius of the circle :        100
Enter the Center of the circle (x,y) :  100 100
```



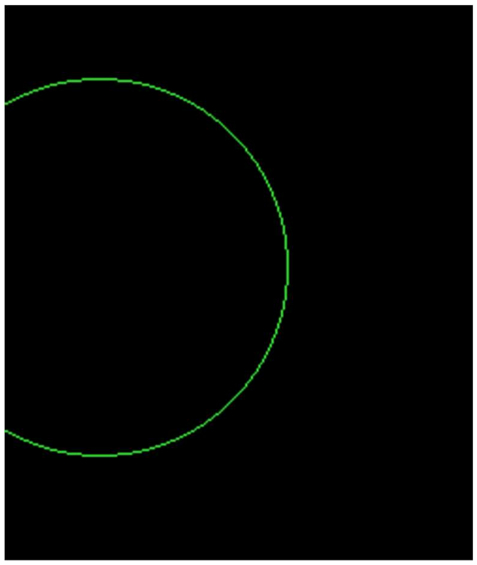
```
Windows BGI
100,100100,100100,-10100,-100
200,0   200,0   0   ,0   0   ,0
101,10099 ,100101,-1099 ,-100
200,1   200,-1  0   ,1   0   ,-1
102,10098 ,100102,-1098 ,-100
200,2   200,-2  0   ,2   0   ,-2
103,10097 ,100103,-1097 ,-100
200,3   200,-3  0   ,3   0   ,-3
104,10096 ,100104,-1096 ,-100
200,4   200,-4  0   ,4   0   ,-4
105,10095 ,100105,-1095 ,-100
200,5   200,-5  0   ,5   0   ,-5
106,10094 ,100106,-1094 ,-100
200,6   200,-6  0   ,6   0   ,-6
107,10093 ,100107,-1093 ,-100
200,7   200,-7  0   ,7   0   ,-7
108,10092 ,100108,-1092 ,-100
200,8   200,-8  0   ,8   0   ,-8
109,10091 ,100109,-1091 ,-100
200,9   200,-9  0   ,9   0   ,-9
110,99  90 ,99  110,-9990 ,-99
199,10  199,-101   ,10 1  ,-10
111,99  89 ,99  111,-9989 ,-99
199,11  199,-111   ,11 1  ,-11
112,99  88 ,99  112,-9988 ,-99
199,12  199,-121   ,12 1  ,-12
113,99  87 ,99  113,-9987 ,-99
199,13  199,-131   ,13 1  ,-13
114,99  86 ,99  114,-9986 ,-99
199,14  199,-141   ,14 1  ,-14
115,99  85 ,99  115,-9985 ,-99
199,15  199,-151   ,15 1  ,-15
116,99  84 ,99  116,-9984 ,-99
199,16  199,-161   ,16 1  ,-16
117,99  83 ,99  117,-9983 ,-99
199,17  199,-171   ,17 1  ,-17
118,98  82 ,98  118,-9882 ,-98
198,18  198,-182   ,18 2  ,-18
119,98  81 ,98  119,-9881 ,-98
198,19  198,-192   ,19 2  ,-19
120,98  80 ,98  120,-9880 ,-98
198,20  198,-202   ,20 2  ,-20
121,98  79 ,98  121,-9879 ,-98
198,21  198,-212   ,21 2  ,-21
122,98  78 ,98  122,-9878 ,-98
198,22  198,-222   ,22 2  ,-22
123,97  77 ,97  123,-9777 ,-97
197,23  197,-233   ,23 3  ,-23
124,97  76 ,97  124,-9776 ,-97
197,24  197,-243   ,24 3  ,-24
125,97  75 ,97  125,-9775 ,-97
197,25  197,-253   ,25 3  ,-25
126,97  74 ,97  126,-9774 ,-97
197,26  197,-263   ,26 3  ,-26
127,96  73 ,96  127,-9673 ,-96
196,27  196,-274   ,27 4  ,-27
128,96  72 ,96  128,-9672 ,-96
196,28  196,-284   ,28 4  ,-28
```

3. Ellipse Program

```
#include <stdio.h>
#include <conio.h>
#include<iostream>
#include <graphics.h>
#include <stdlib.h>
#include<math.h>
#define ROUND(x)  ((int)(x+0.5))
using namespace std;
float xc,yc,rx,ry;
void drawpoint(int x, int y){
 putpixel(xc+x,yc+y,10);
  putpixel(xc-x,yc+y,10);
 putpixel(xc+x,yc-y,10);
 putpixel(xc-x,yc-y,10);}
int main(){
        float x,y;
        int gdriver=DETECT, gmode, ecode;
        char comma;
        initgraph(&gdriver, &gmode, "C:\\TURBOC3\\BGI");
/* read result of initialization */
        ecode = graphresult();
        if (ecode != grOk){
                printf("Graphics error:\n");
                printf("Press any key...");
                getch();
                exit(1);
        }
float p;
        cout<<"Enter Center of Ellip (x,y): ";
        cin>>xc>>comma>>yc;
        cout<<"Enter Radius along X-Axis: ";
        cin>>rx;
        cout<<"Enter Radius along Y-Axis: ";
        cin>>ry;
        yc = getmaxy()-yc;
        x=0;
        y=ry;
        drawpoint(x,y);
        p=ROUND(ry*ry-rx*rx*ry+0.25*(rx*rx)); //ry2-rx2*ry+(.25*rx2)
        while((ry*ry)*x<(rx*rx)*y)
        {       x=x+1;
                if(p>=0)
                {       y=y-1;
                        p=p+2*(ry*ry)*x+ry*ry-2*(rx*rx)*y;
                }
                else
                {       p=p+2*(ry*ry)*x+ry*ry;
                }
                drawpoint(x,y);
        }
        p=ROUND(ry*ry*((x+.5)*(x+.5))+rx*rx*((y-1)*(y-1))-(rx*rx)*(ry*ry));
        while(y>0)
        {       y=y-1;
                if(p<=0)
                {       x=x+1;
                        p=p-2*(rx*rx)*y+rx*rx+2*(ry*ry)*x;
                }
                else
                {
                        p=p-2*(rx*rx)*y+rx*rx;
                }
                drawpoint(x,y);
        }
        getch();
        closegraph();
                                                            }
```

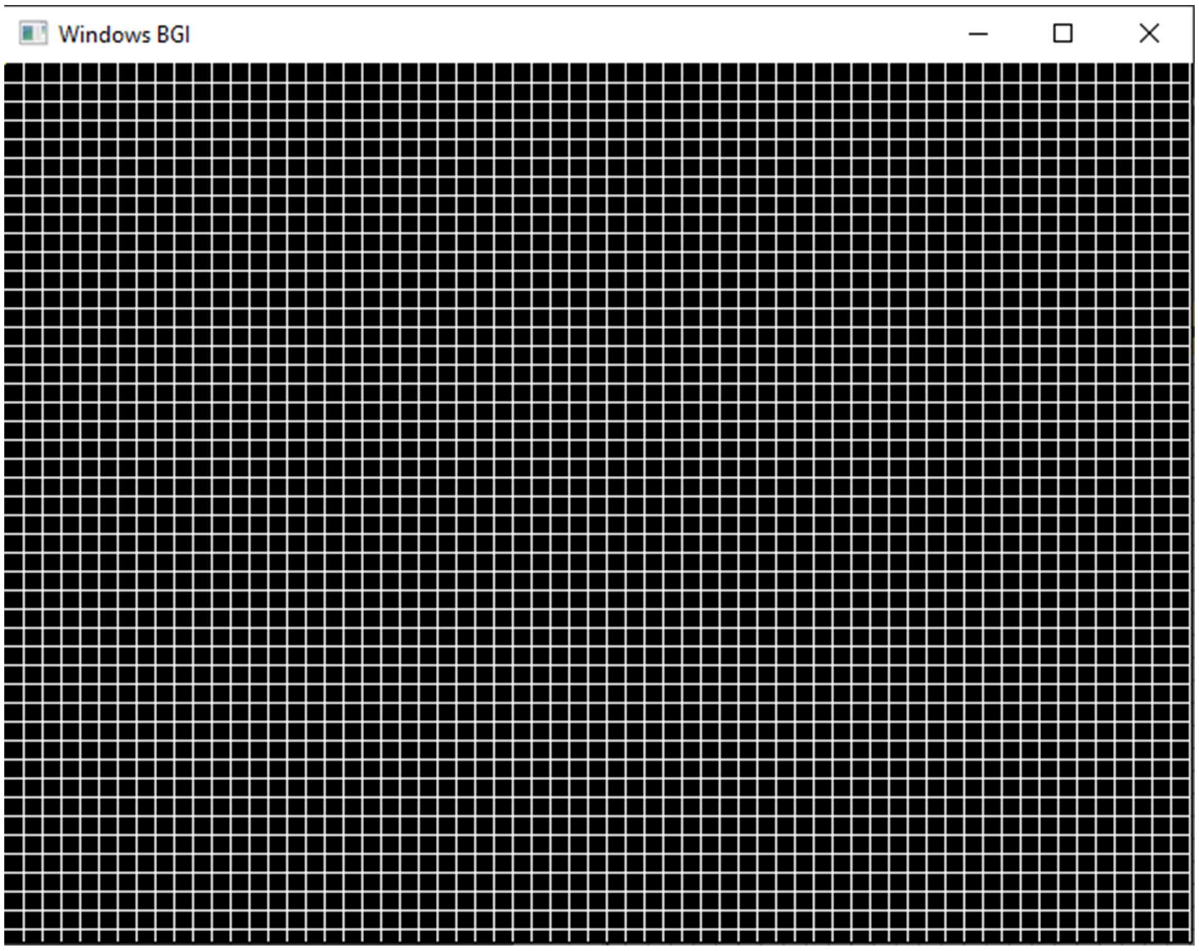


```
D:\#New\#dev\mine\Ellipse\Ellipse.exe
Enter Center of Ellip (x,y): 50 50
Enter Radius along X-Axis: 100
Enter Radius along Y-Axis: 100
```



4. Full Graph Program

```
#include<iostream>
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
using namespace std;
int main(void)
{
  /* request auto detection */
  int gdriver = DETECT, gmode, errorcode;
  int xmax, ymax;
  /* initialize graphics and local variables */
  initgraph(&gdriver, &gmode, "C:\\TURBOC3\\BGI");
  /* read result of initialization */
  errorcode = graphresult();
    if (errorcode != grOk)
  {printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1); }
  setcolor(getmaxcolor());
  xmax = getmaxx();
  ymax = getmaxy();
  for(int i=10;i<xmax;i+=10)
  line(i,0,i,ymax);
  for(int i=10;i<ymax;i+=10)
  line(0,i,xmax,i);
     getch();
  closegraph();
  return 0;
}
```

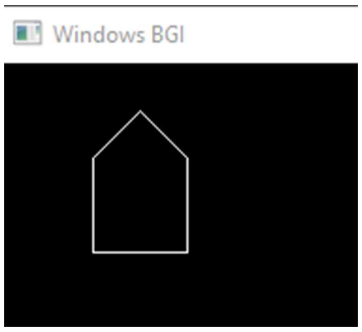


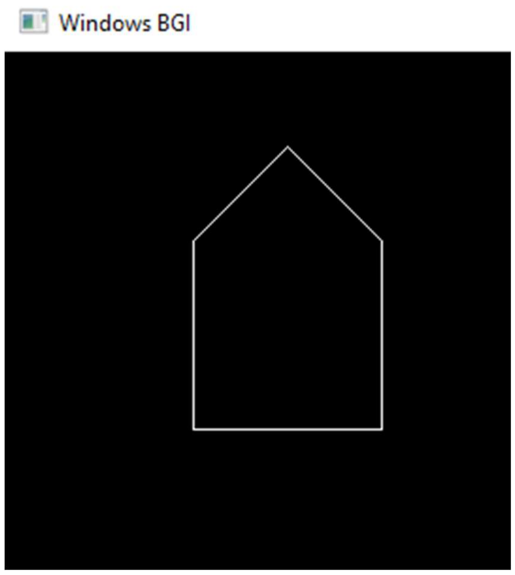
5. Different Functions at Object

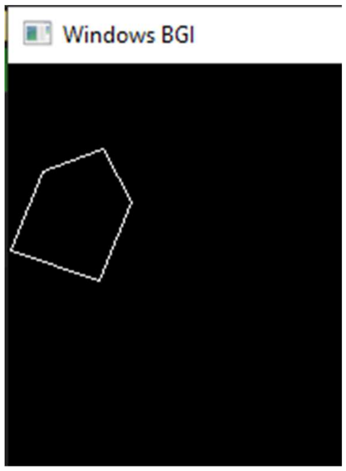
```
#include<iostream>
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
using namespace std;

int arr[10]={50,50, 50,100, 100,100, 100,50, 75,25};
int i;
        void draw(){
                for(i=0;i<=6;i+=2)
                        line(arr[i],arr[i+1],arr[i+2],arr[i+3]);
                        line(arr[i],arr[i+1],arr[0],arr[1]);  }
        void translate(int tx, int ty){
                for(i=0;i<=8;i+=2)
                        {arr[i]=arr[i]+tx;
```

```
                    arr[i+1]=arr[i+1]+ty;}
            }
        void scaling_inc(int sx, int sy){
                for(i=0;i<=8;i+=2){
                        arr[i]=arr[i]*sx;
                        arr[i+1]=arr[i+1]*sy;}
                }
        void scaling_dec(int sx, int sy){
                for(i=0;i<=8;i+=2){
                        arr[i]=arr[i]/sx;
                        arr[i+1]=arr[i+1]/sy;}}
 void rotate(float cos, float sin){
                    for(i=0;i<=8;i+=2){
                        arr[i]=(arr[i]*cos)-(arr[i+1]*sin);
                        arr[i+1]=(arr[i+1]*cos)+(arr[i]*sin);}
                }
int main(void){
  int gdriver = DETECT, gmode, errorcode;
  int xmax, ymax;
  initgraph(&gdriver, &gmode, "C:\\TURBOC3\\BGI");
  errorcode = graphresult();
if (errorcode != grOk){
    printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1);}
  char c;
  draw();
  do{    c=getch();
                switch(c){
                case '5':
                rotate(0.9396,0.3420);
                break;
                case '1':
                scaling_inc(2,2);
                break;
                case '3':
```

```
                scaling_dec(2,2);
                break;
                case '2':
                translate(0,10);
                break;
                case '6':
                translate(10,0);
                break;
                case '4':
                translate(-10,0);
                break;
                case '8':
                translate(0,-10);
                break;
                }
        cleardevice();
        draw();
    }
    while(c!='q');
    getch();
    closegraph();
    return 0;
}
```

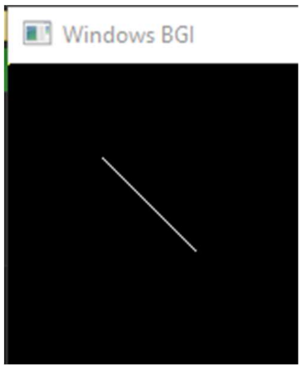






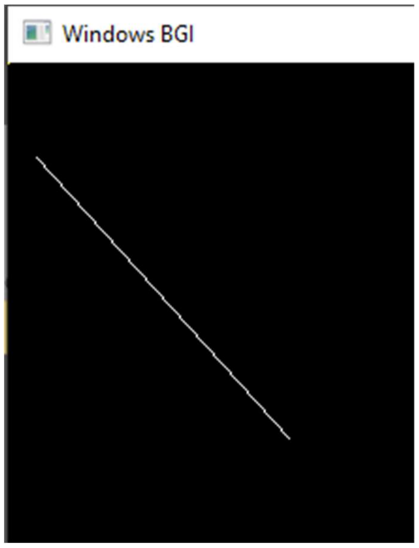
6. Draw a Line with the help of C++ program.

```
#include <iostream>
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
using namespace std;
int main(void)
{
  /* request auto detection */
  int gdriver=DETECT, gmode, errorcode;
  initgraph(&gdriver,&gmode,"C:\\TURBOC3\\BGI");
  int xmax, ymax;
  errorcode = graphresult();
  /* an error occurred */
  if (errorcode != grOk)
  {
    printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1);
  }
  setcolor(getmaxcolor());
  /* draw a diagonal line */
  line(50, 50, 100,100);
 cout<<"that was line";
  getch();
  closegraph();
  return 0;
}
```



7. Another C++ program to draw a line at different points.

```
#include <iostream>
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
using namespace std;
int main(void)
{
 int gdriver = DETECT, gmode, errorcode;
   int xmax, ymax;
   /* initialize graphics and local variables */
   initgraph(&gdriver, &gmode, "C:\\TURBOC3\\BGI");
   /* read result of initialization */
   errorcode = graphresult();
   /* an error occurred */
   if (errorcode != grOk)
   {
      printf("Graphics error: %s\n", grapherrormsg(errorcode));
      printf("Press any key to halt:");
      getch();
      exit(1);
   }
  setcolor(getmaxcolor());

   /* draw a diagonal line */
   line(15, 50, 150,200);

   /* clean up */
   cout<<"that was line";
   getch();
   closegraph();
   return 0;
}
```



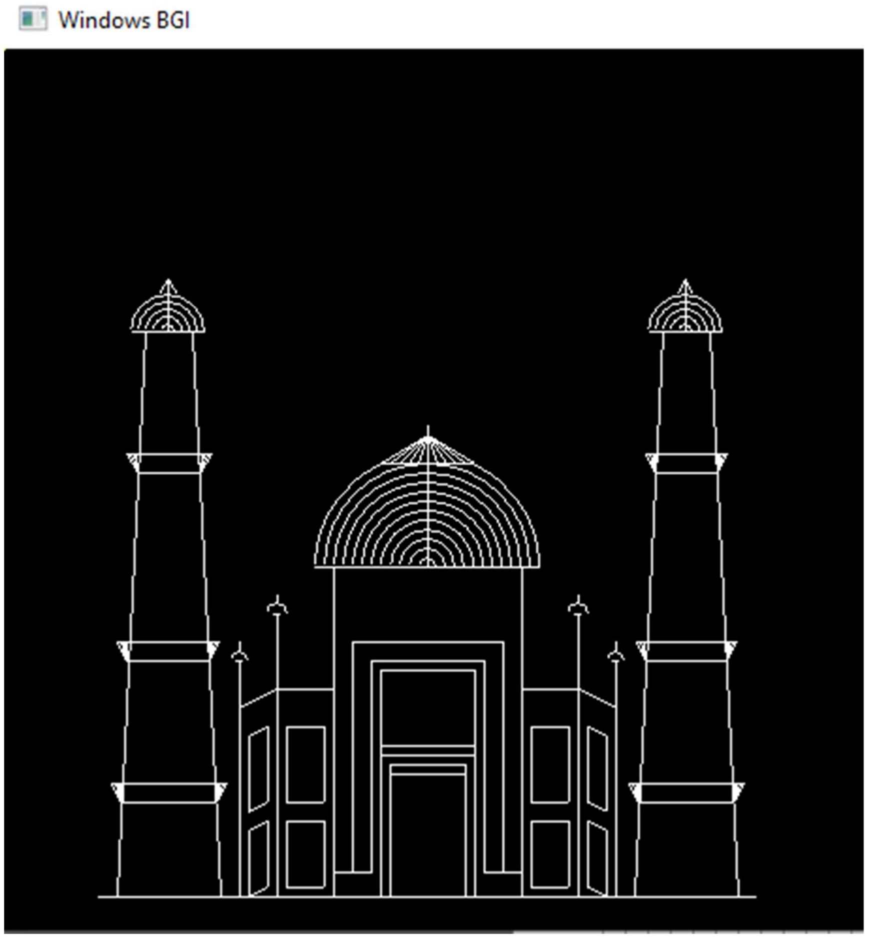
8. C++ program to draw a graphical image (lineCode).

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
int main(void)
{
  /* request auto detection */
  int gdriver = DETECT, gmode, errorcode;
  int xmax, ymax;

  /* initialize graphics and local variables */
  initgraph(&gdriver, &gmode, "C:\\turboc3\\bgi");

  /* read result of initialization */
  errorcode = graphresult();
  /* an error occurred */
  if (errorcode != grOk)
  {
    printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1);
  }

  setcolor(getmaxcolor());
  xmax = getmaxx();
  ymax = getmaxy();

  /* draw a diagonal line */
  line(50, 450, 400, 450);
  line(75,150,60,450);
  line(100,150,115,450);
  line(375,150,390,450);
  line(350,150,335,450);
  line(125,325,125,450);
  line(325,325,325,450);

  line(145,300,145,450);
  line(305,300,305,450);

  line(175,275,175,450);
  line(275,275,275,450);

  line(185,315,185,437);
  line(265,315,265,437);
  line(185,315,265,315);

  line(195,325,195,437);
  line(255,325,255,437);
  line(195,325,255,325);

  line(195,437,175,437);
  line(255,437,275,437);

  line(200,330,200,450);
  line(250,330,250,450);
  line(200,330,250,330);
  line(200,370,250,370);
  line(200,375,250,375);

  line(205,380,205,450);
  line(245,380,245,450);
  line(205,380,245,380);
  line(205,385,245,385);



  line(125,350,145,340);
  line(145,340,175,340);

  line(275,340,305,340);
  line(305,340,325,350);

  line(150,360,170,360);
  line(150,360,150,400);
  line(170,360,170,400);
  line(150,400,170,400);

  line(130,365,140,360);
  line(140,360,140,400);
  line(130,365,130,405);
  line(130,405,140,400);

  line(150,410,170,410);
  line(150,410,150,445);
  line(170,410,170,445);
  line(150,445,170,445);

  line(140,410,140,445);
  line(130,415,130,450);
  line(130,415,140,410);
  line(130,450,140,445);

  //Right Windowz
  line(280,360,300,360);
  line(280,360,280,400);
  line(300,360,300,400);
  line(280,400,300,400);

  line(280,410,300,410);
  line(280,410,280,445);
  line(300,410,300,445);
  line(280,445,300,445);

  line(310,360,310,400);
  line(310,360,320,365);
  line(310,360,310,400);
  line(310,400,320,405);
```

```
 line(320,365,320,405);

 line(310,410,310,445);
 line(320,415,320,450);
 line(310,410,320,415);
 line(310,445,320,450);

 //tomb arc
 arc(225,275,0,65,60);
 arc(225,275,115,180,60);
//right little tomb
 arc(325,325,0,180,5);
 line(325,315,325,320);
 line(323,325,327,325);
 // Right menaar tomb....
 arc(362.5,150,0,180,20);
 line(343,150,382,150);
 line(362.5,122,358,130);
 line(362.5,122,366,130);
 line(362.5,122,362.5,150);
 arc(362.5,150,0,180,16);
 arc(362.5,150,0,180,12);
 arc(362.5,150,0,180,8);
 arc(362.5,150,0,180,4);

 // Left Menaar Tomb....
 arc(87.5,150,0,180,20);
 line(68,150,107,150);
 line(87.5,122,87.5,150);
 line(87.5,122,82.5,130);
 line(87.5,122,92.5,130);
 arc(87.5,150,0,180,16);
 arc(87.5,150,0,180,12);
 arc(87.5,150,0,180,8);
 arc(87.5,150,0,180,4);

 // left little tomb arc
 arc(125,325,0,180,5);
 line(123,325,127,325);
 line(125,315,125,320);

 arc(225,275,0,180,55);
 arc(225,275,0,180,50);
 arc(225,275,0,180,45);
 arc(225,275,0,180,40);
 arc(225,275,0,180,35);
 arc(225,275,0,180,30);
 arc(225,275,0,180,25);
 arc(225,275,0,180,20);
 arc(225,275,0,180,15);
 arc(225,275,0,180,10);
 arc(225,275,0,180,5);

 line(200,220,250,220);
 line(225,220,225,275);

// arc(350,150,0,180,10);
line(165,275,285,275);
line(225,205,200,220);
line(225,205,250,220);
line(225,205,225,220);

line(225,205,230,220);
line(225,205,235,220);
line(225,205,240,220);
line(225,205,245,220);

line(225,205,220,220);
line(225,205,215,220);
line(225,205,210,220);
line(225,205,205,220);

line(225,200,225,205);
```

```
 arc(145,300,0,180,6);
 line(143,300,147,300);
 line(145,290,145,294);

 arc(305,300,0,180,6);
 line(303,300,307,300);
 line(305,290,305,294);

 line(62,400,113,400);
 line(57,390,118,390);
 line(57,390,62,400);
 line(59,390,62,400);
 line(61,390,62,400);
line(60,390,62,400);
line(62,390,62,400);

 line(118,390,113,400);
 line(116,390,113,400);
 line(114,390,113,400);
 line(113,390,113,400);

 line(65,325,109,325);
 line(60,315,114,315);
 line(60,315,65,325);
 line(62,315,65,325);
 line(63,315,65,325);
 line(64,315,65,325);
 line(65,315,65,325);
 line(114,315,109,325);
 line(112,315,109,325);
 line(110,315,109,325);
 line(109,315,109,325);

 line(71,225,104,225);
 line(65,215,110,215);
 line(65,215,71,225);
 line(67,215,71,225);
line(69,215,71,225);
line(70,215,71,225);
line(110,215,104,225);
line(108,215,104,225);
line(106,215,104,225);
line(105,215,104,225);

line(337,400,388,400);
line(332,390,393,390);
line(332,390,337,400);
line(334,390,337,400);
line(336,390,337,400);
line(337,390,337,400);
line(393,390,388,400);
line(391,390,388,400);
line(389,390,388,400);
line(388,390,388,400);

line(341,325,384,325);
line(336,315,389,315);
line(336,315,341,325);
line(338,315,341,325);
line(340,315,341,325);
line(389,315,384,325);
line(387,315,384,325);
line(385,315,384,325);
line(384,315,384,325);

line(346,225,379,225);
line(341,215,384,215);
line(341,215,346,225);
line(343,215,346,225);
line(345,215,346,225);
line(346,215,346,225);

line(384,215,379,225);
line(382,215,379,225);
```

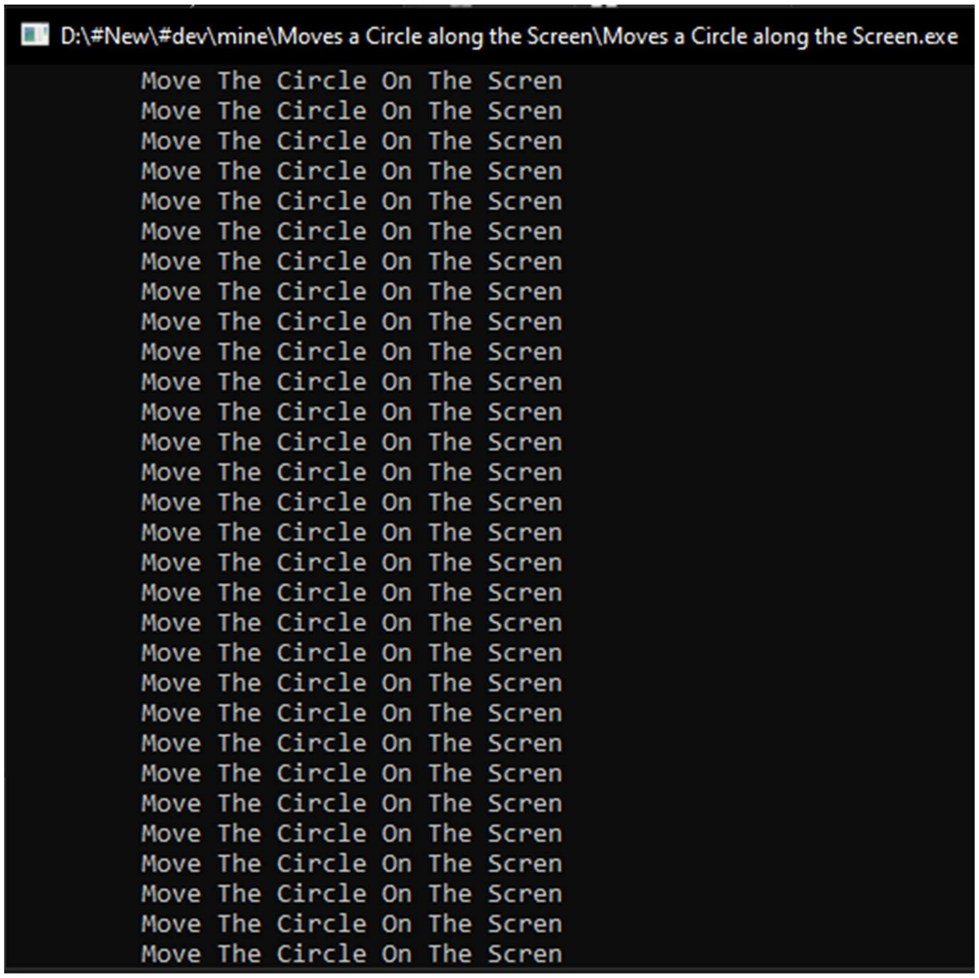
```
 line(380,215,379,225);
 line(379,215,379,225);



  /* clean up */
  getch();
  closegraph();
  return 0;
}
```



9. C++ program to move a circle along the screen.

```
#include <iostream>
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
#include <dos.h>
using namespace std;
int main()
{
  int gdriver = DETECT, gmode, errorcode;
  int xmax, ymax;
  initgraph(&gdriver, &gmode, "c:\\turboc3\\bgi");
  errorcode = graphresult();
  if (errorcode != grOk)
  {
    printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1);
  }
  xmax = getmaxx();
  ymax = getmaxy();
 {
        while(!kbhit())
{
for(int i=0;i<=800;i+=10)
{
                delay (100);

               cleardevice();
                printf("\n \t Move The Circle On The Scren");
               circle(i,100,100);
}
for(int i=800;i>=20;i-=10)
              {
               delay(100);
```

```
                    cleardevice();
                    printf("\n \t Move The Circle On The Scren");
                   circle(i-50,100,100);
                    }
    }
          getch();
          closegraph();
          return 0;
    }
    }
```



```
D:\#New\#dev\mine\Moves a Circle along the Screen\Moves a Circle along the Screen.exe
         Move The Circle On The Scren
         Move The Circle On The Scren
         Move The Circle On The Scren
         Move The Circle On The Scren
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         Move The Circle On The Scren
```
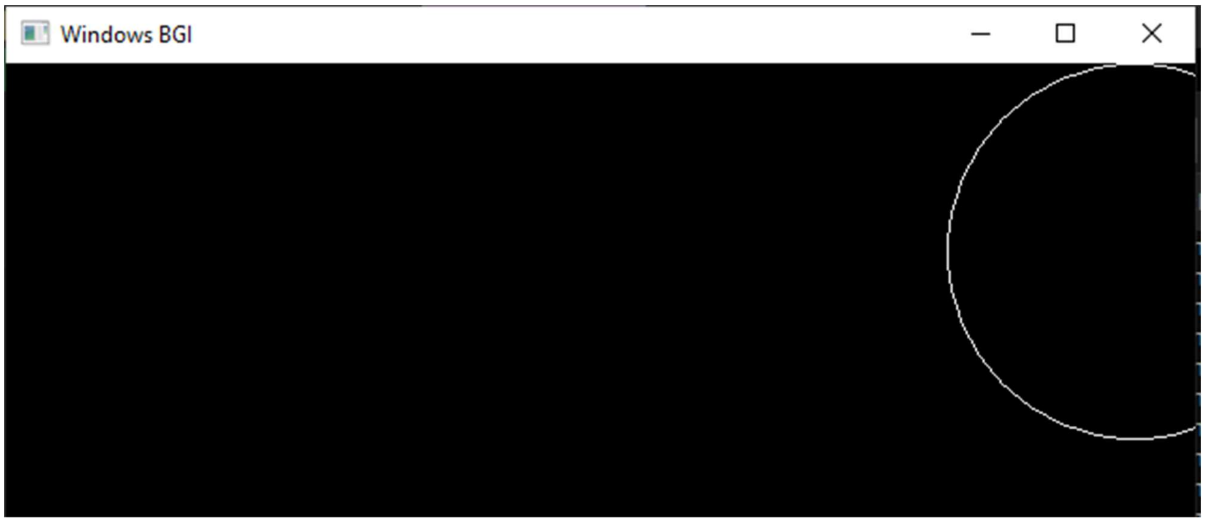
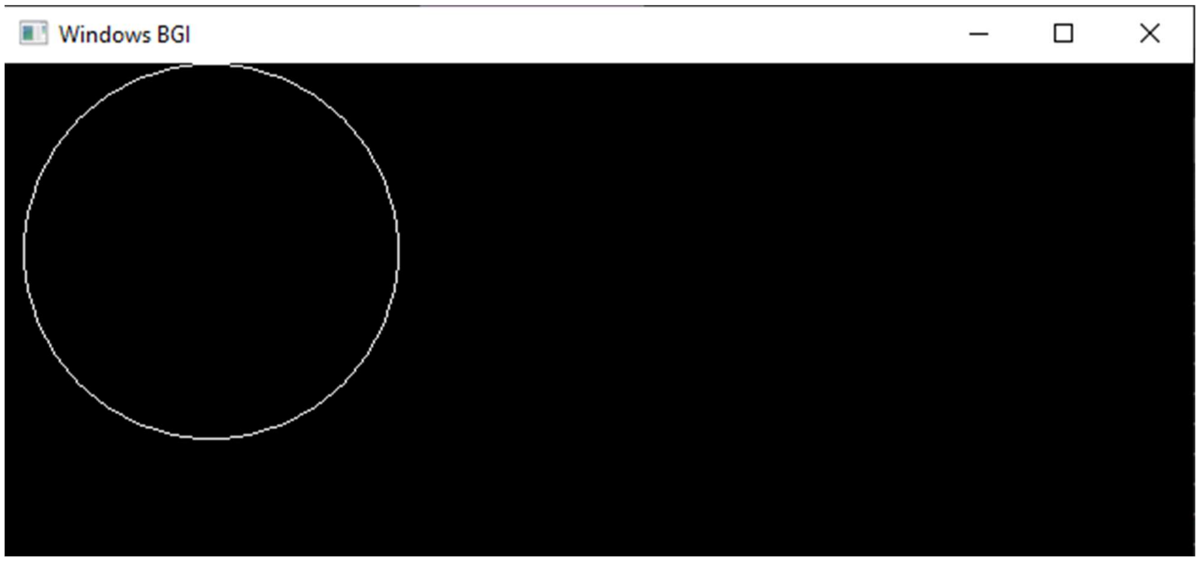
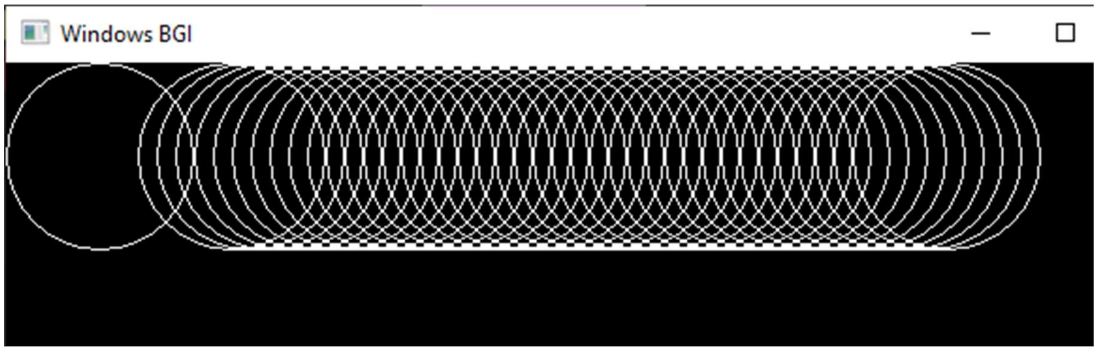





10. C++ program to draw a moving circle.

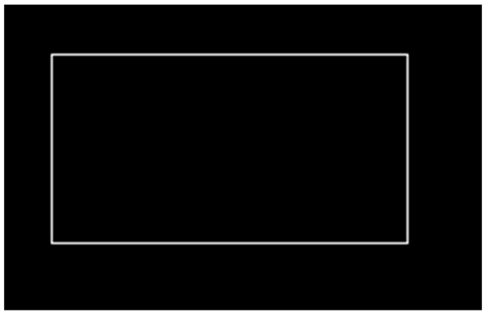
```
# include <iostream>
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
# include <dos.h>
using namespace std;
int main(void)
{
  /* request auto detection */
  int gdriver = DETECT, gmode, errorcode;
  int xmax, ymax;
  int i;
  /* initialize graphics and local variables */
  initgraph(&gdriver, &gmode, "C:\\TURBOC3\\BGI");
  /* read result of initialization */
  errorcode = graphresult();
  /* an error occurred */
  if (errorcode != grOk)
  {
    printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
```

```
      exit(1);
    }

  {        while(!kbhit())
{          for(int i=0;i<=500;i+=10)
                       delay(100);
                      cleardevice();
                      circle(i,50,50);}
for(i=550;i>=20;i-=10)
{
                      delay(100);
                      circle(i-50,50,50);}
}
  /* clean up */
   getch();
   closegraph();
   return 0;
}
```



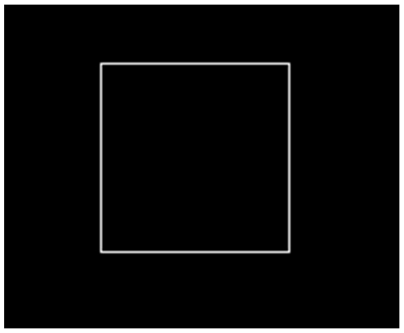
11. C++ program to draw a rectangle.

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
int main()
{
  int gdriver = DETECT, gmode, errorcode;
  int xmax, ymax;
  initgraph(&gdriver, &gmode, "c:\\turboc3\\bgi");
  errorcode = graphresult();
  if (errorcode != grOk)
  {
 printf("Graphics error: %s\n", grapherrormsg(errorcode));
    printf("Press any key to halt:");
    getch();
    exit(1);
}
  setcolor(getmaxcolor());
  xmax = getmaxx();
  ymax = getmaxy()  ;
int left = getmaxx() / 2 ;

int top = getmaxy() / 2 - 50;
int right = getmaxx() /5;
int bottom = getmaxy() / 2 +50;
printf("\n Display the Retanguler");
rectangle(left,top,right,bottom);
getch();
closegraph();
return 0;
```



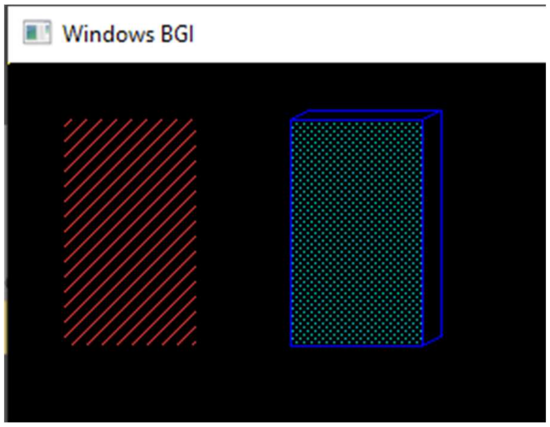
12. C++ program to draw a square.

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>
#include <conio.h>
int main()
{
   int gdriver = DETECT, gmode, errorcode;
   int xmax, ymax;
   initgraph(&gdriver, &gmode, "c:\\turboc3\\bgi");
   errorcode = graphresult();
   if (errorcode != grOk)
   {
      printf("Graphics error: %s\n", grapherrormsg(errorcode));
      printf("Press any key to halt:");
      getch();
      exit(1);
   }
  setcolor(getmaxcolor());
   xmax = getmaxx();
   ymax = getmaxy()  ;


int left = getmaxx()/2-50 ;
int top = getmaxy()/ 2 - 50;
int right = getmaxx()/2+50;
int bottom = getmaxy()/2+50;
rectangle(left,top,right,bottom);
getch();
closegraph();
return 0;
}
```



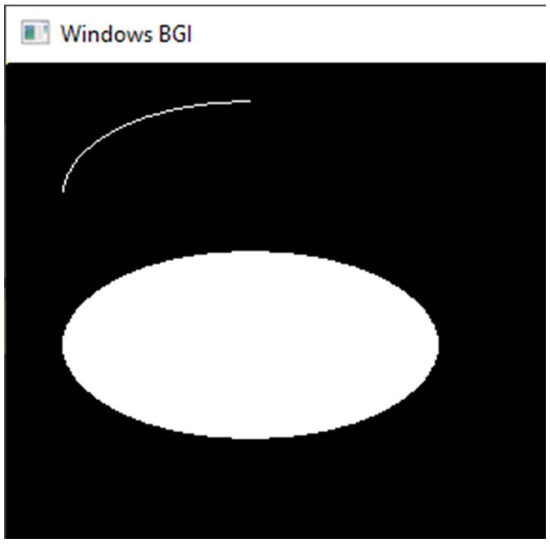
13. Write a C++ program that draws 2D and 3D rectangles with patterns and colors on Windows BGI using bar() and bar3d() functions in graphical programming.

```
#include <iostream>
#include <graphics.h>
using namespace std;
int main()
{
        int gd=DETECT, gm, err,x=30,y=30;
        initgraph(&gd,&gm,"");
        err=graphresult();
        if(err!=grOk)
        {
                cout<<"Graphics Error "<<grapherrormsg(err);
                exit(1);
        }
        setcolor(BLUE);
        setfillstyle(3,LIGHTRED);
        bar(30,30,100,150);
        setfillstyle(11,CYAN);
        bar3d(150,30,220,150,10,1);
        getch();
        closegraph();
        return 0;
}
```



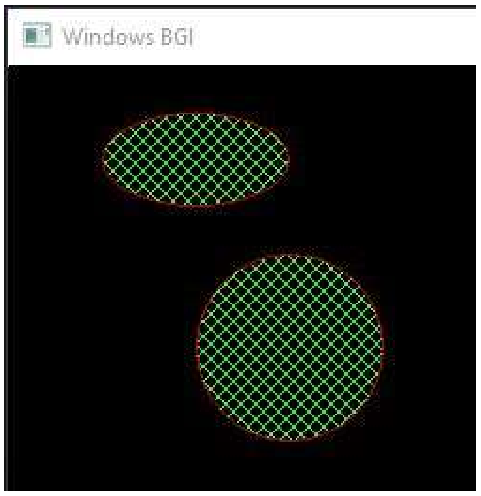
14. Write a C++ program that draws an arc and ellipse on BGI Window using ellipse() and fillellipse() functions in graphical programming.

```
#include <iostream>
#include <graphics.h>
using namespace std;
int main()
{
	int gd=DETECT, gm, err;
	initgraph(&gd,&gm,"");
	err=graphresult();
	if(err!=grOk)
	{
		cout<<"Graphics Error "<<grapherrormsg(err);
		exit(1);
	}
	ellipse(130,70,90,180,100,50);
	fillellipse(130,150,100,50);
	getch();
	closegraph();
	return 0;
}
```



15. Write a program that draws ellipse and circle with patterns and colors on Windows BGI using setfillstyle() and floodfill() functions in graphical programming.

```
#include <iostream>
#include <graphics.h>
using namespace std;
int main()
{
	int gd=DETECT, gm, err,x=30,y=30;
	initgraph(&gd,&gm,"");
	err=graphresult();
	if(err!=grOk)
	{
		cout<<"Graphics Error "<<grapherrormsg(err);
		exit(1);
	}
	setcolor(RED);
	setfillstyle(8,10);
	fillellipse(100,50,50,25);
	circle(150,150,50);
	floodfill(150,150,4);
	getch();
	closegraph();
	return 0;
}
```


Windows BGI