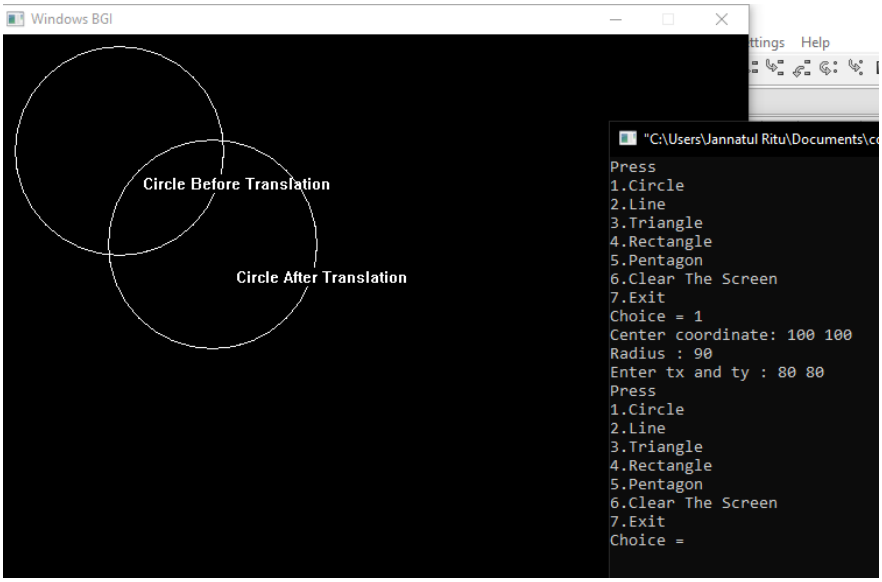
Problem - 01 : 2D translation of circle, line, triangle, rectangle, pentagon

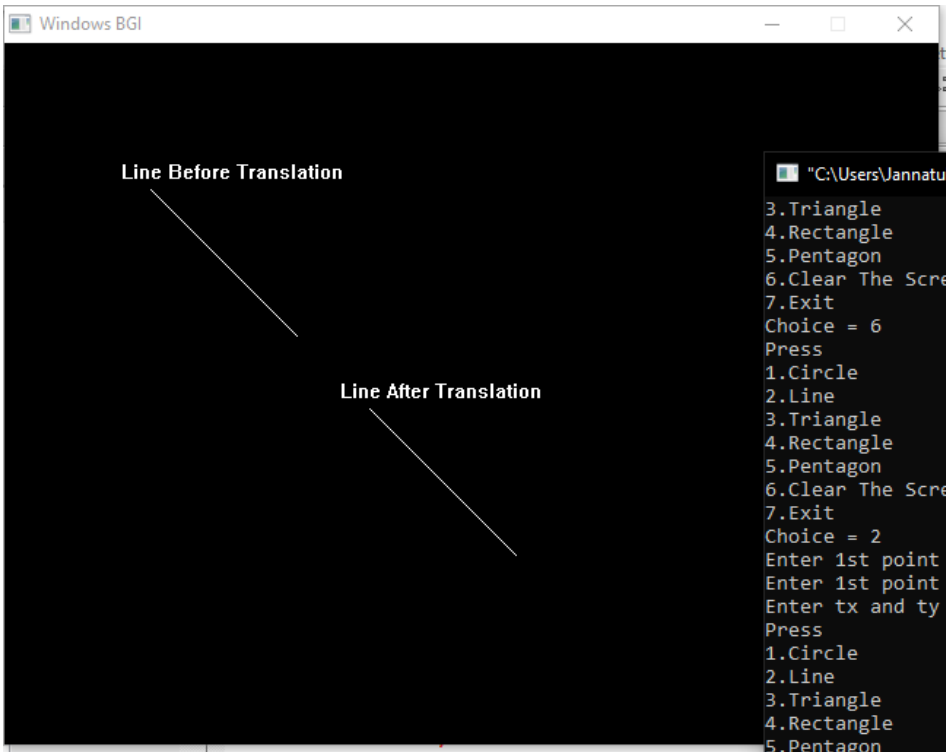
```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>
using namespace std;
void find_circle(){
  int h,k,tx,ty,radius;
  cout<<"Center coordinate: "; cin>>h>>k;
  cout<<"Radius : "; cin>>radius;
  circle(h, k, radius);
  outtextxy(h+20, k+20, "Circle Before Translation");
  cout<<"Enter tx and ty : ";cin>>tx>>ty;
  h = h+tx; k = k+ty;
  circle(h, k, radius);
  outtextxy(h+20, k+20, "Circle After Translation");
}
void find_line(){
   int x1,y1,x2,y2,x3,y3,tx,ty;
   cout<<"Enter 1st point x1 and y1 : ";cin>>x1>>y1;
   cout<<"Enter 1st point x2 and y2 : ";cin>>x2>>y2;
   line(x1,y1, x2,y2);
   outtextxy(x1-20, y1-20, "Line Before Translation");
   cout<<"Enter tx and ty : ";cin>>tx>>ty;
   x1 = x1+tx; y1 = y1+ty;
   x2 = x2+tx; y2 = y2+ty;
   line(x1,y1, x2,y2);
   outtextxy(x1-20, y1-20, "Line After Translation");
}
void find_triangle(){
   int x1,y1,x2,y2,x3,y3,tx,ty;
   cout<<"Enter 1st point x1 and y1 : ";cin>>x1>>y1;
   cout<<"Enter 1st point x2 and y2 : ";cin>>x2>>y2;
```

```
    cout<<"Enter 1st point x3 and y3 : ";cin>>x3>>y3;
    outtextxy(x1-40, y1-40, "Before Translation: ");
    line(x1,y1, x2,y2);
    line(x1,y1, x3,y3);
    line(x2,y2, x3,y3);
    cout<<"Enter tx and ty: "; cin>>tx>>ty;
    x1+=tx; x2+=tx; x3+=tx;
    y1+=ty; y2+=ty; y3+=ty;
    outtextxy(x1-40, y1-40, "After Translation: ");
    line(x1,y1, x2,y2);
    line(x1,y1, x3,y3);
    line(x2,y2, x3,y3);
}
void find_rectangle(){
    int x1,y1,x2,y2,x3,y3,x4,y4,tx,ty;
    cout<<"Enter 1st point x1 and y1 : ";cin>>x1>>y1;
    cout<<"Enter 1st point x2 and y2 : ";cin>>x2>>y2;
    cout<<"Enter 1st point x3 and y3 : ";cin>>x3>>y3;
    cout<<"Enter 1st point x4 and y4 : ";cin>>x4>>y4;
    outtextxy(x1-40, y1-40, "Before Translation: ");
    line(x1,y1, x2,y2);
    line(x2,y2, x3,y3);
    line(x3,y3, x4,y4);
    line(x4,y4, x1,y1);
    cout<<"Enter tx and ty: "; cin>>tx>>ty;
    x1+=tx;x2+=tx;x3+=tx;x4+=tx;
    y1+=ty;y2+=ty;y3+=ty;y4+=ty;
    outtextxy(x1-40, y1-40, "After Translation: ");
    line(x1,y1, x2,y2);
    line(x2,y2, x3,y3);
    line(x3,y3, x4,y4);
    line(x4,y4, x1,y1);
```

```
}
void find_pentagon(){
   int x1,y1,x2,y2,x3,y3,x4,y4,x5,y5,tx,ty;
   cout<<"Enter 1st point x1 and y1 : ";cin>>x1>>y1;
   cout<<"Enter 1st point x2 and y2 : ";cin>>x2>>y2;
   cout<<"Enter 1st point x3 and y3 : ";cin>>x3>>y3;
   cout<<"Enter 1st point x4 and y4 : ";cin>>x4>>y4;
   cout<<"Enter 1st point x5 and y5 : ";cin>>x5>>y5;
   outtextxy(x1-40, y1-40, "Before Translation: ");
   line(x1,y1, x2,y2);
   line(x2,y2, x3,y3);
   line(x3,y3, x4,y4);
   line(x4,y4, x5,y5);
   line(x5,y5, x1,y1);
   cout<<"Enter tx and ty: "; cin>>tx>>ty;
   x1+=tx;x2+=tx;x3+=tx;x4+=tx;x5+=tx;
   y1+=ty;y2+=ty;y3+=ty;y4+=ty;y5+=ty;
   outtextxy(x1-40, y1-40, "After Translation: ");
   line(x1,y1, x2,y2);
   line(x2,y2, x3,y3);
   line(x3,y3, x4,y4);
   line(x4,y4, x5,y5);
   line(x5,y5, x1,y1);
}



int main(){
  ///graphics init
  int gd = DETECT,gm;
  initgraph(&gd, &gm, "C:\\TC\\BGI");
```

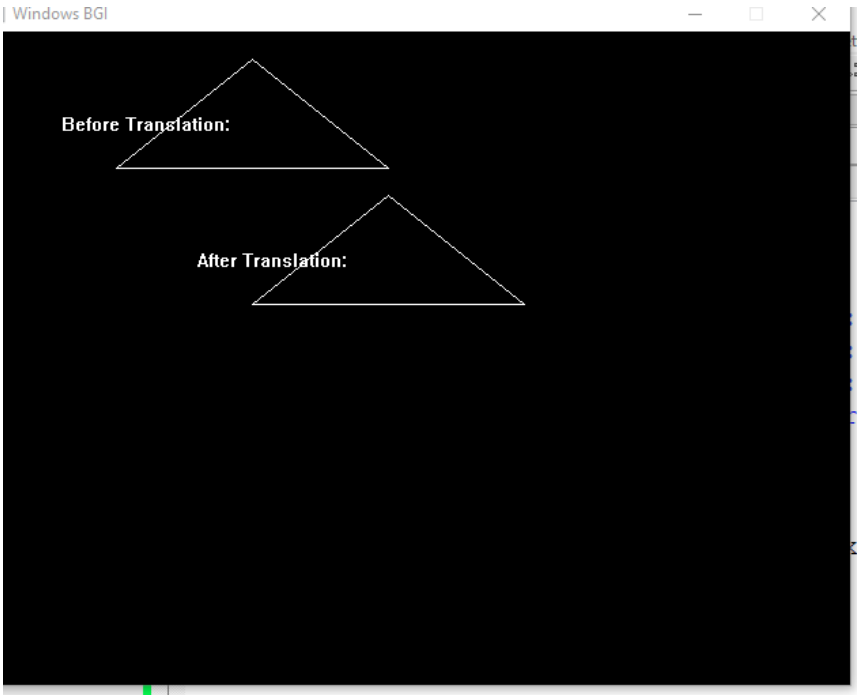
```
  while(1){
     cout<<"Press \n1.Circle \n2.Line \n3.Triangle \n4.Rectangle \n5.Pentagon \n6.Clear The Screen \n7.Exit \nChoice = ";
     int value; cin>>value;
     if(value == 1) {find_circle(); }
     else if(value == 2) find_line();
     else if(value == 3) find_triangle();
     else if(value == 4) find_rectangle();
     else if(value == 5) find_pentagon();
     else if(value == 6) cleardevice();
     else return 0;
     cout<<endl;
  }

  ///graphics close
  getch();
  closegraph();
  return 0;
}
```





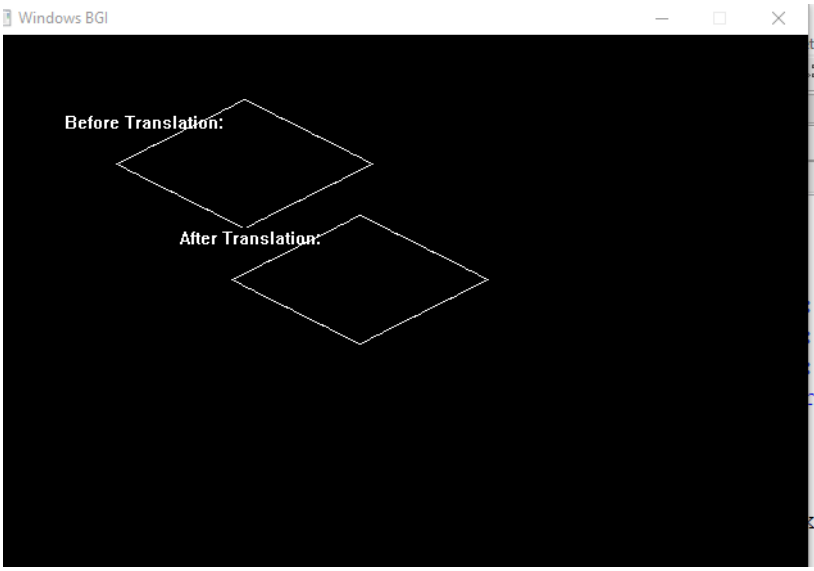

```
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice = 6
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice = 2
Enter 1st point x1 and y1 : 100 100
Enter 1st point x2 and y2 : 200 200
Enter tx and ty : 150 150
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice =
```

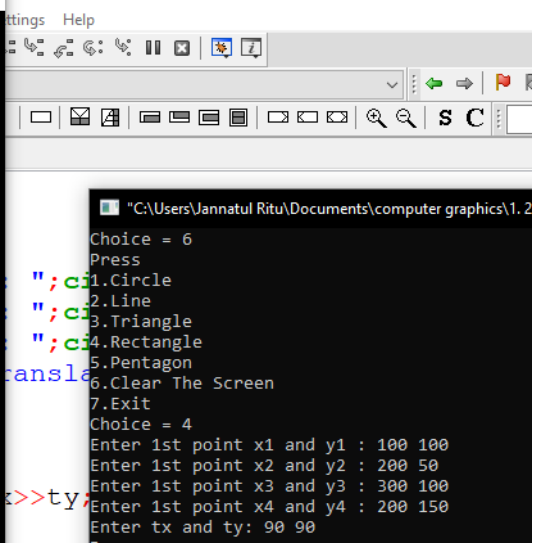
```
104     }
105     /*
106     sample input:
```

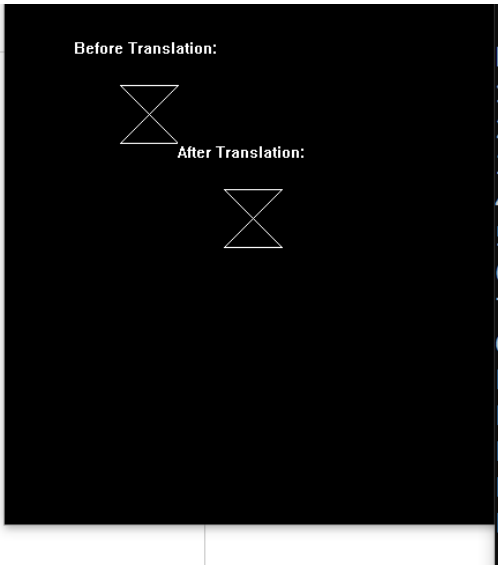



```
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice = 3
Enter 1st point x1 and y1 : 100 100
Enter 1st point x2 and y2 : 300 100
Enter 1st point x3 and y3 : 200 20
Enter tx and ty: 100 100
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice =
```

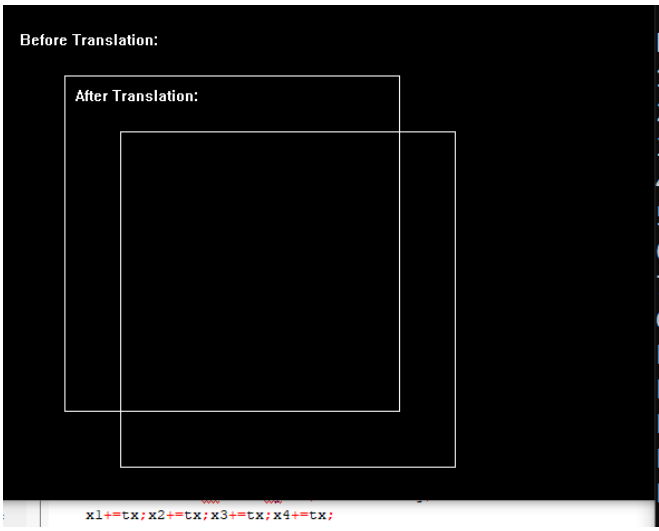
```
47      outtextxy(x1-40, y1-40, "After Translat
48      line(x1,y1, x2,y2);
49      line(x1,y1, x3,y3);
```



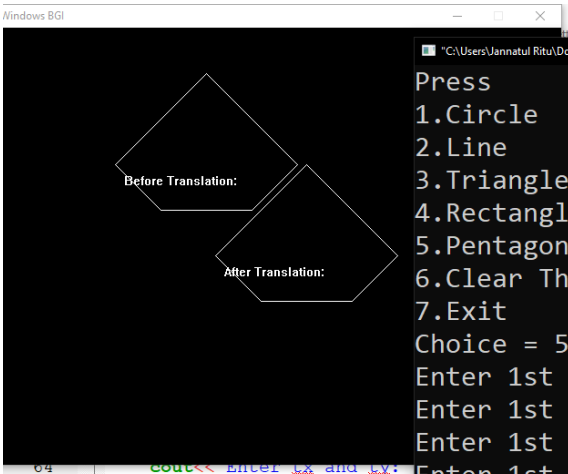





```
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice = 4
Enter 1st point x1 and y1 : 100 100
Enter 1st point x2 and y2 : 150 100
Enter 1st point x3 and y3 : 100 150
Enter 1st point x4 and y4 : 150 150
Enter tx and ty: 90 90
```




```
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice = 4
Enter 1st point x1 and y1 : 100 100
Enter 1st point x2 and y2 : 400 100
Enter 1st point x3 and y3 : 400 400
Enter 1st point x4 and y4 : 100 400
Enter tx and ty: 50 50
```




```
64      cout<< Enter tx and ty:
65      x1+=tx;x2+=tx;x3+=tx;x4+
66      y1+=ty;y2+=ty;y3+=ty;y4+
67      outtextxy(x1-40, y1-40,
68      line(x1,y1, x2,y2);
69      line(x2,y2, x3,y3);
```

```
"C:\Users\Jannatul Ritu\Documents\computer graphics\1. 2D translation.exe"
Press
1.Circle
2.Line
3.Triangle
4.Rectangle
5.Pentagon
6.Clear The Screen
7.Exit
Choice = 5
Enter 1st point x1 and y1 : 200 200
Enter 1st point x2 and y2 : 150 150
Enter 1st point x3 and y3 : 250 50
Enter 1st point x4 and y4 : 350 150
Enter 1st point x5 and y5 : 300 200
Enter tx and ty: 110 100
```