

# CPSC 231- Lab

---

INTRODUCTION TO TURTLE

# What is python package?

---

Programmers always use other programmers' codes!

It doesn't mean they steal or copy their codes.

Programming packages or libraries are the pre-developed codes that help us, do programming easier and faster .

# Math package

---

Math package is a python library that enable us to calculate mathematics equations.

For example you can calculate factorial of a number without writing the solution your self.

`Math.factorial(x)`: Returns x factorial as an integer.

# How to use packages?

---

1. Google package name. You can find a tutorial for any popular package easily.

Always read package documents carefully and make sure that you know how to use that.

2. Install the packages. Some packages is included in python installation package, so you do not need to install them. (e.g. math, turtle, string)

3. Import package to your project.

Python syntax:

```
import <package name>
```

# Turtle package

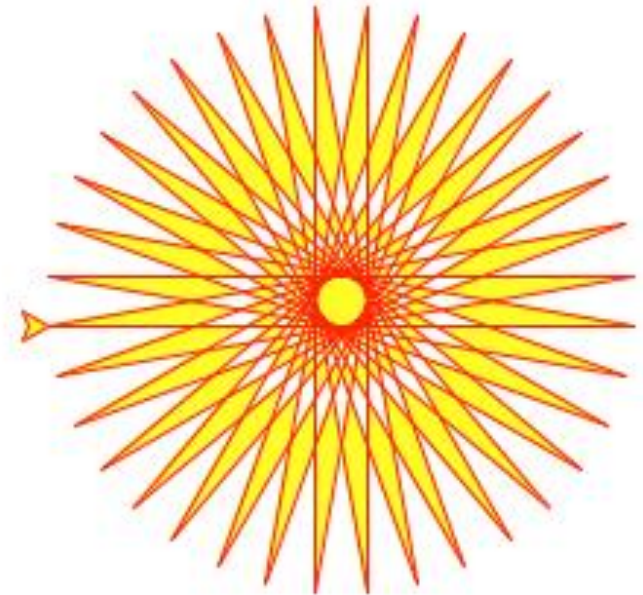
---

Using turtle we can draw graphical shapes.

This package is a very good tool for learning programming.

You need to add the turtle package to your code:

- Import turtle



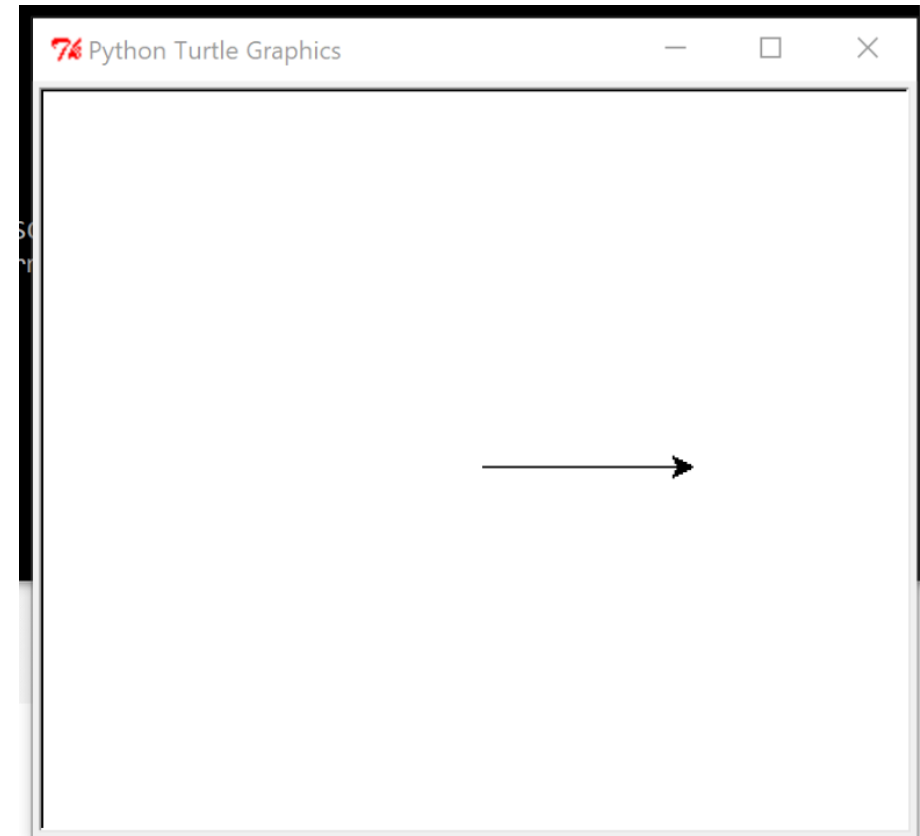
# Turtle functions

---

forward(): Move the turtle forward by the given distance

backward(): Move the turtle backward by the given distance

```
1 import turtle
2
3 turtle.forward(100)
```

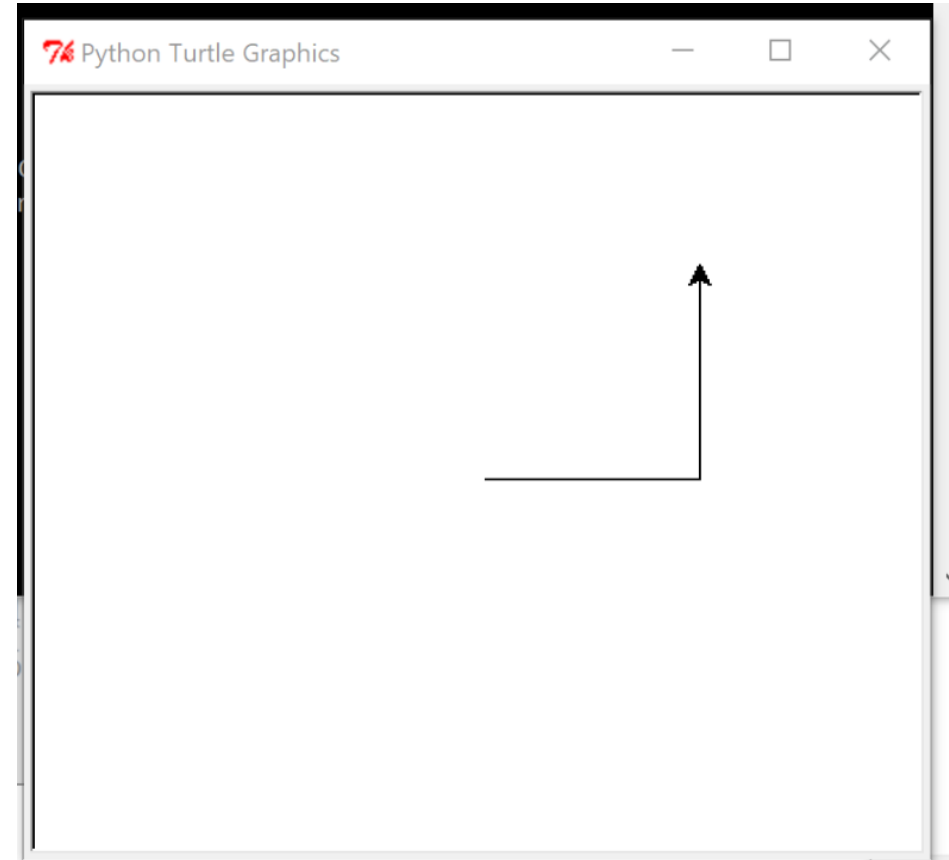


# Turtle functions

left(): Turn the turtle left by the given angle units

right(): Turn the turtle right by the given angle units

```
1 import turtle
2
3 turtle.forward(100)
4 turtle.right(90)
5 turtle.forward(100)
```

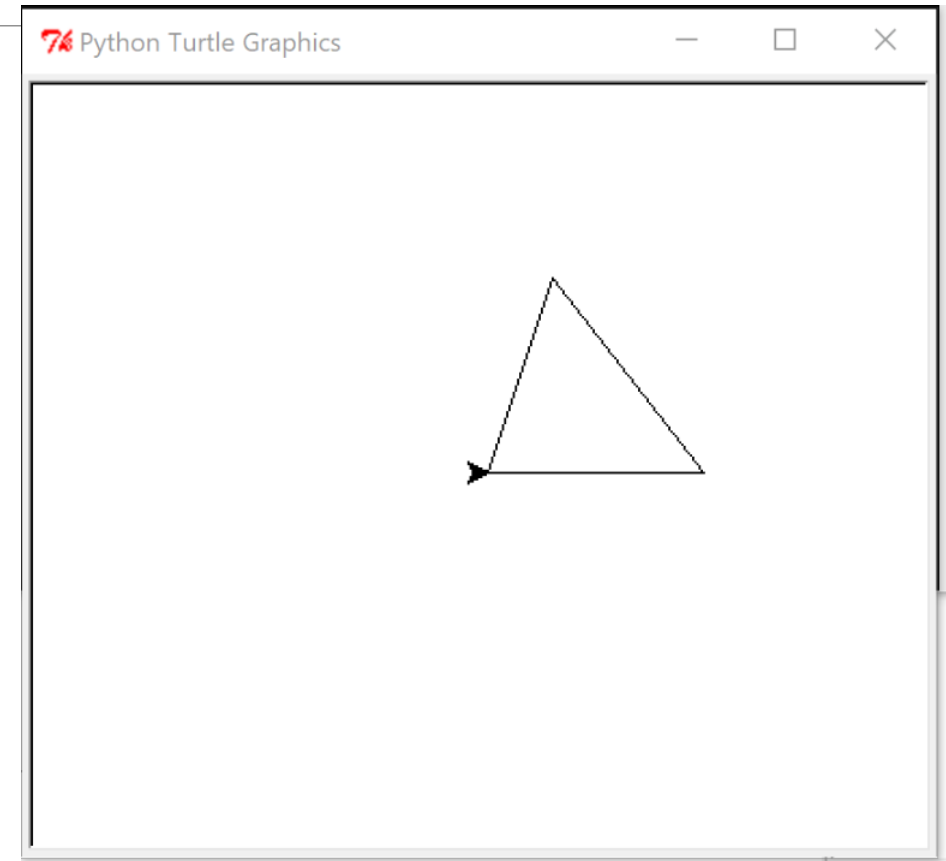


# Turtle functions

`goto()`: Move the turtle to the given point

`home()`: Turn back the turtle to the starting point

```
1 import turtle
2
3 turtle.forward(100)
4 turtle.goto(30, 90)
5 turtle.home()
```





# Turtle functions

---

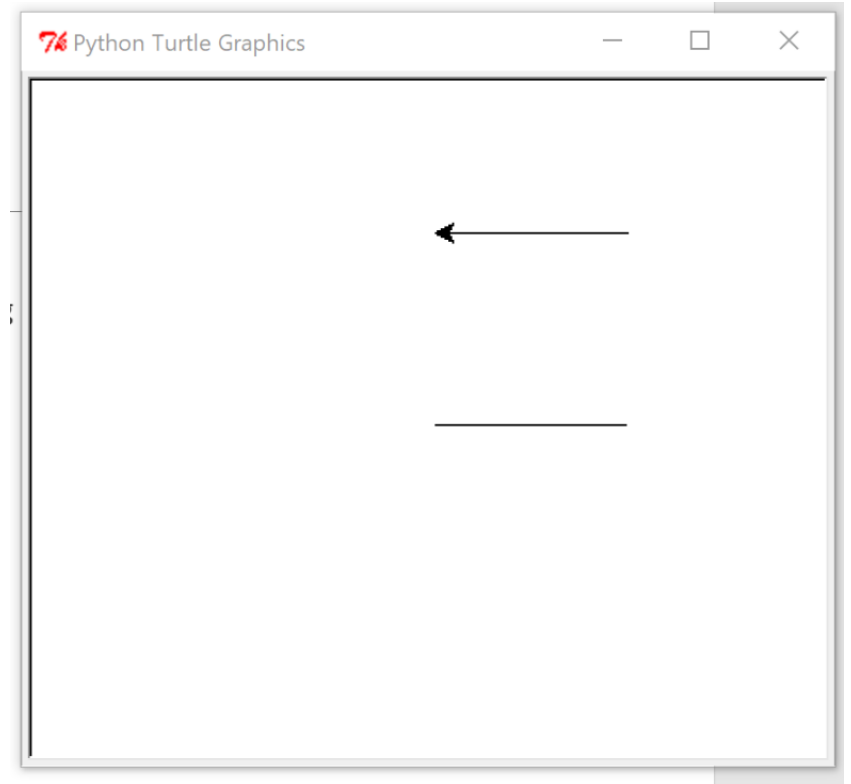
penup(): Pull the pen up – no drawing when moving

pendown(): Pull the pen down – drawing when moving

**At the beginning the pen is down**

```
import turtle

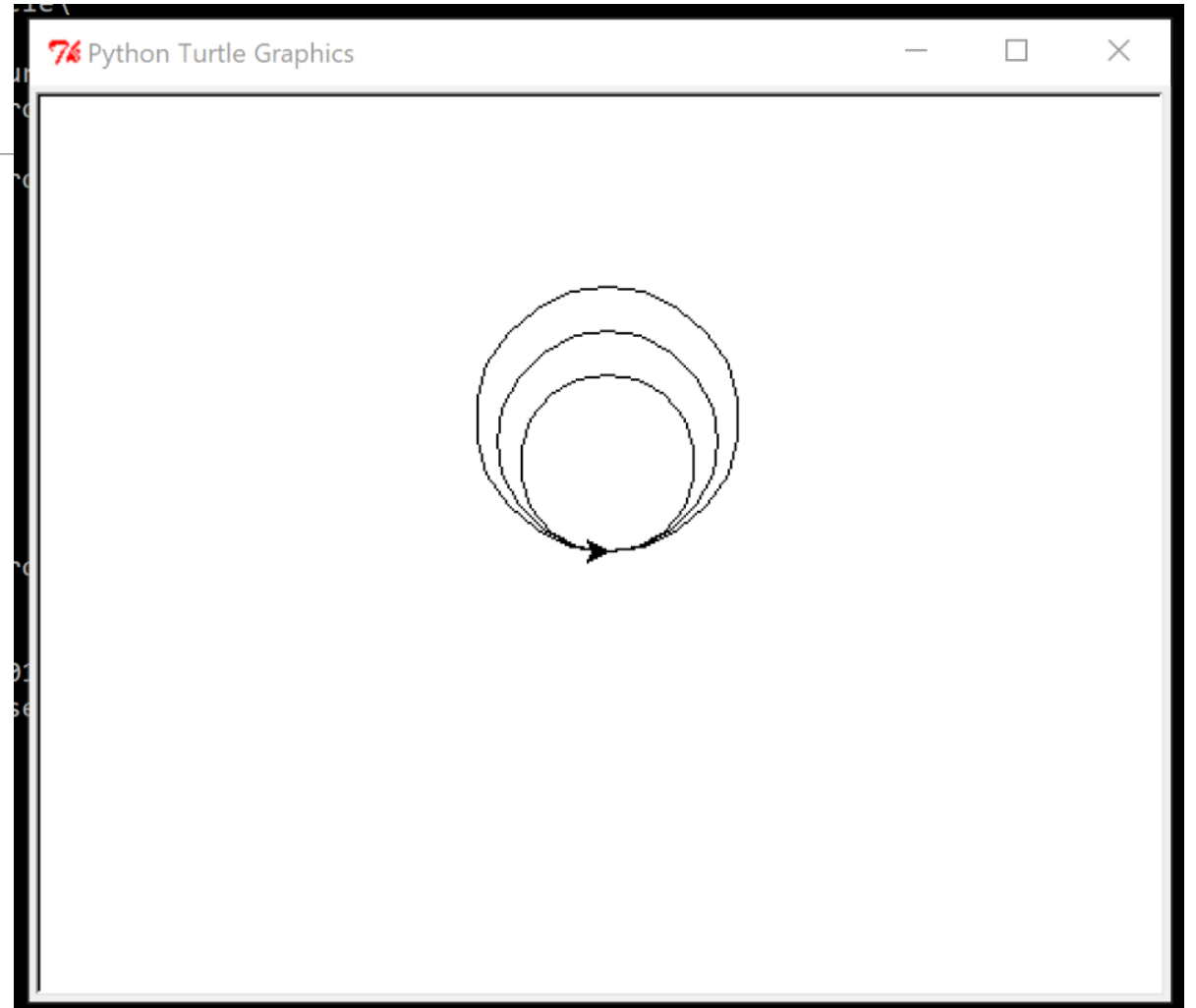
turtle.forward(100)
turtle.turn(90)
turtle.penup()
turtle.forward(100)
turtle.pendown()
turtle.forward(100)
```



# Turtle functions

circle(): Draw a circle by given radius

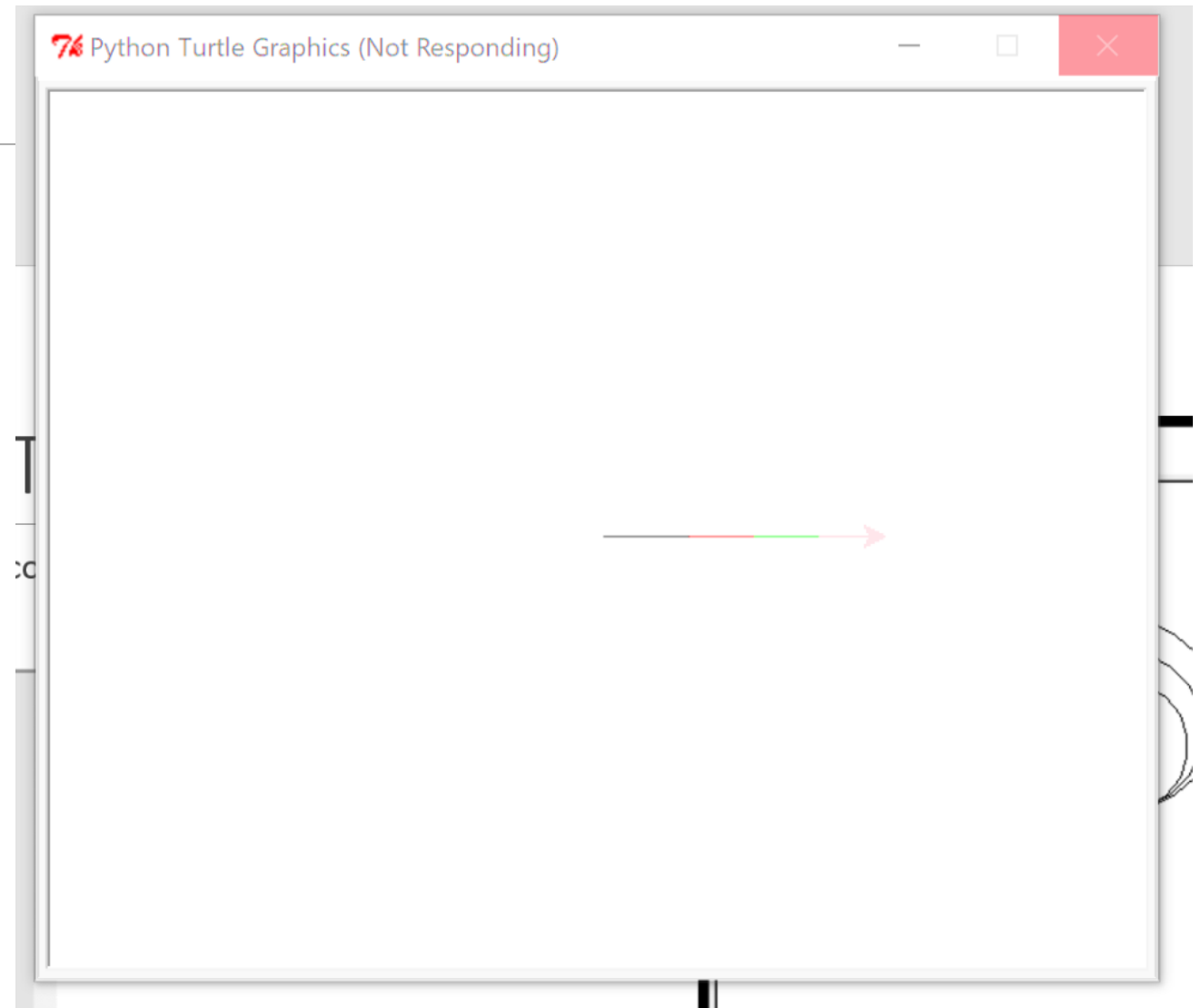
```
1 import turtle
2
3 turtle.circle(10)
4 turtle.circle(20)
5 turtle.circle(30)
6 turtle.circle(40)
```



# Turtle functions

color(): Set pen color

```
1 import turtle
2
3 turtle.forward(50)
4 turtle.color("red")
5 turtle.forward(50)
6 turtle.color("green")
7 turtle.forward(50)
8 turtle.color("pink")
9 turtle.forward(50)
```



---

# Have a nice weekend!

