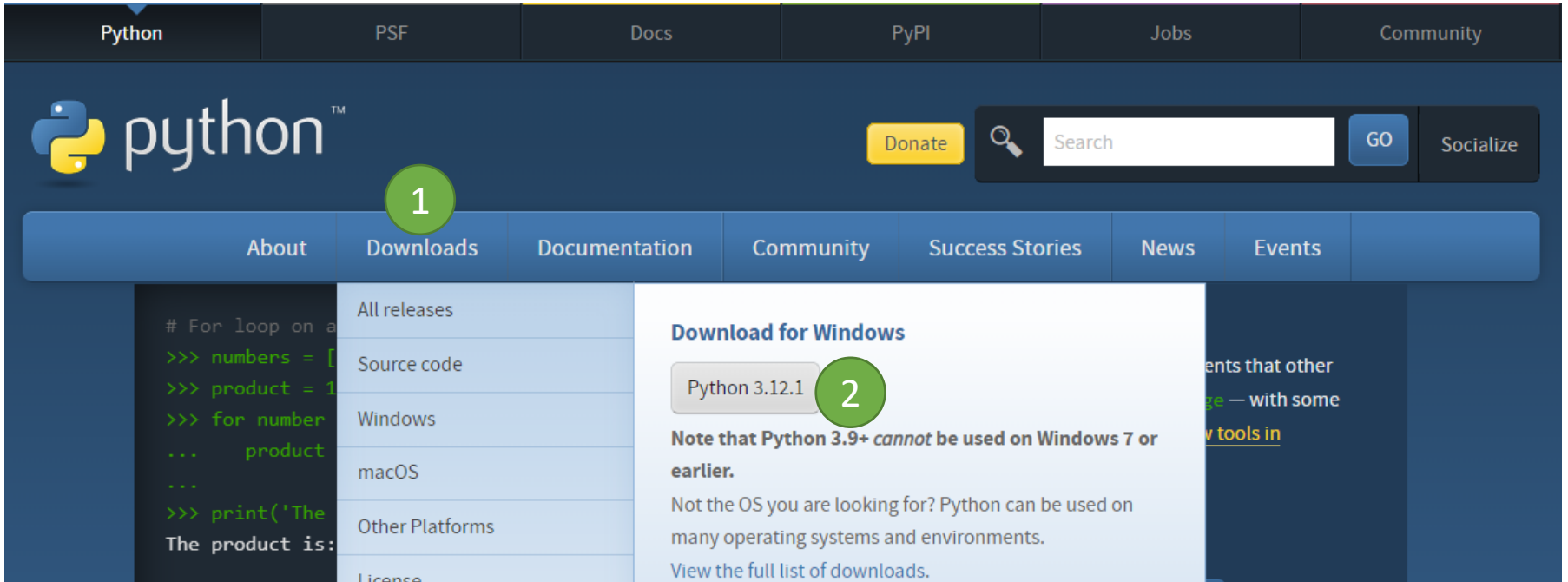
Introduction

- Installation
  - IDLE
- Python Shell
  - REPL
- Code Editors
  - Interpreters vs compilers
- Turtle Graphics

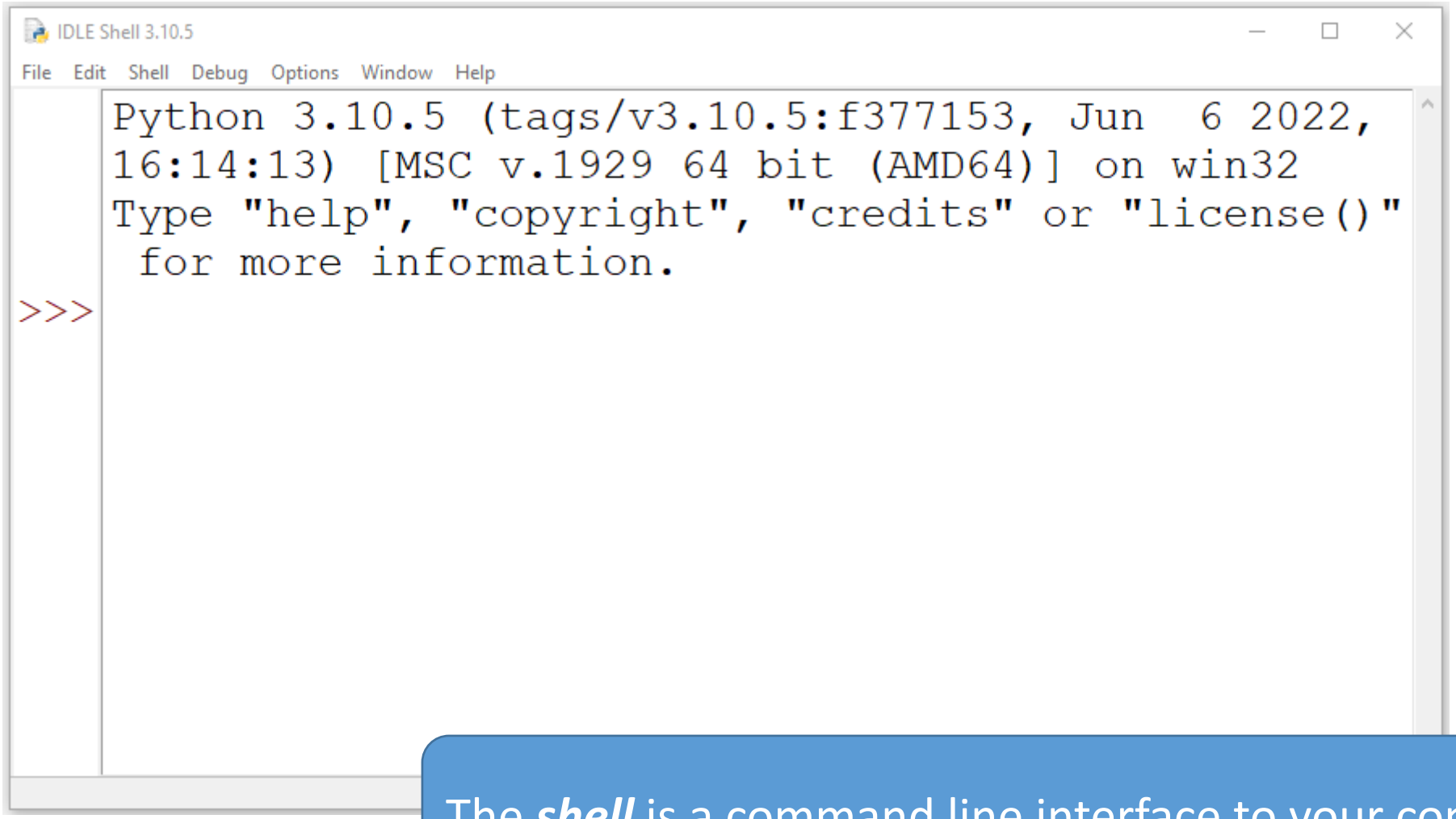
Installations

Installations

- Go to
  - https://www.python.org/
- Click Download
  - Execute the downloaded setup file

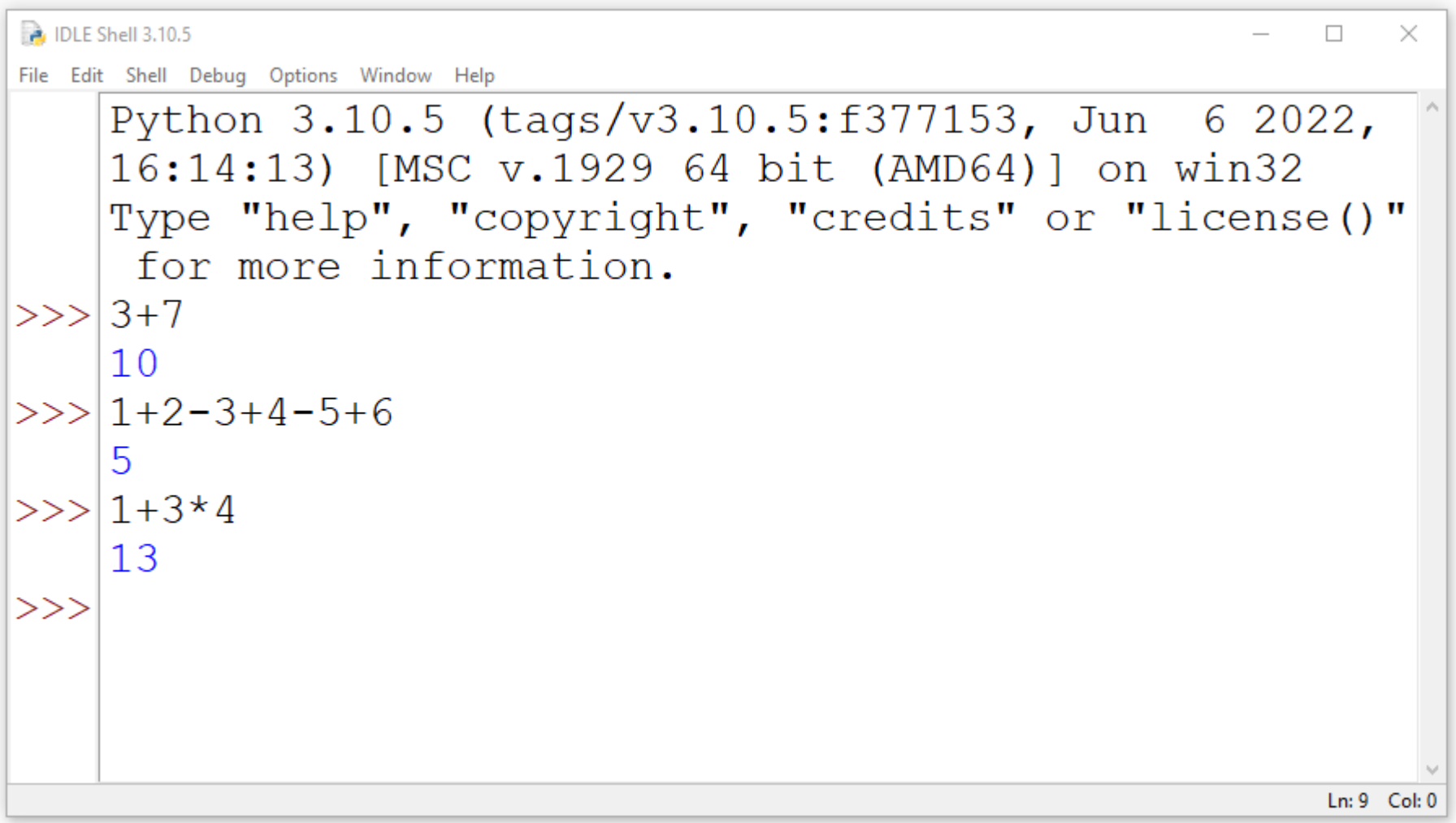


Start the Python **IDLE** Python Shell

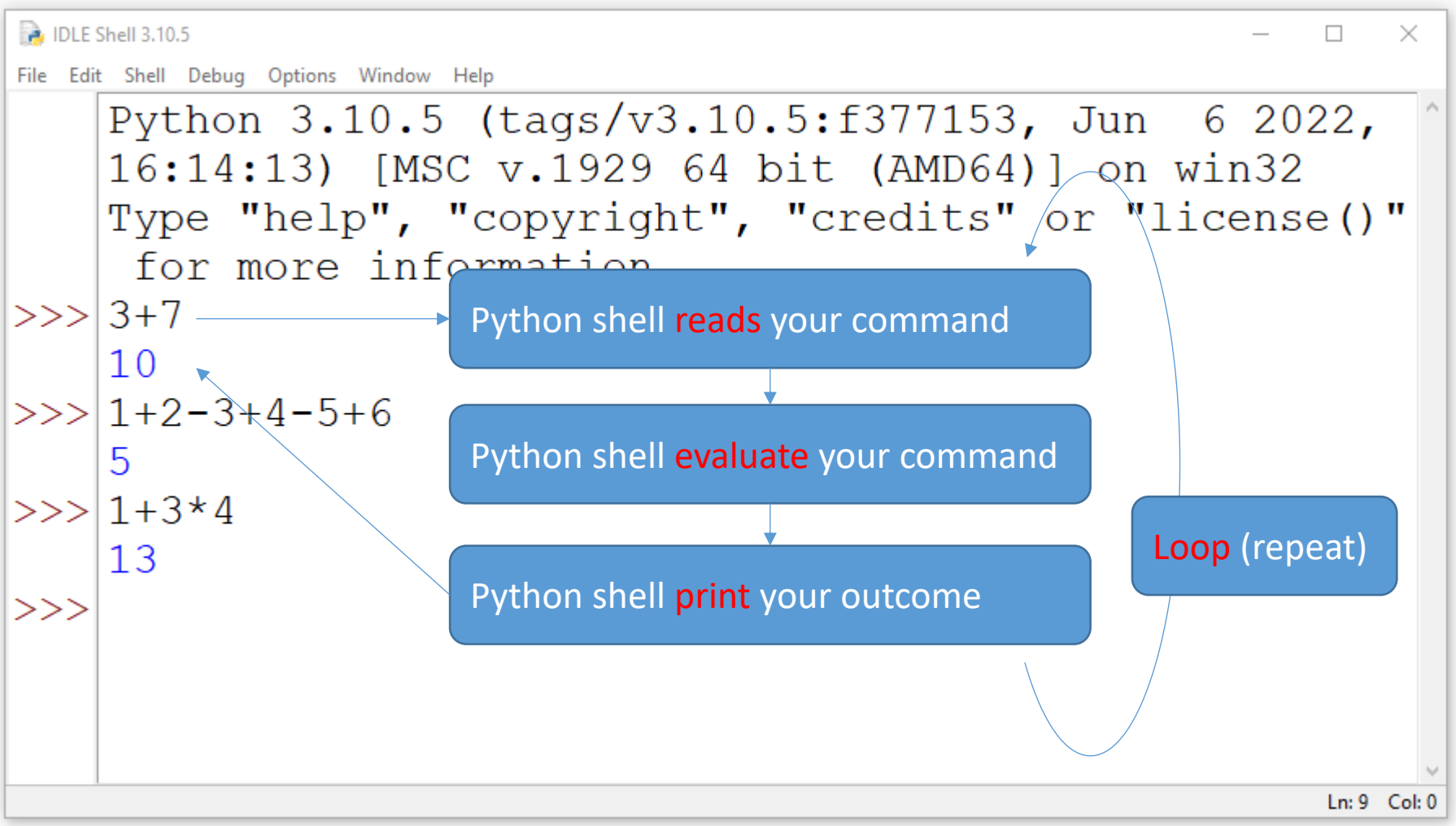


The ***shell*** is a command line interface to your computer.

Use the Shell as a Calculator



Read–eval–print loop (REPL)



Try to solve the following problem by Python

- You put $10000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?

Try to solve the following problem by Python

- You put $15000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?

Try to solve the following problem by Python

- You put $23000 into your fixed deposit bank account and the annual interest is 4.5%
  - How much do you have after one year?

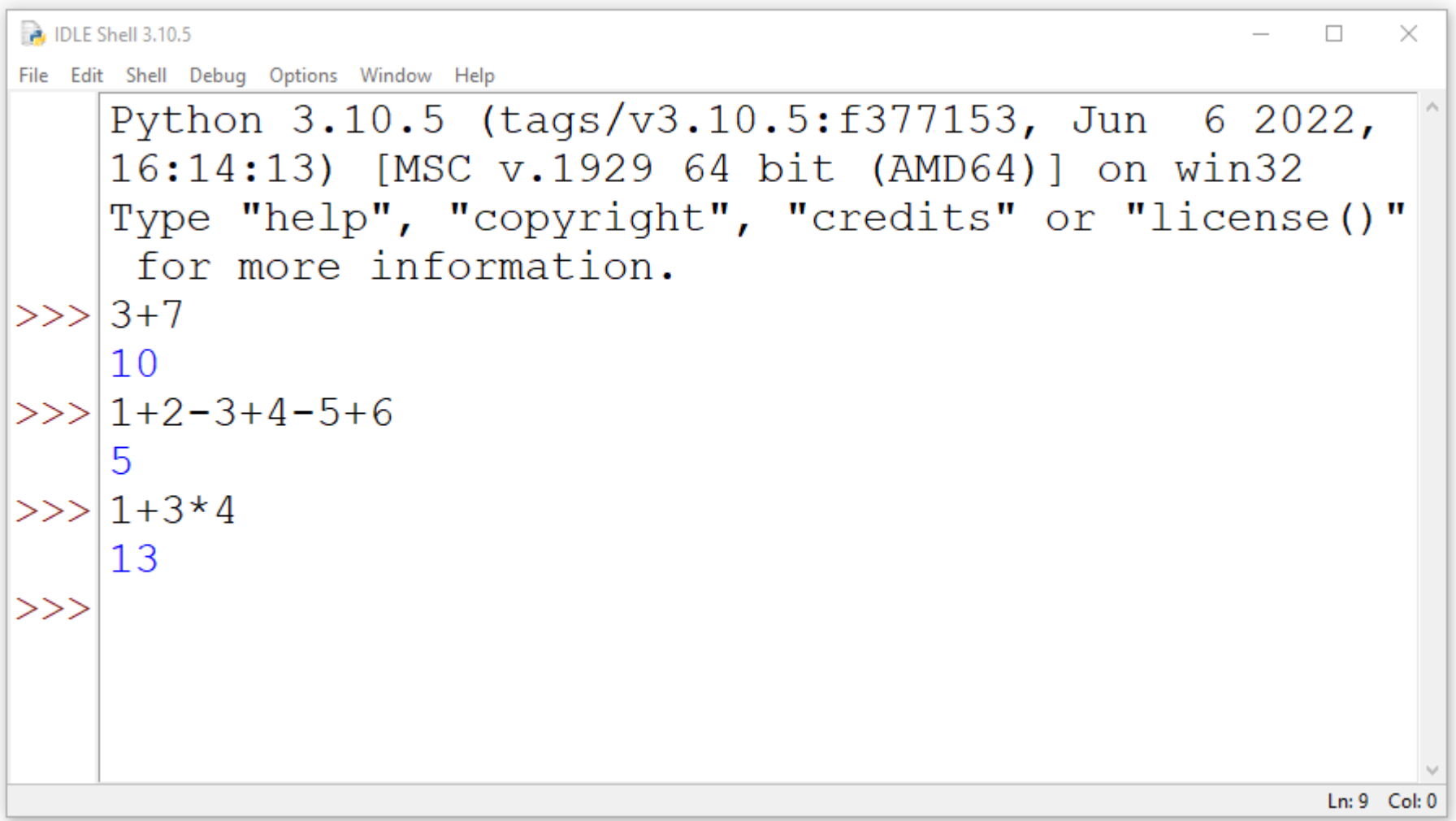
Try to solve the following problem by Python

- You put $10000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?
- You put $15000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?
- You put $23000 into your fixed deposit bank account and the annual interest is 4.5%
  - How much do you have after

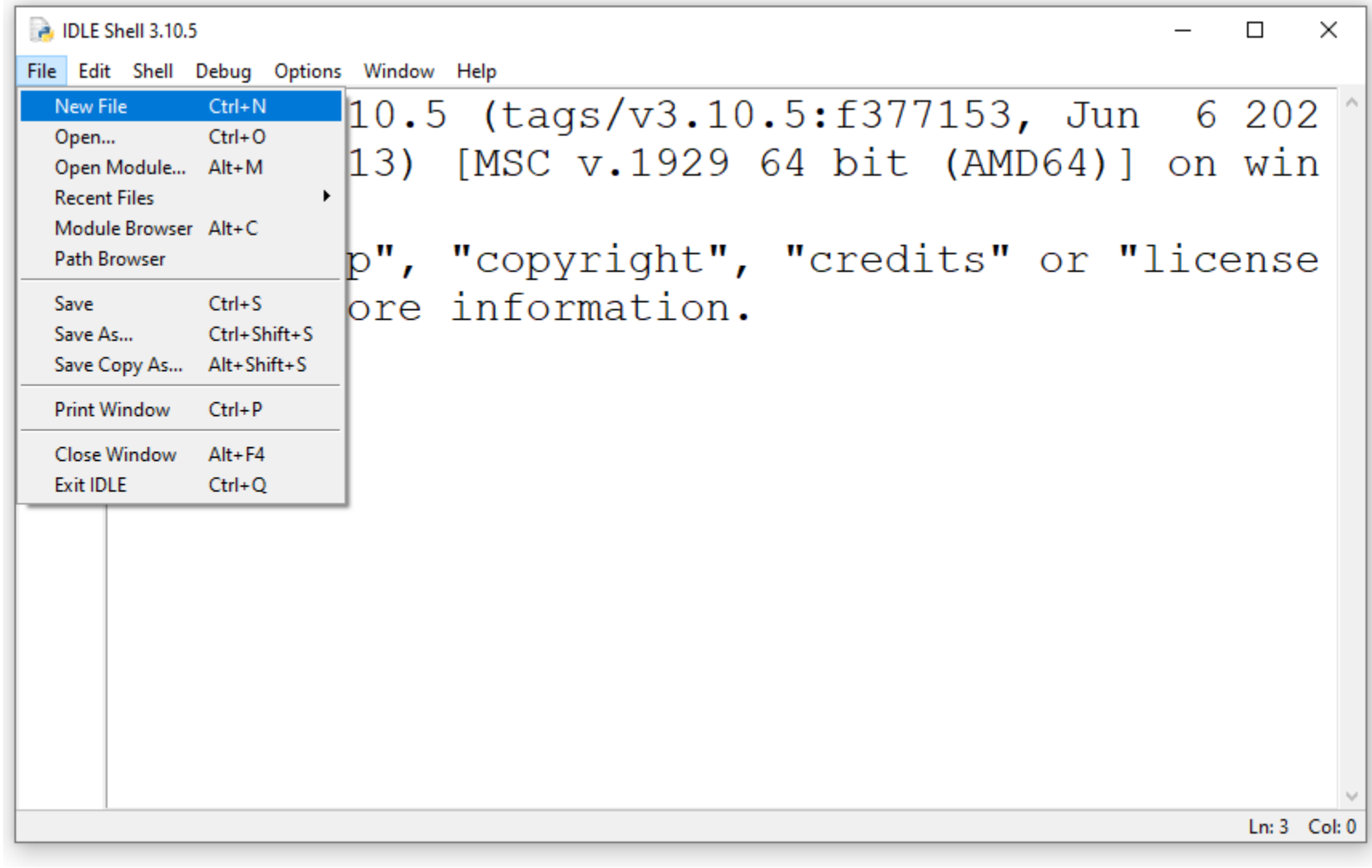
Did you type in the formula 3 times? What if you need to do it 10 times? 100 times?

Code Editor

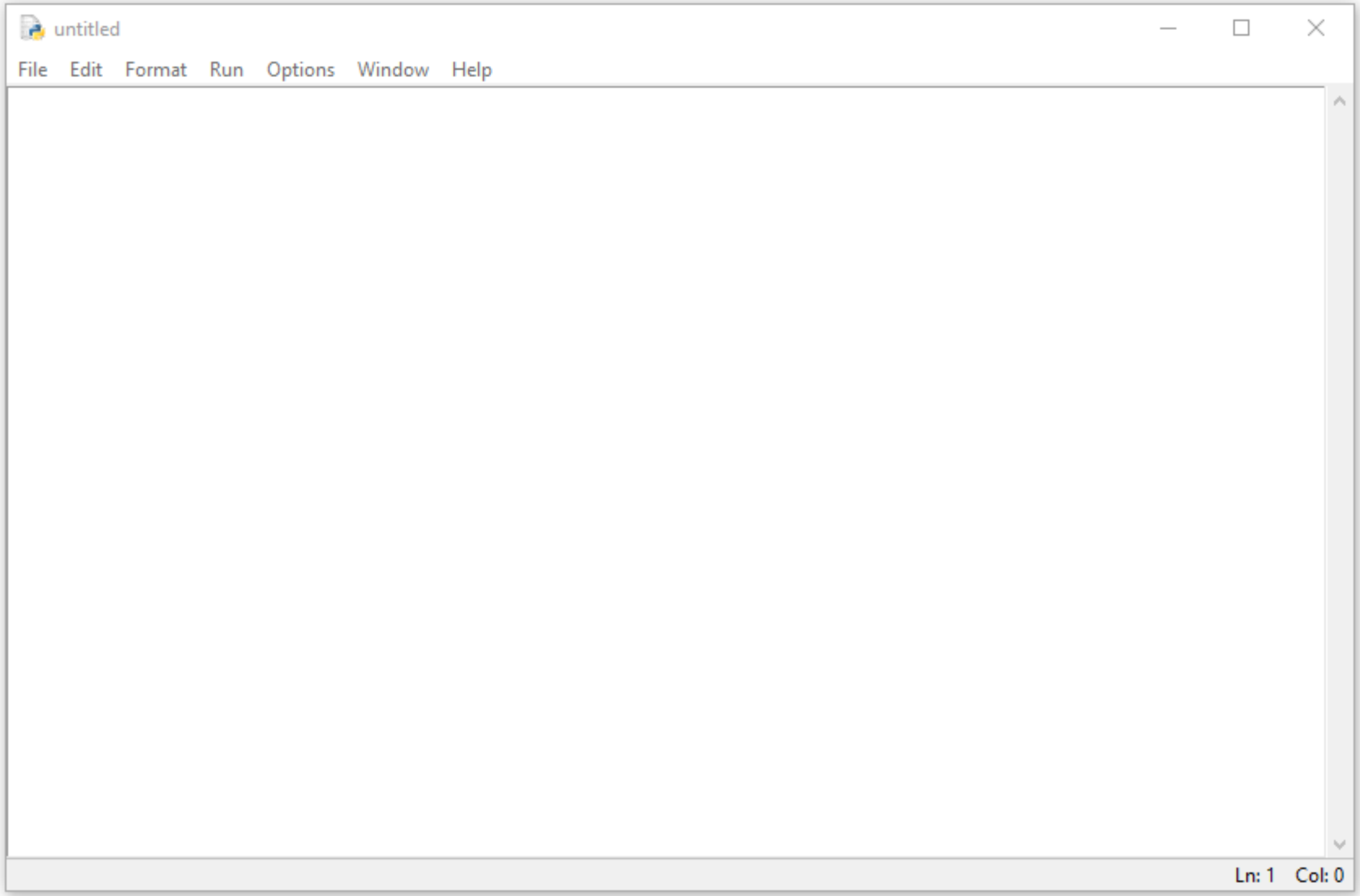
Using the Shell, you cannot “save” your work



What you should do: Create a program file



After Created a “New” file

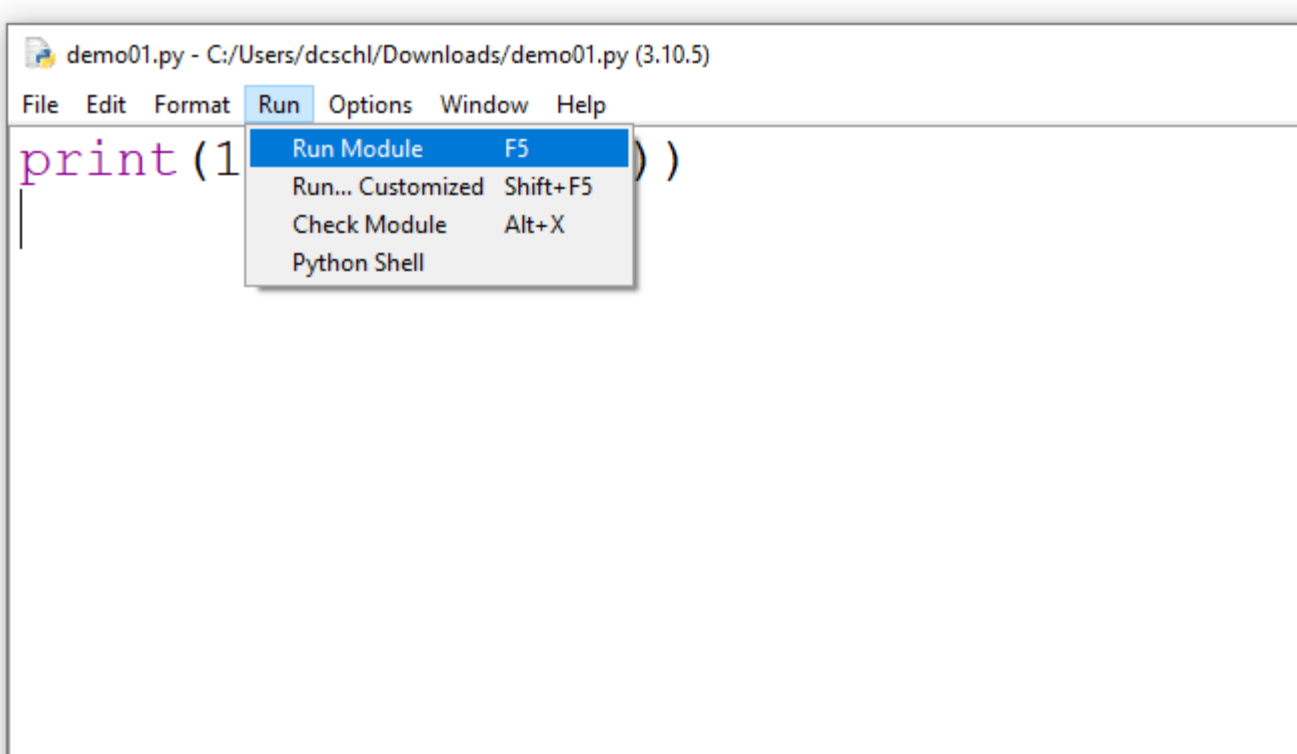


Try

- type:

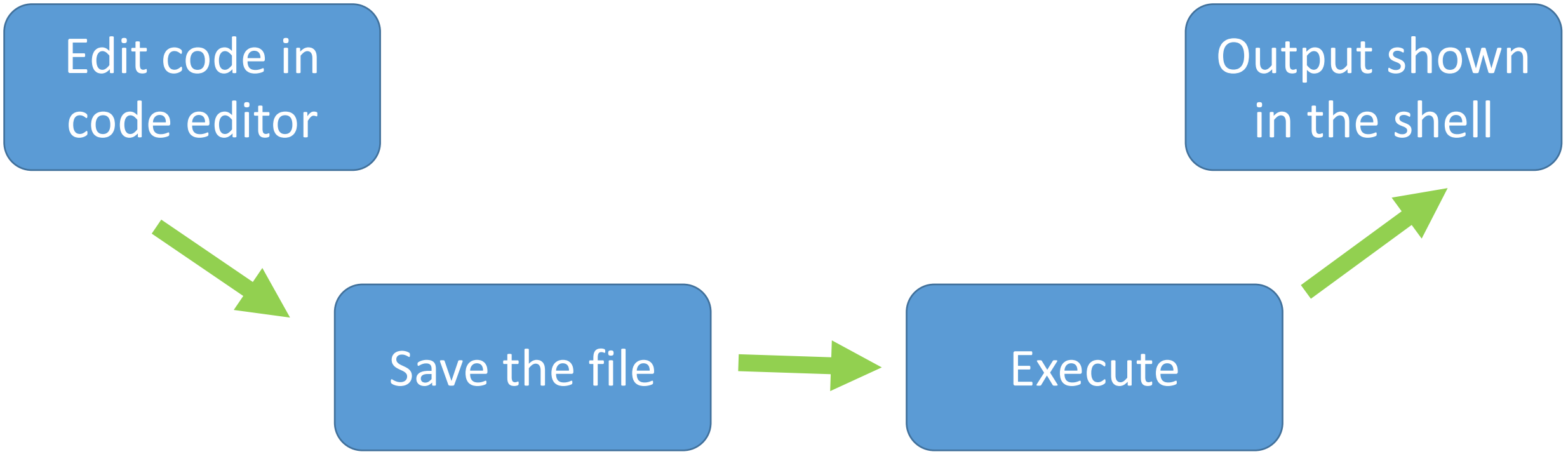
```
print(10000*(1+0.04))
```

- Save the file
- Anything happen?
- You need to “execute” the code
  - Or just press F5 in Windows

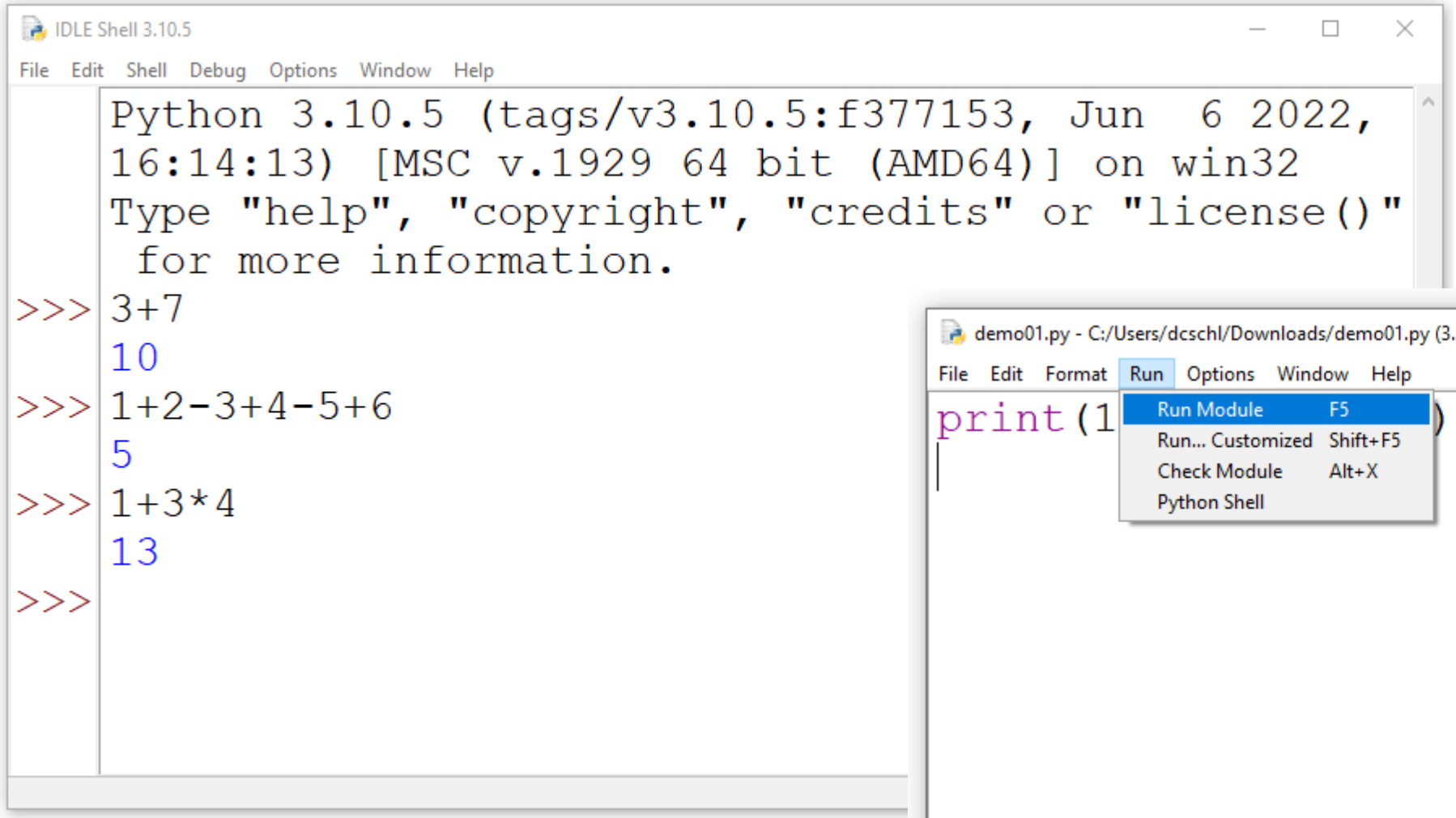


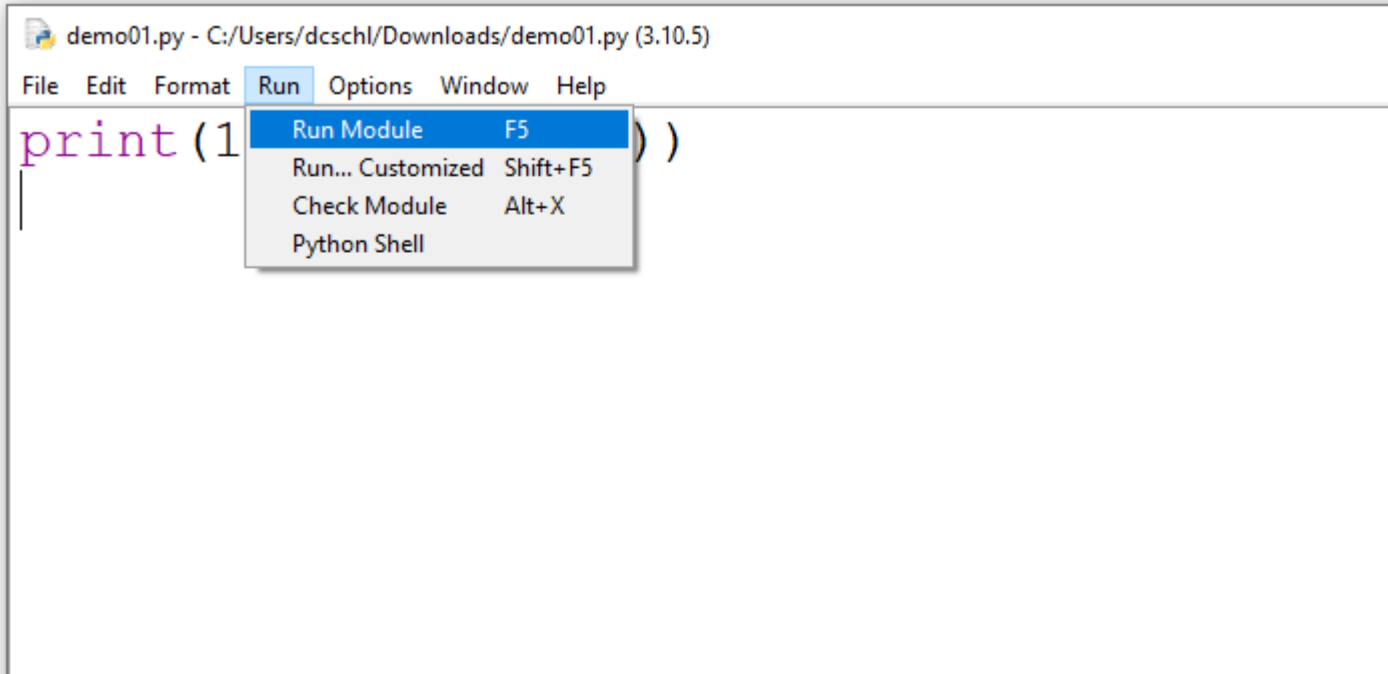
Execution of code

- The execution of code refers to the process of a *computer program* being run or carried out by a computer's central processing unit (CPU).



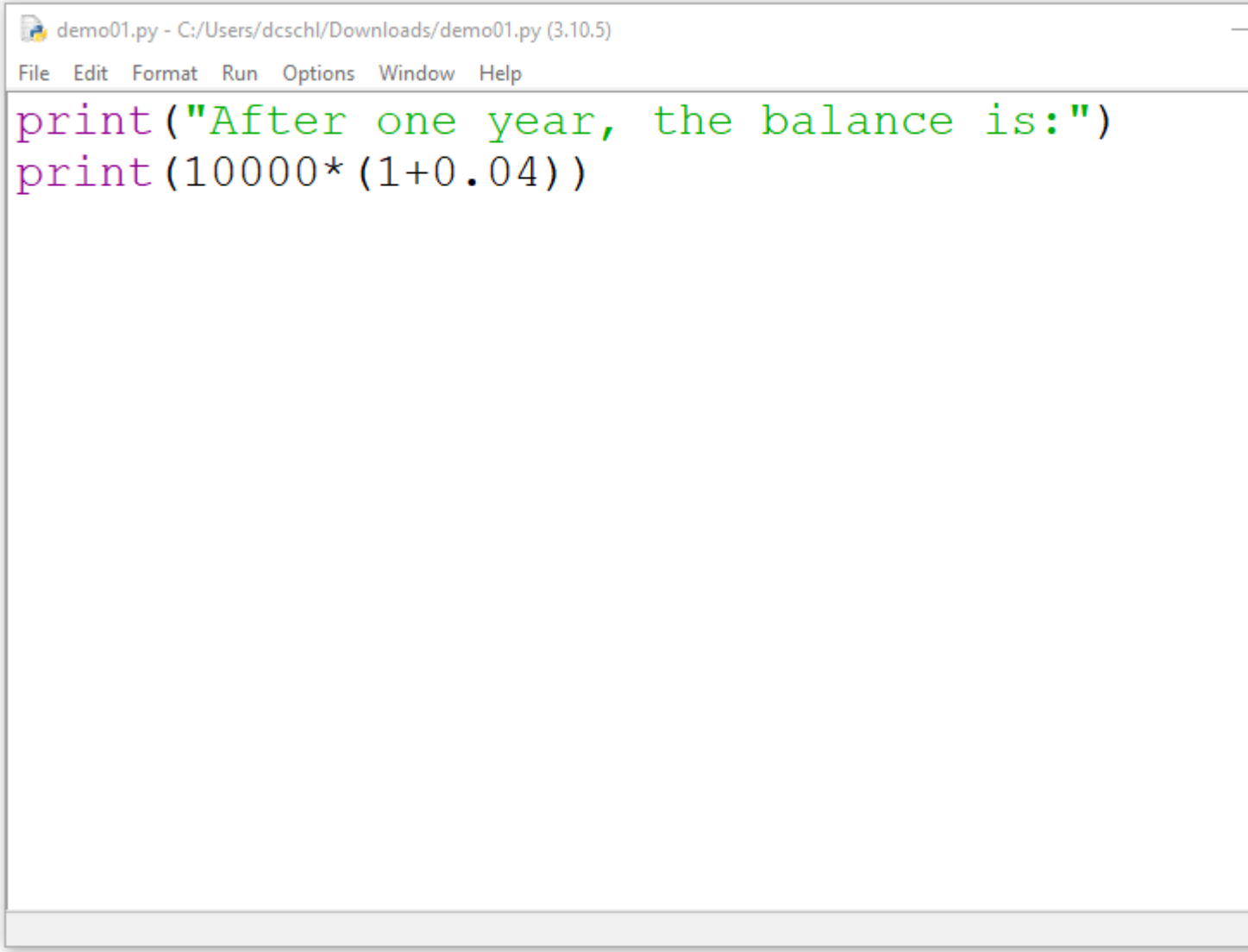
Shell vs Code Editor



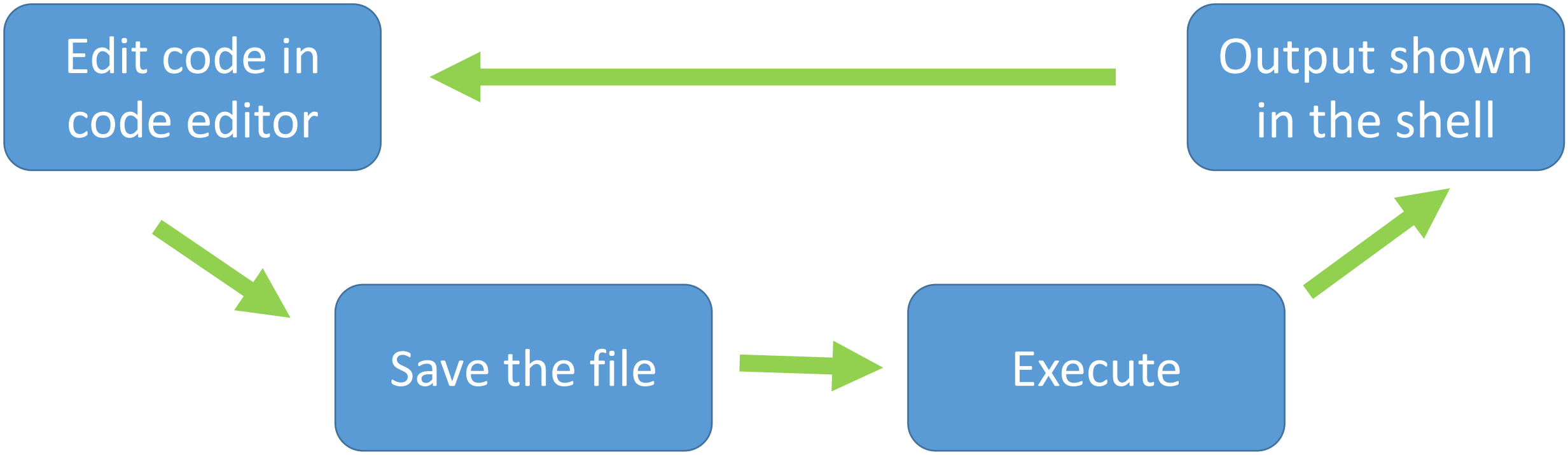


Code Editor

- Able to be
  - Saved
  - Edited
  - Reused
- Execute multiple lines
- Shell is mainly for testing

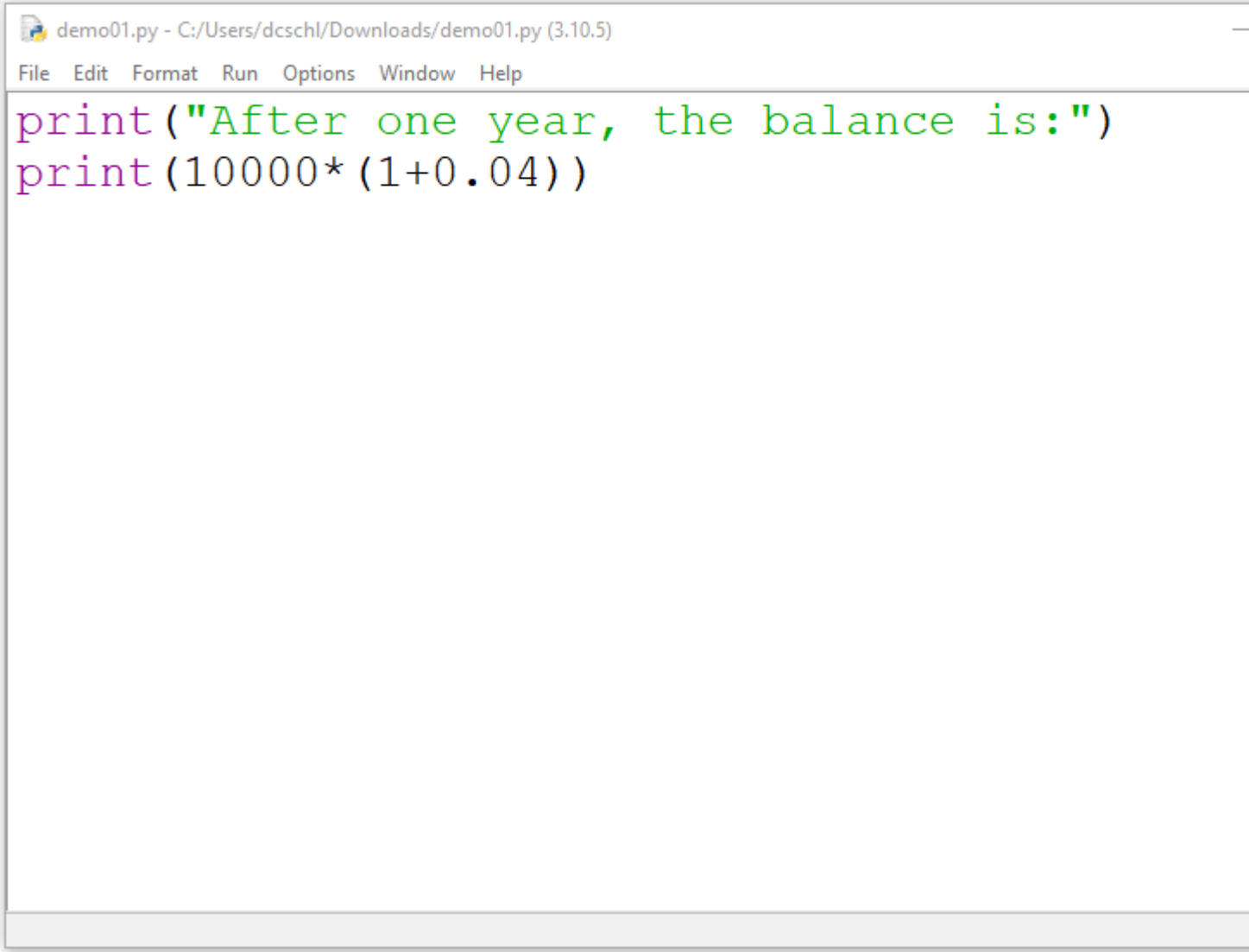


Code Development Cycle

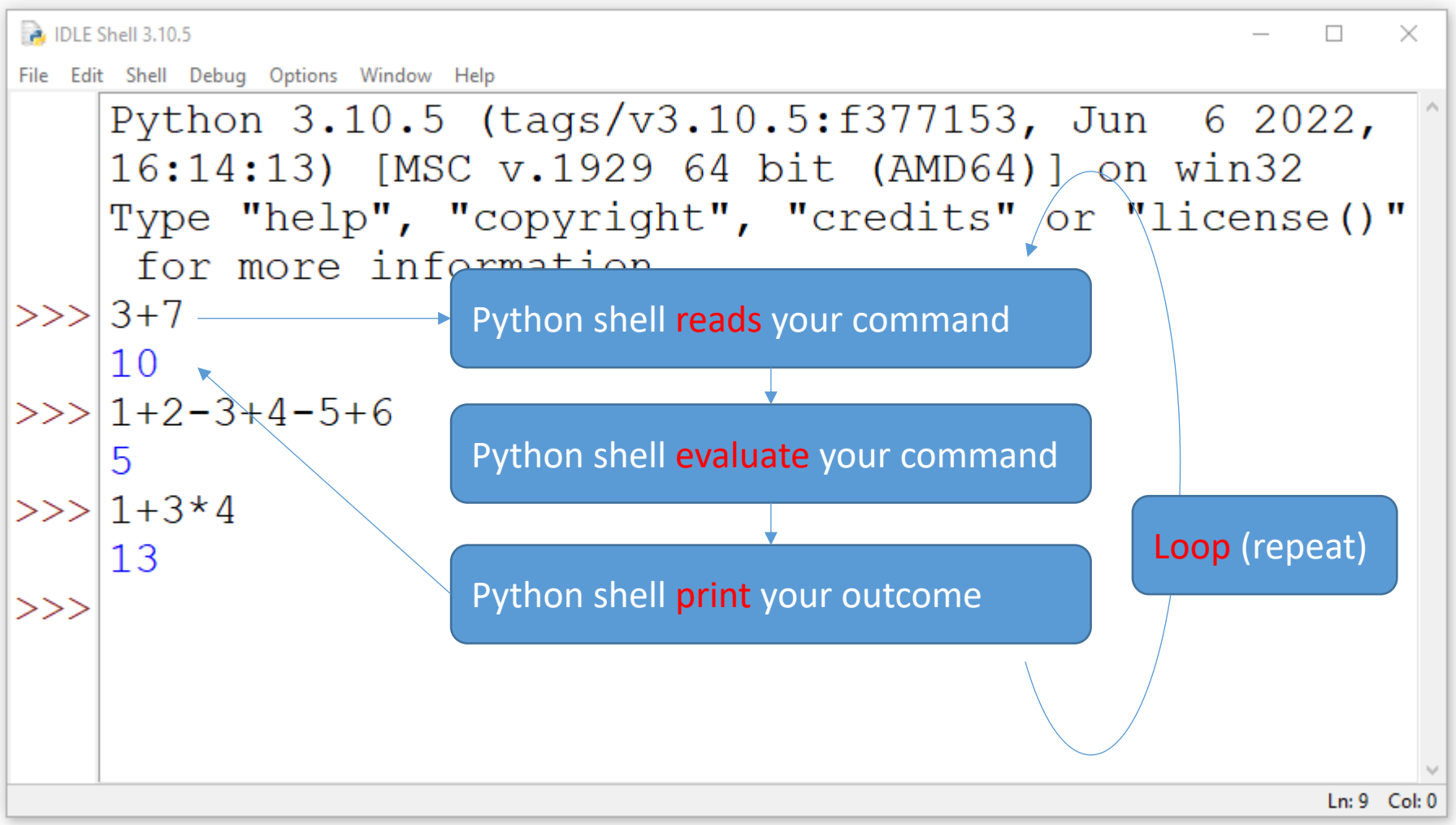


What is "`print()`"?

- `print()` is a ***function***
- It "commands" Python to display what is in the bracket.
- But why we don't need it when we run it in the shell?

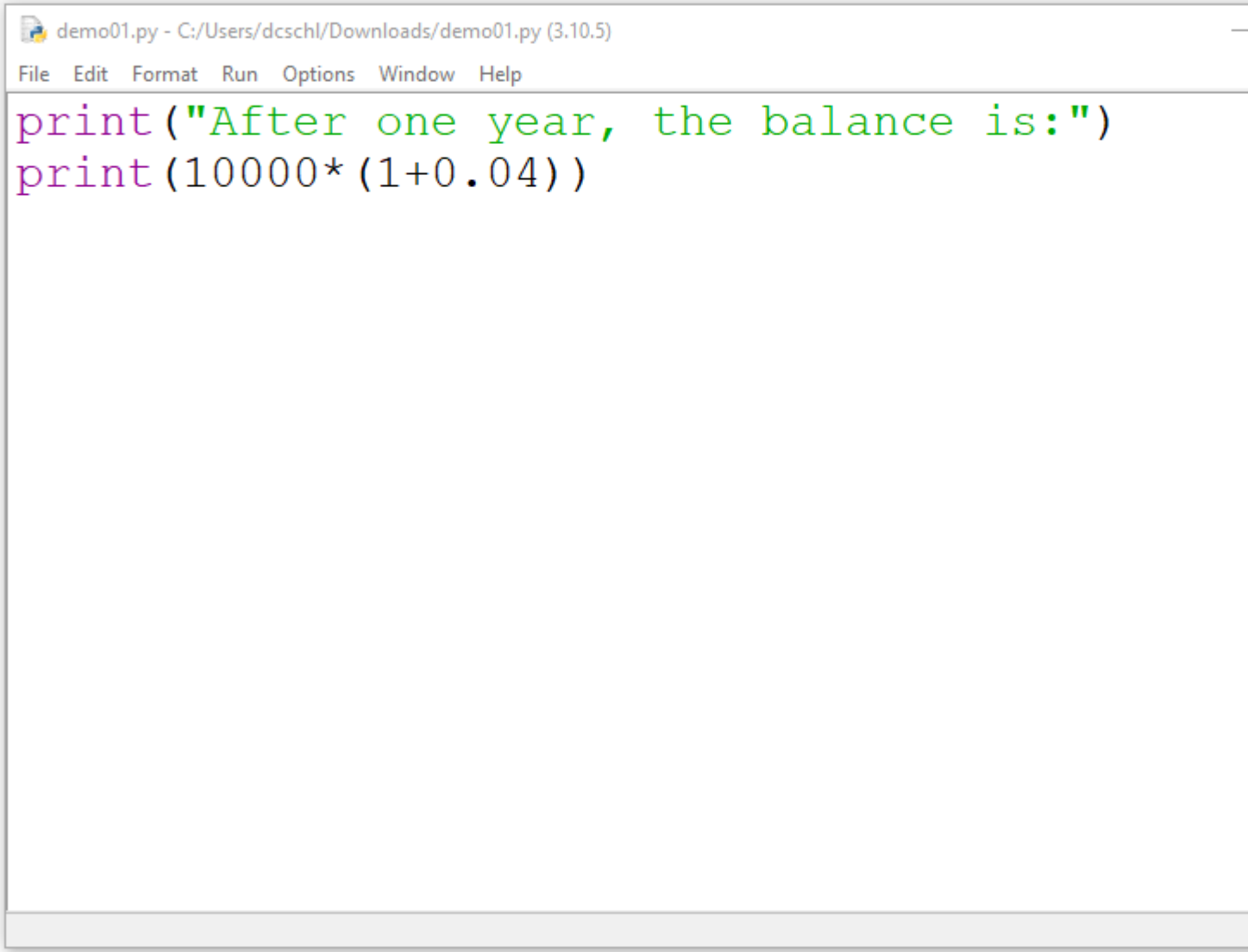


Recap in Shell: Read–eval–print loop (REPL)



What is "`print()`"?

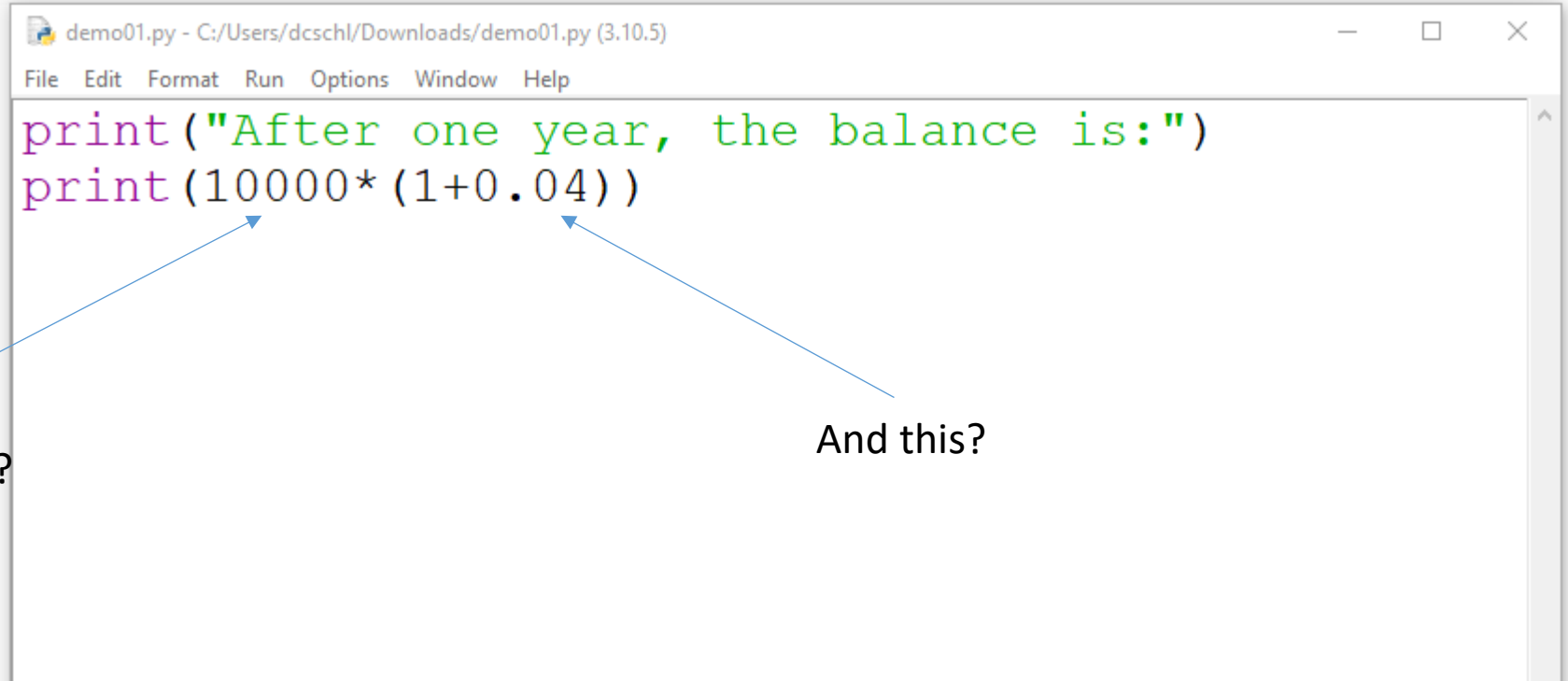
- `print()` is a ***function***
- It "commands" Python to display what is in the bracket.
- But why we don't need it when we run it in the shell?
  - When you execute a program from the code editor, Python will only "execute" every line of code, but it will not "print"



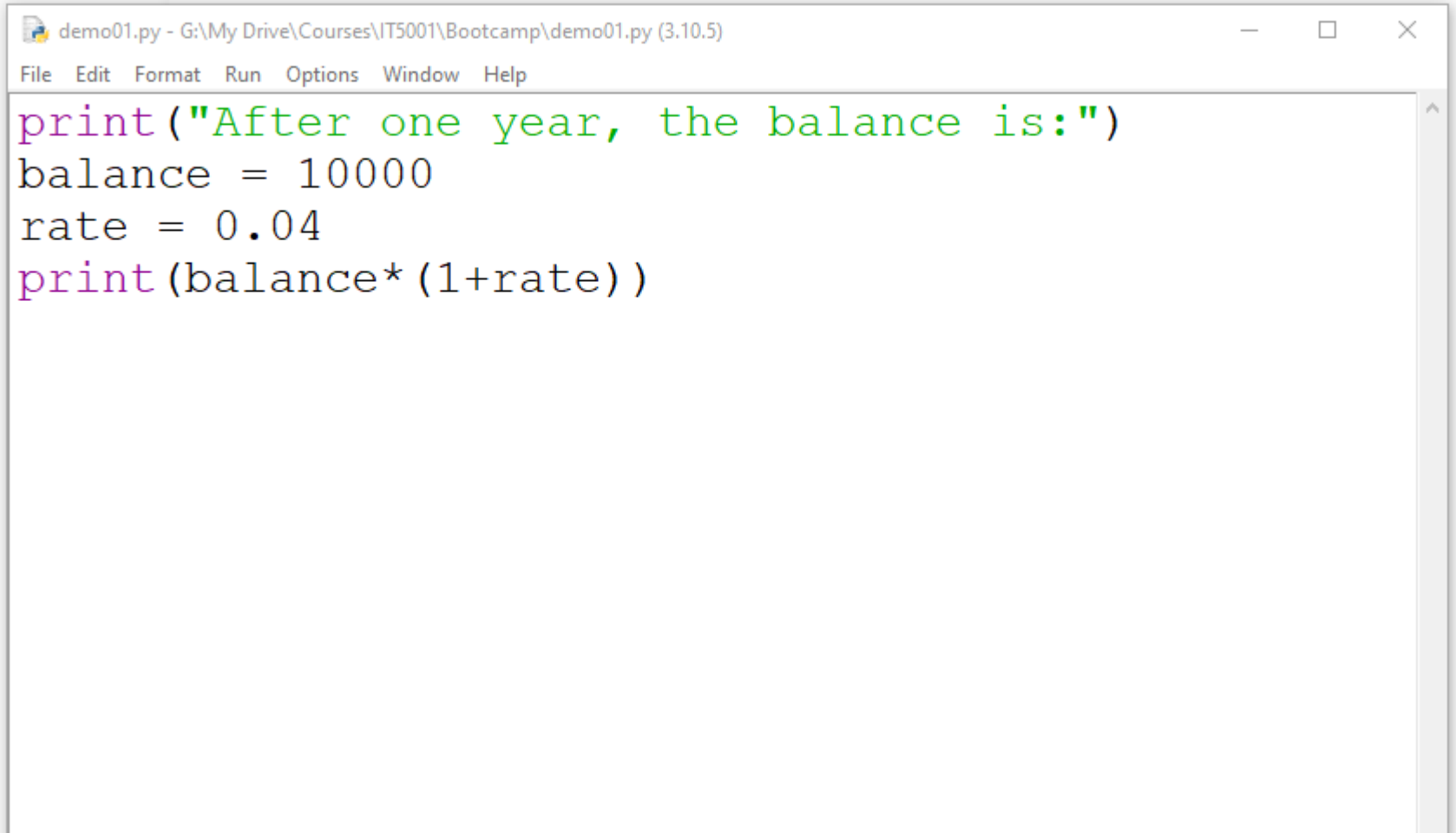
Break

Recap

- You put $10000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?



A better way to do it: Using Variables



Try to solve the following problem by Python

- You put $10000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?
- You put $15000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?
- You put $23000 into your fixed deposit bank account and the annual interest is 4.5%
  - How much do you have after

Did you type in the formula 3 times? What if you need to do it 10 times? 100 times?

A better way to do it: Using Variables

demo01.py - G:\My Drive\Courses\IT5001\Bootcamp\demo01.py (3.10.5)

File Edit Format Run Options Window Help

```
print("After one year, the balance is:")
balance = 10000
rate = 0.04
print(balance*(1+rate))
```

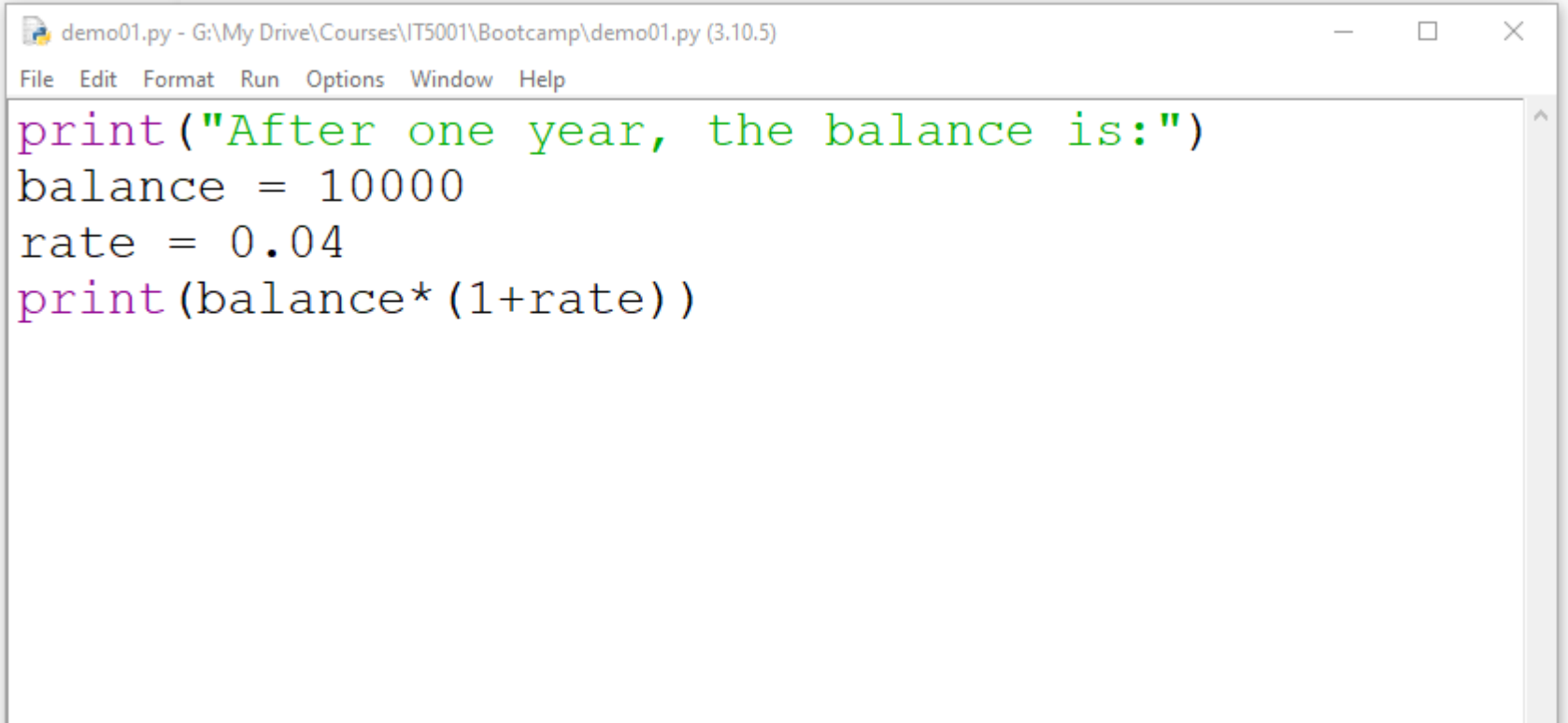
demo01.py - G:\My Drive\Courses\IT5001\Bootcamp\demo01.py (3.10.5)

File Edit Format Run Options Window Help

```
print("After one year, the balance is:")
balance = 23000
rate = 0.045
print(balance*(1+rate))
```

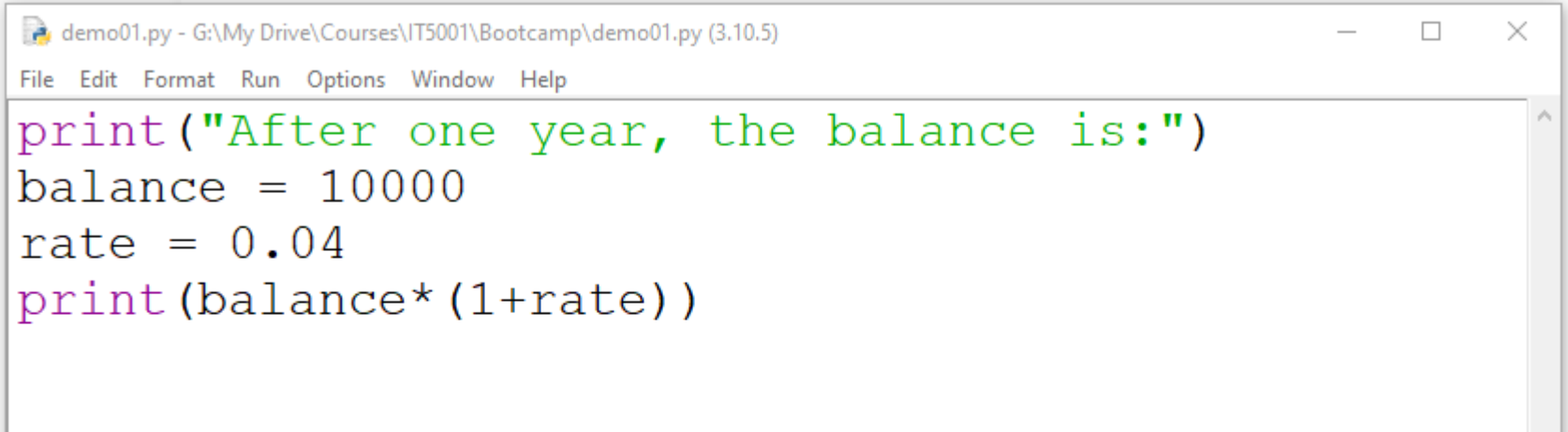
Problem

- You put $10000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?



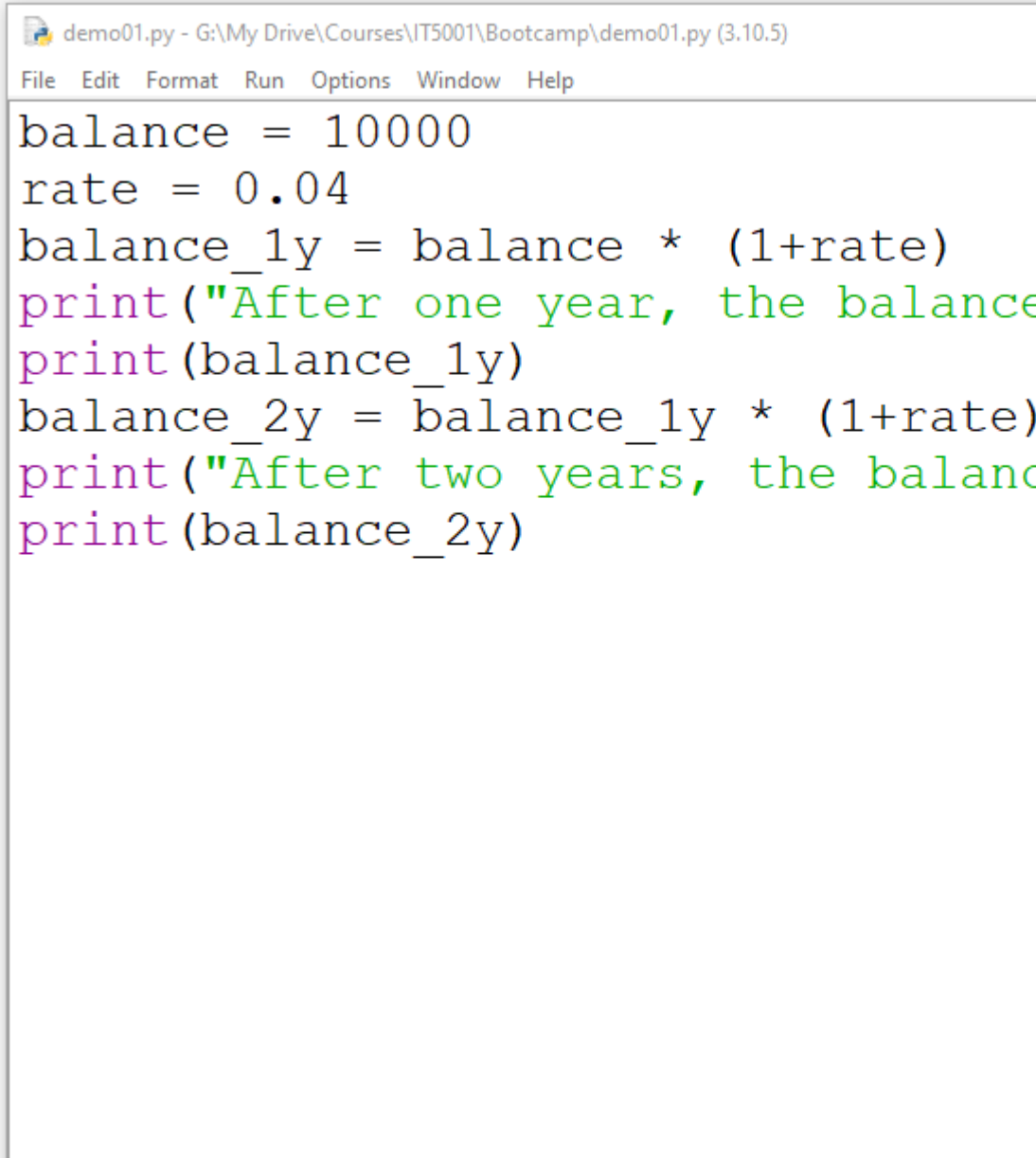
Problem

- You put $10000 into your fixed deposit bank account and the annual interest is 4%
  - How much do you have after one year?
  - How much do you have after two years?
  - How much do you have after three years?
- We need to use the balance result AFTER one year to calculate the next year



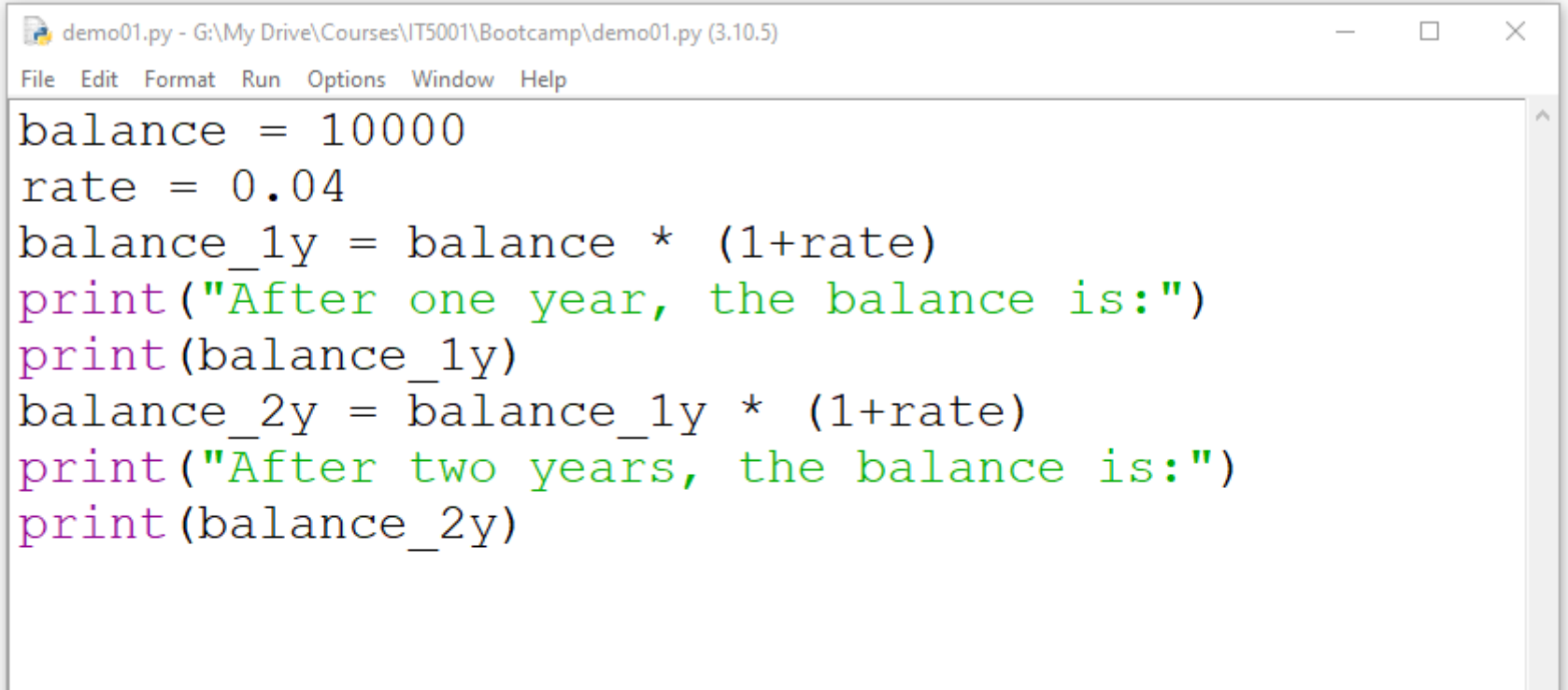
Problem

- You put $10000 into your fixed deposit bank account and the annu interest is 4%
  - How much do you have after one year
  - How much do you have after two year
  - How much do you have after three years?
- We need to use the balance result AFTER one year to calculate the nex year



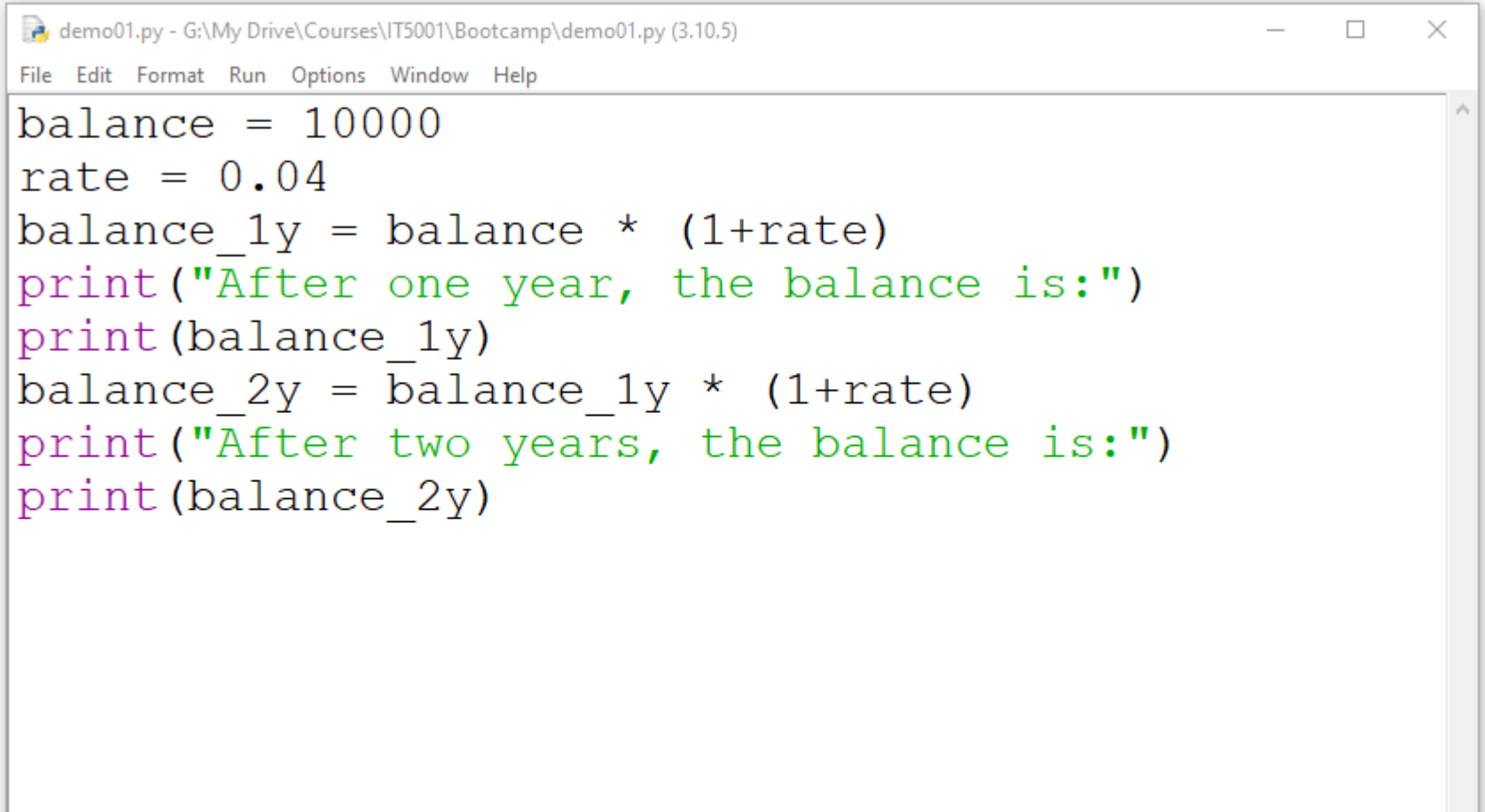
Calculating Balance

- In computing, a *variable* is a piece of memory that stores a value that can be *changed*.



Your job now

- Print out the balance in the next 3 years

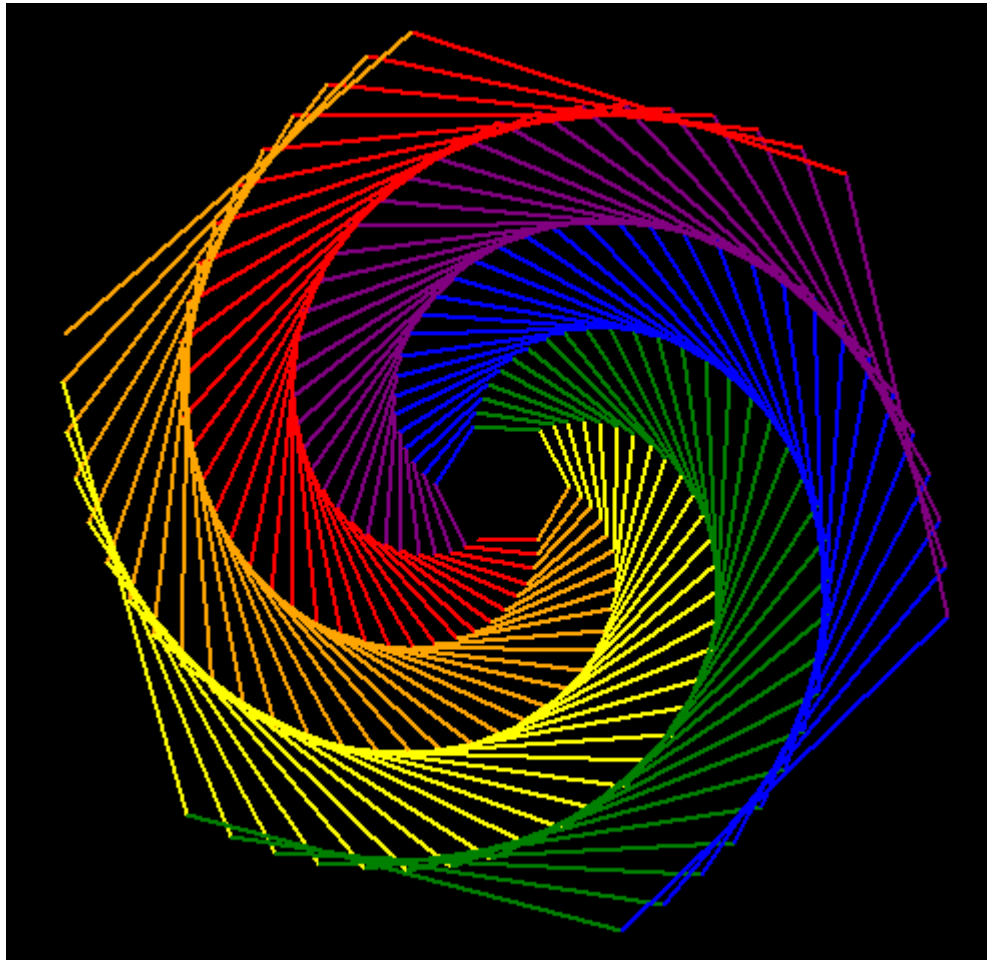


Turtle Graphics

Let’s get familiar with Programming

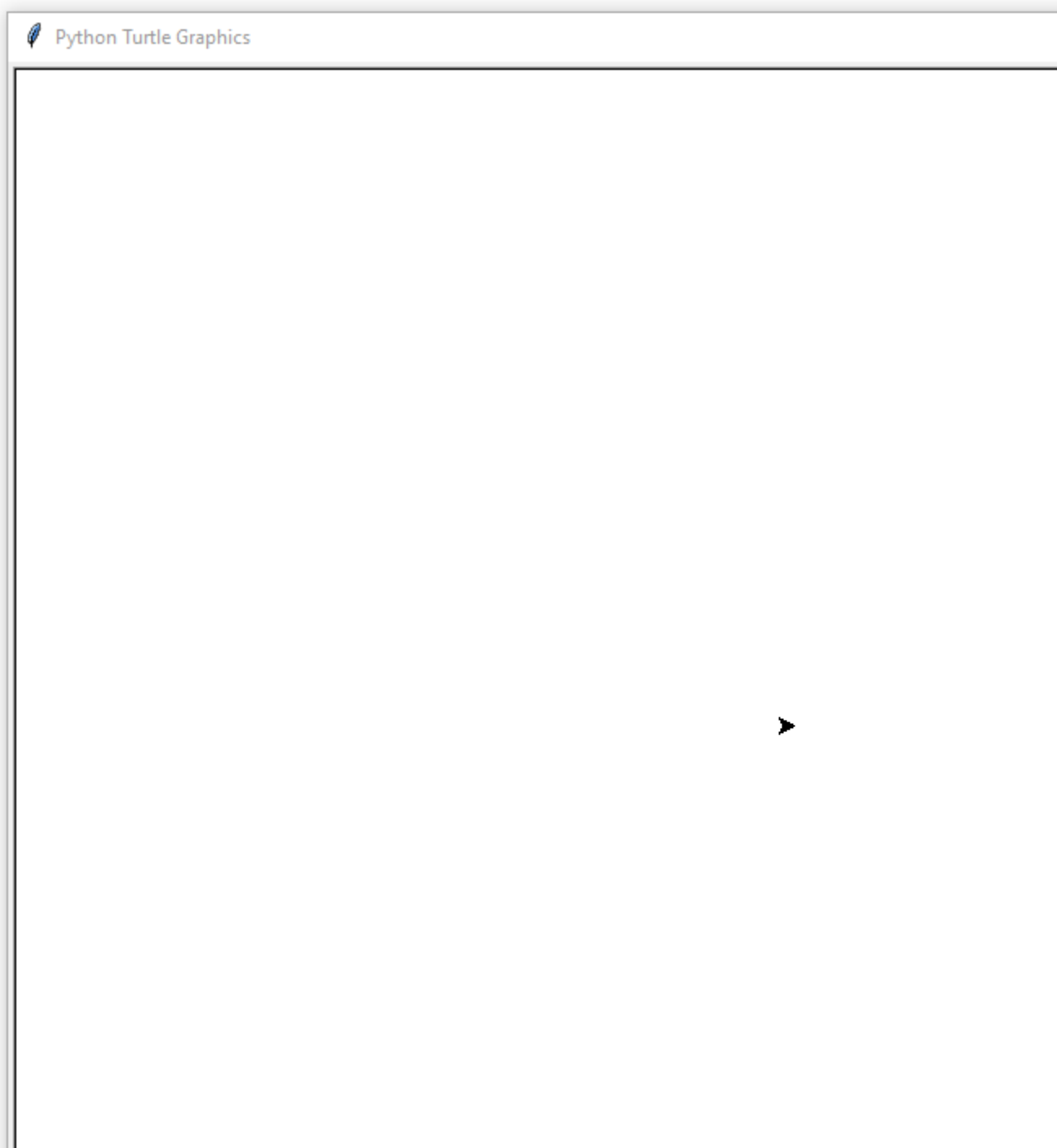
Turtle Graphics

- “A picture is worth a thousand words”



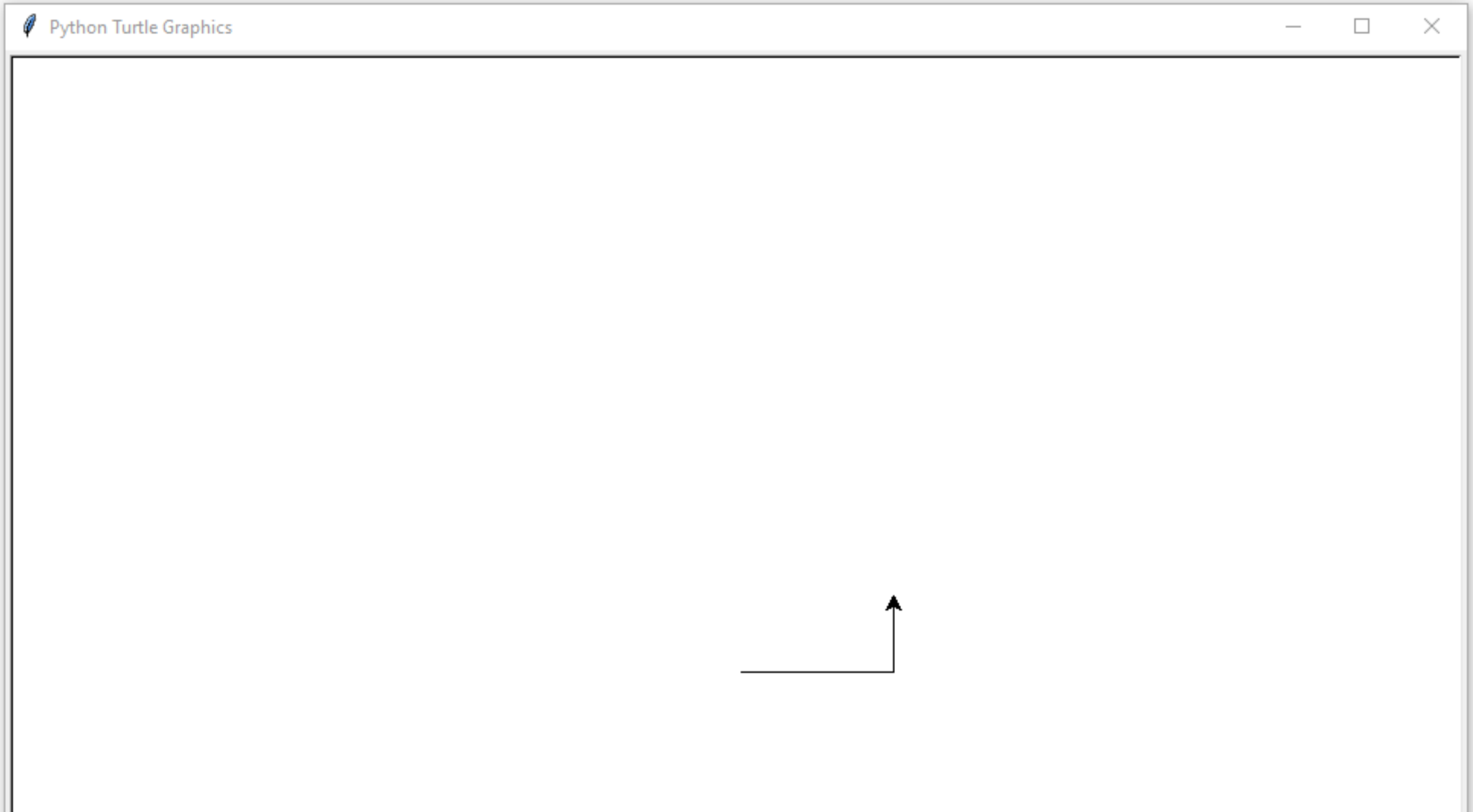
Turtle Graphics

- “Turtle” is a Python feature like a drawing board, which lets us command a turtle to draw all over it!
- Imagine you have a little turtle on the screen and facing East
  - *picture*
- Then you command it to go forward 100 pixels
- Then turn left 90 degree and walk another 50 pixels
  - *picture*



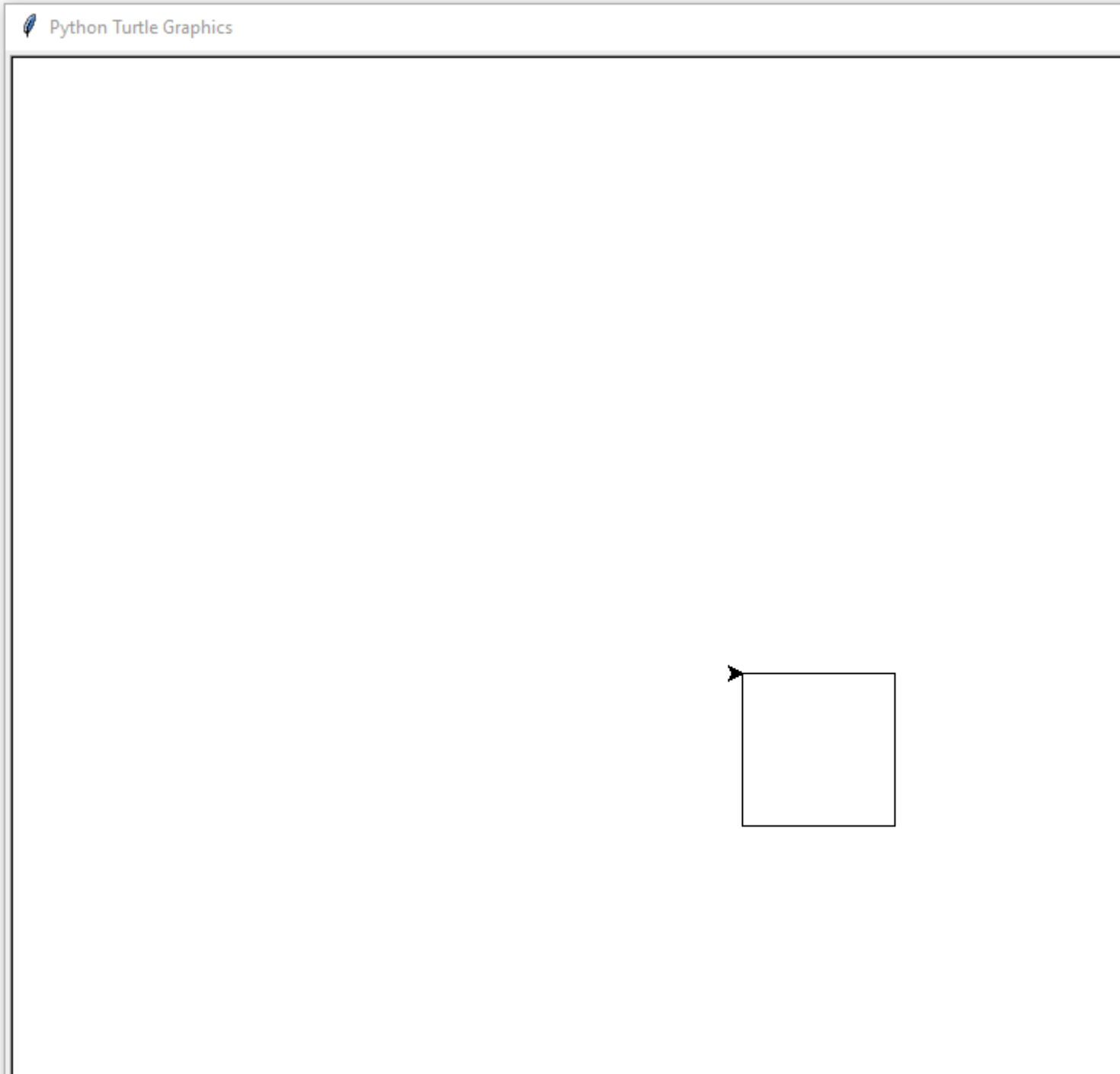
Then you command it to go forward 100 pixels

Then turn left 90 degree and walk another 50 pixels



Drawing a Square

```
forward(100)
right(90)
forward(100)
right(90)
forward(100)
right(90)
forward(100)
right(90)
```

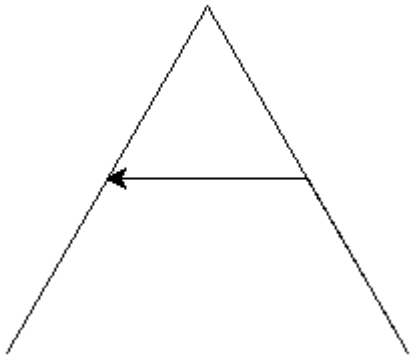


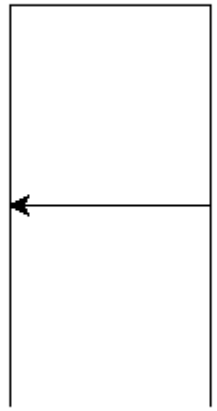
Assignment 1

- Draw a triangle
- And share how you draw it
  - (You may be tempted to use for-loop now, but let’s try without it now)

Assignment 2

- Draw a letter A





- Share how you draw it
- Or did you draw other things?

How to learn programming in general?

- Google is your good friend
- E.g. how to get more commands in Turtle?
  - Google ”turtle Python”