Introduction to Python and the Command Line

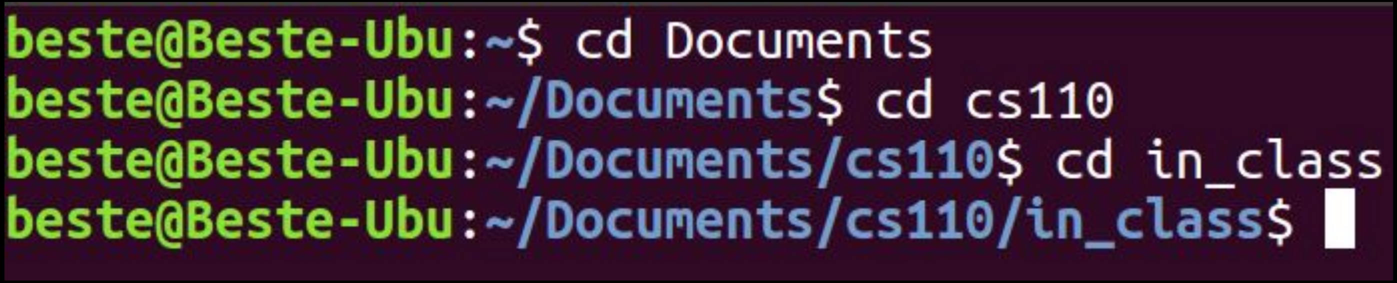
•••

Beste Filiz Yuksel

Some simple commands …

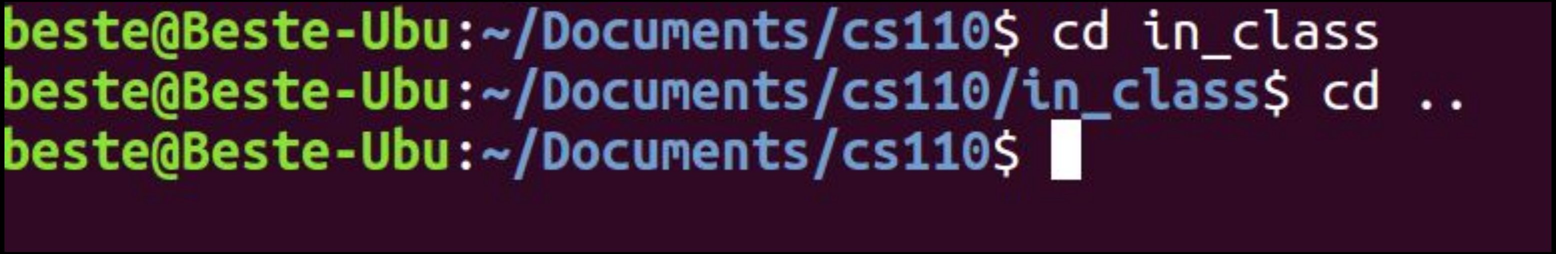
cd (change directory)

To go down into a directory



```
beste@Beste-Ubu:~$ cd Documents
beste@Beste-Ubu:~/Documents$ cd cs110
beste@Beste-Ubu:~/Documents/cs110$ cd in_class
beste@Beste-Ubu:~/Documents/cs110/in_class$ 
```

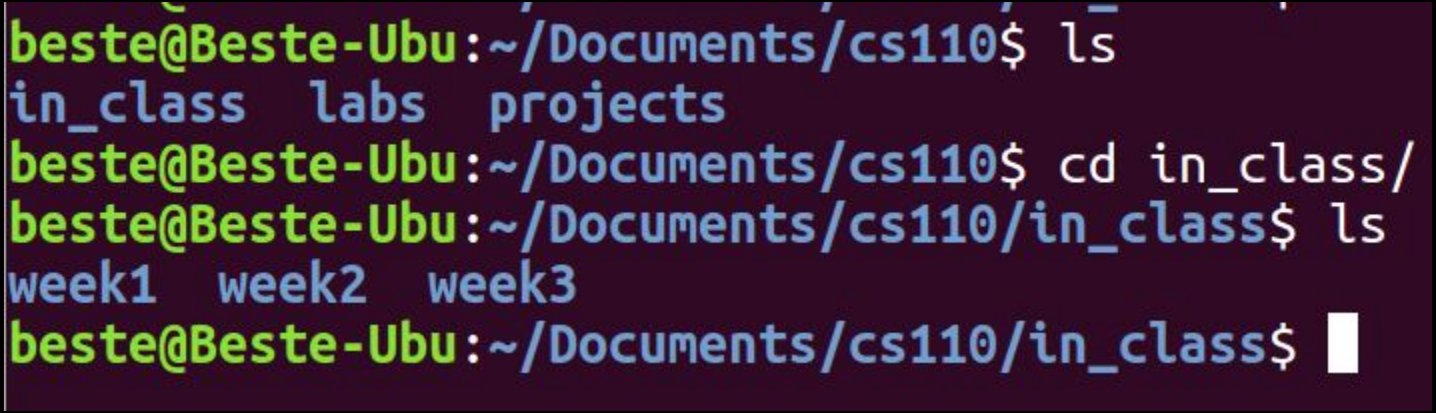
To back up into a directory `cd ..`



```
beste@Beste-Ubu:~/Documents/cs110$ cd in_class
beste@Beste-Ubu:~/Documents/cs110/in_class$ cd ..
beste@Beste-Ubu:~/Documents/cs110$ 
```

ls (list)

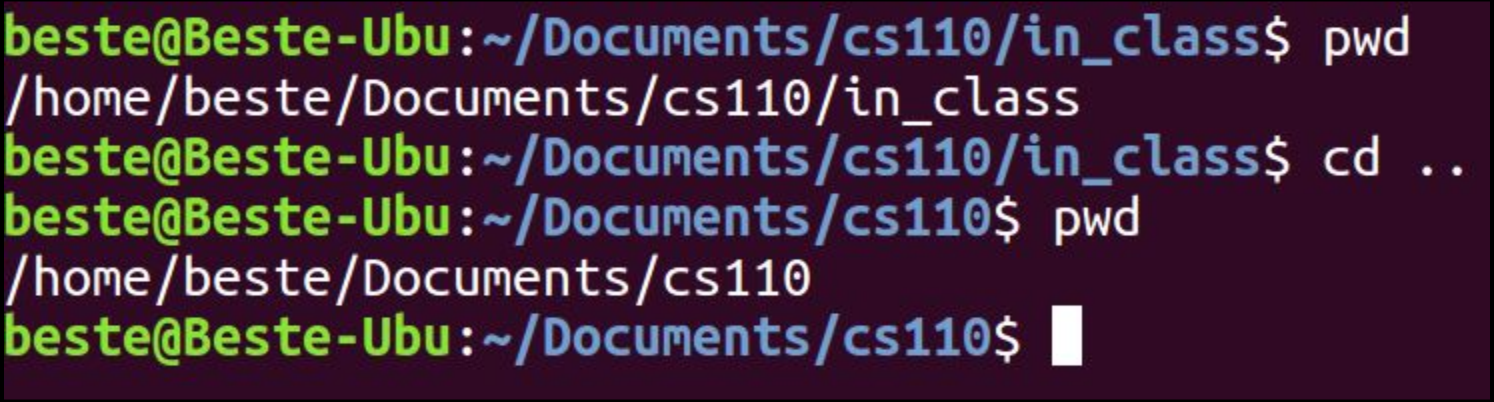
Lists out all the files and directories under that current directory



```
beste@Beste-Ubu:~/Documents/cs110$ ls
in_class  labs  projects
beste@Beste-Ubu:~/Documents/cs110$ cd in_class/
beste@Beste-Ubu:~/Documents/cs110/in_class$ ls
week1  week2  week3
beste@Beste-Ubu:~/Documents/cs110/in_class$ 
```

pwd (present working directory)

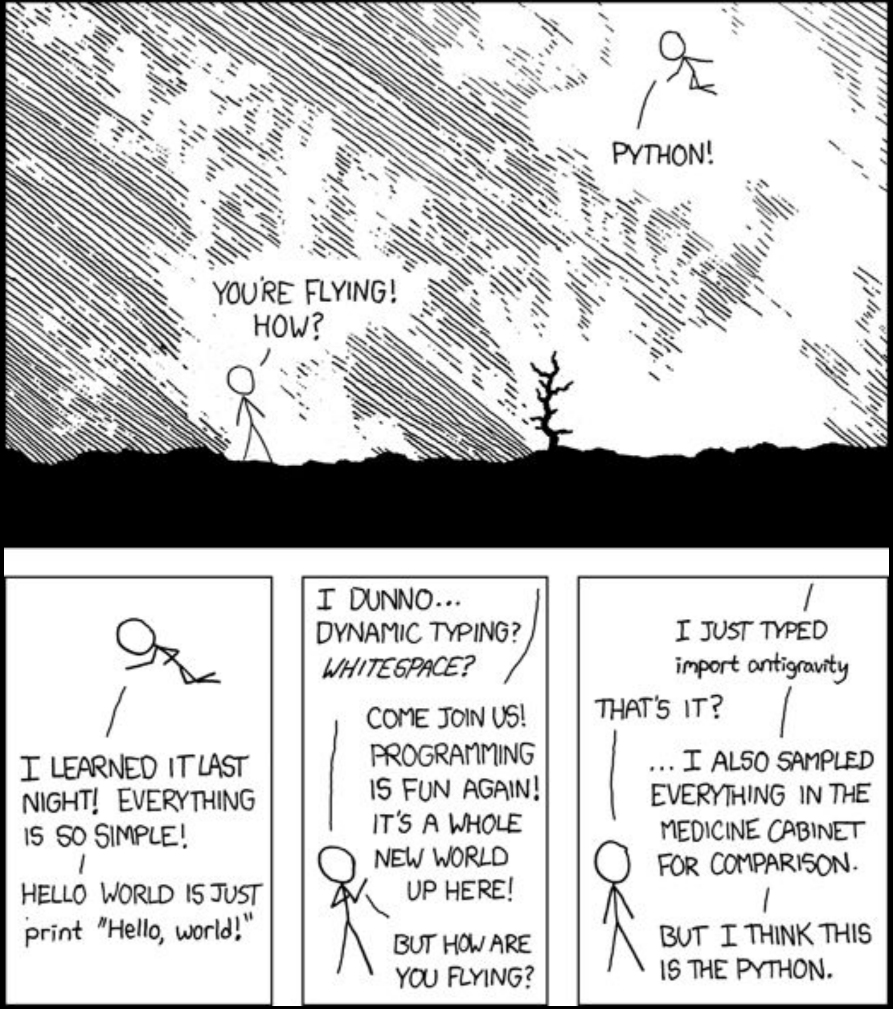
Gives you the path of the directory you are currently in



```
beste@Beste-Ubu:~/Documents/cs110/in_class$ pwd
/home/beste/Documents/cs110/in_class
beste@Beste-Ubu:~/Documents/cs110/in_class$ cd ..
beste@Beste-Ubu:~/Documents/cs110$ pwd
/home/beste/Documents/cs110
beste@Beste-Ubu:~/Documents/cs110$ 
```

Some simple Python

…


YOU'RE FLYING! HOW?
PYTHON!
I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!
HELLO WORLD IS JUST print "Hello, world!"
I DUNNO... DYNAMIC TYPING? WHITESPACE?
COME JOIN US! PROGRAMMING IS FUN AGAIN! IT'S A WHOLE NEW WORLD UP HERE!
BUT HOW ARE YOU FLYING?
I JUST TYPED import antigravity
THAT'S IT?
... I ALSO SAMPLED EVERYTHING IN THE MEDICINE CABINET FOR COMPARISON.
BUT I THINK THIS IS THE PYTHON.

Type:
`import antigravity`
into the Python shell and see what happens…

https://xkcd.com/353/

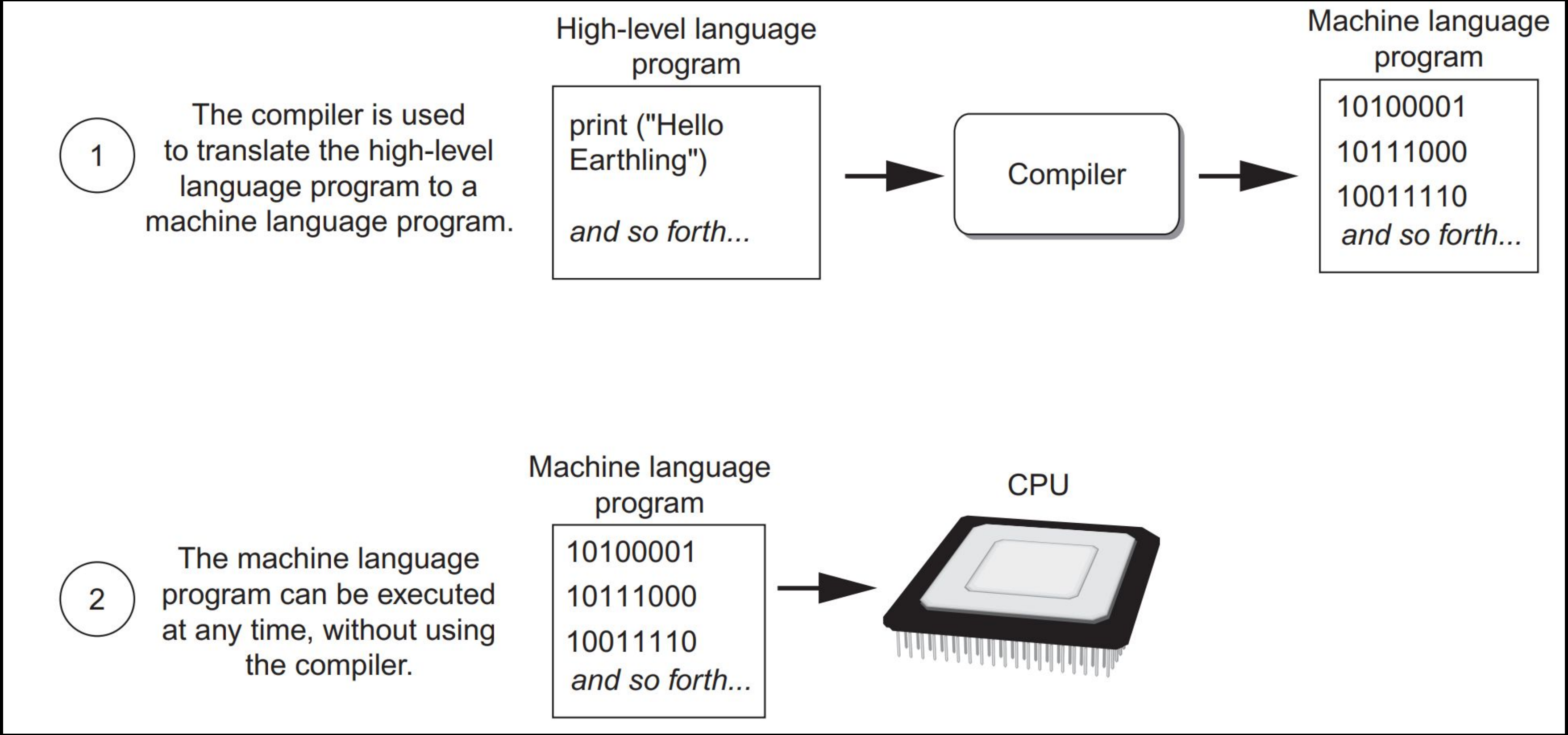
Python as a High-Level Language

Python is a *high-level language*

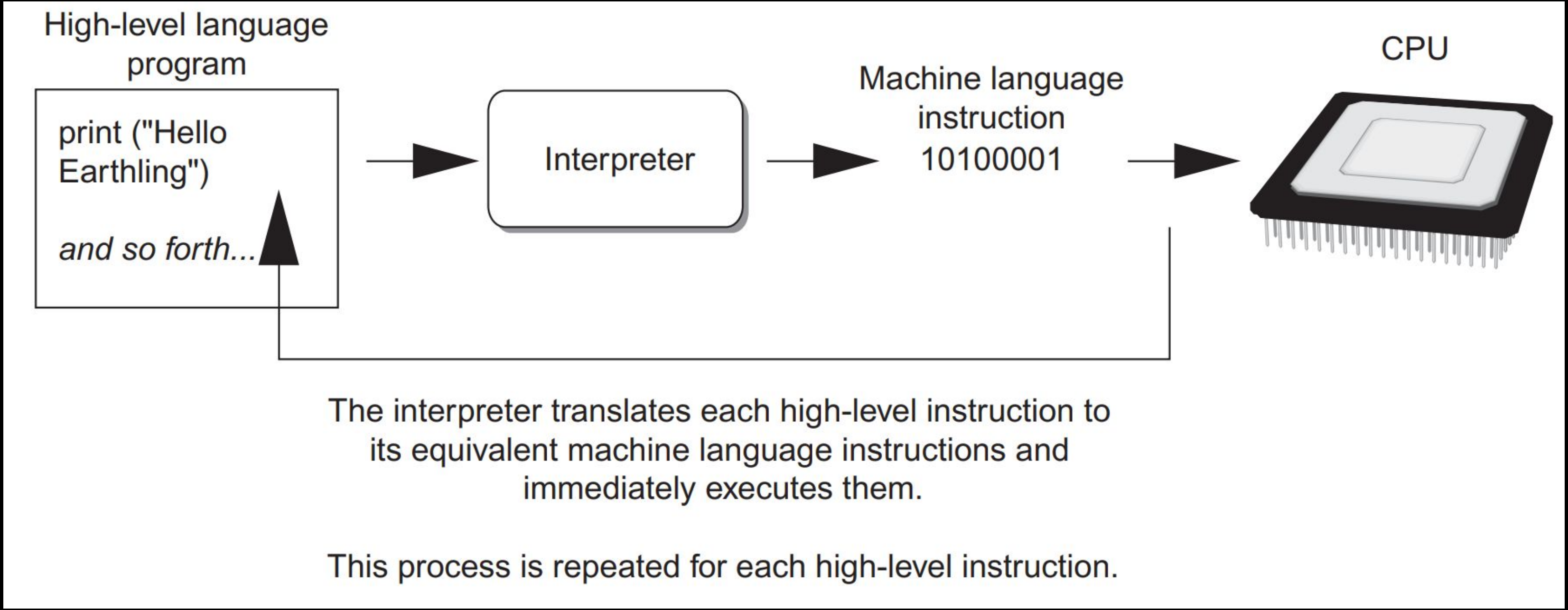
Allows you to create complex programs without knowing machine language (or assembly language).

You don’t need to write low-level instructions to the *central processing unit* (CPU) which is the part of the computer that actually runs the programs.

Compiler translates - execution can occur later


1
The compiler is used to translate the high-level language program to a machine language program.
High-level language program
print ("Hello Earthling")
and so forth...
Compiler
Machine language program
10100001
10111000
10011110
and so forth...
2
The machine language program can be executed at any time, without using the compiler.
Machine language program
10100001
10111000
10011110
and so forth...
CPU

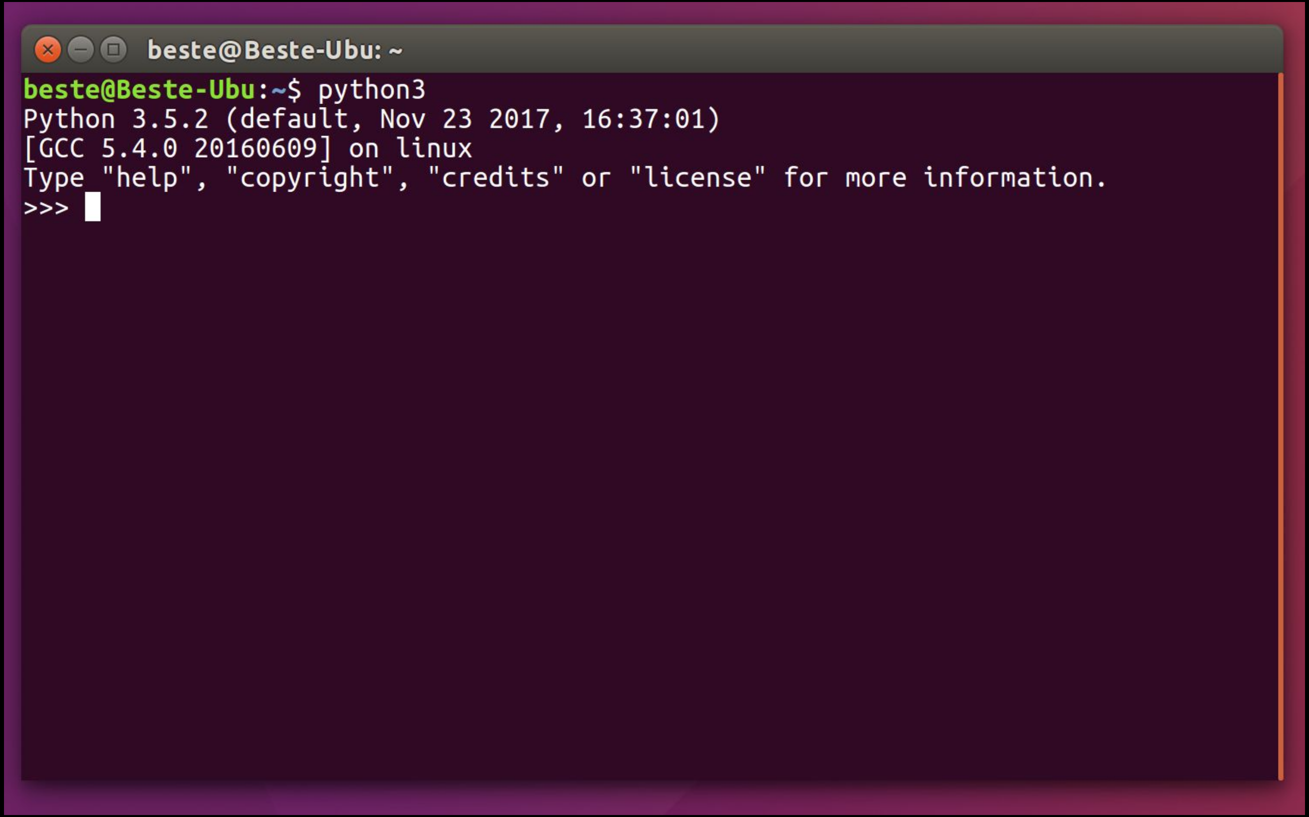
Interpreter (as used by Python) translates *and* executes


High-level language program
print ("Hello Earthling")
and so forth...
Interpreter
Machine language instruction
10100001
CPU

The interpreter translates each high-level instruction to its equivalent machine language instructions and immediately executes them.

This process is repeated for each high-level instruction.

Python shell - interactive mode
Type `python3` into the terminal



```
beste@Beste-Ubu:~$ python3
Python 3.5.2 (default, Nov 23 2017, 16:37:01)
[GCC 5.4.0 20160609] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> 
```

Python Shell - Interactive mode

Type `python3` in your terminal.

The prompt should appear. Type:

`>>>print(‘hello world!’)` and press `Enter`

`>>>print (‘this is pretty easy’)` and press `Enter`

Try making a mistake, e.g.:

`>>>print (this is pretty easy)` and press `Enter`

What happens? Why?

Python Shell - Interactive mode

```
>>> print (2+3)

5

>>> print (‘2 + 3’)

2 + 3

>>> print (‘2 + 3 = ’, 2+3)

2 + 3 = 5
```

Press Ctrl-D (or Ctrl-Z Enter on Windows) to exit the Python Shell in the terminal. Go back into interactive mode - were your statements saved as a program?

Writing Python Programs and Running Them as ***Scripts***

Allows you to save Python statements as a program in a Python file.

To execute your program you use the Python interpreter in ***script mode***.

Let's write a Python script together. In the command line create a filepath *on your own computer* (this is not using FileZilla) to store your Python scripts e.g.

CS110

↳ in_class

↳ week1

↳ hello_world.py

Review: How do you make directories in the command line? How do you change directories in the command line?

Hello_world.py In-Class Exercise 0

In the file type:

```
print('hello world!')
```

To run your script, go to the command line in the directory where your file is and type:

```
python3 hello_world.py
```

NB. You need to be in the correct directory where you file is in order to execute your script.

Submit a print screen of your terminal with the code that you just ran to the Canvas page for assignment In-Class Exercise 0.

Getting User Input (optional for today)

If you want to make the program a bit more interactive, you can ask the user for input. Go back to the interactive interpreter

```
>>> number = int(input(‘Please enter a number: ’))
```

Please enter a number: 6

```
>>> print (number )
```

6

```
>>> number2 = int(input(‘Please enter a 2nd number: ’))
```

Please enter a 2nd number: 10

```
>>> print (number + number2)
```

16

Optional:
Now put the user input code in a script and run it.
You can call the script input.py