Introduction to Python

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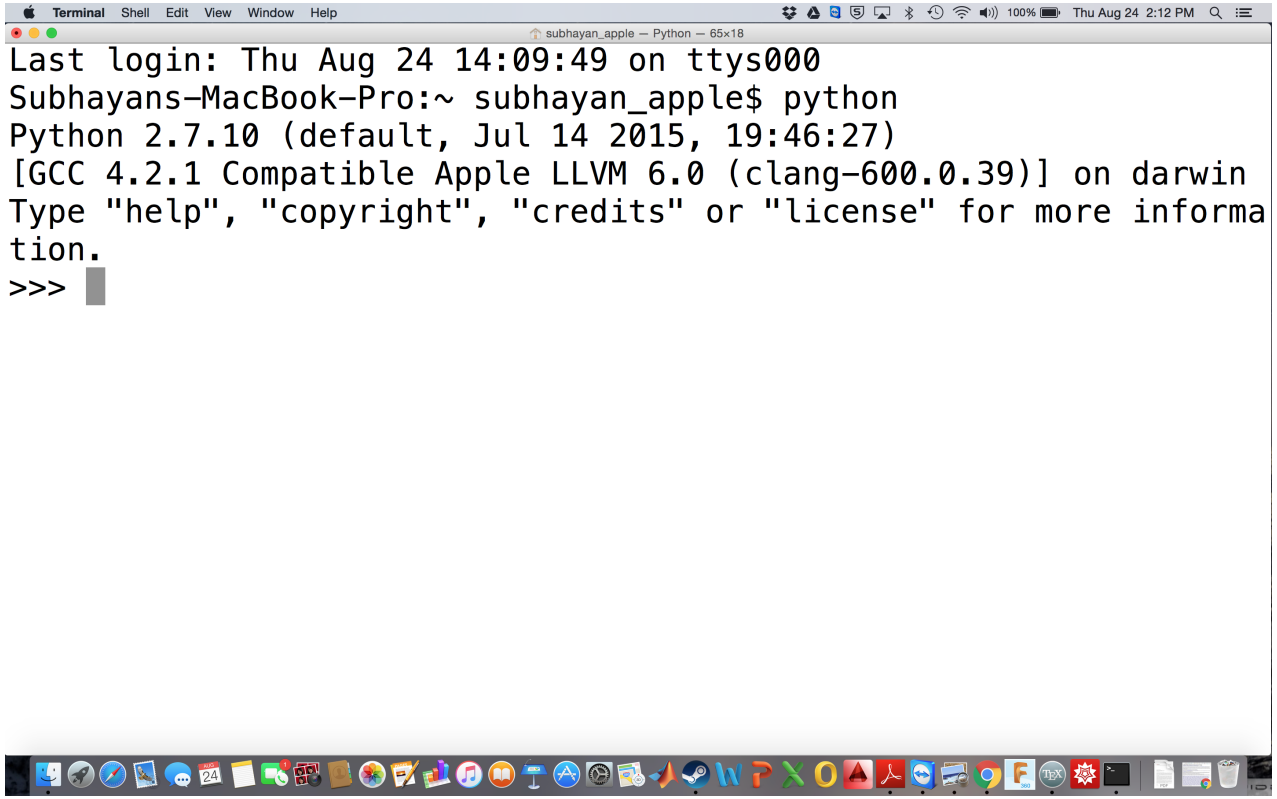
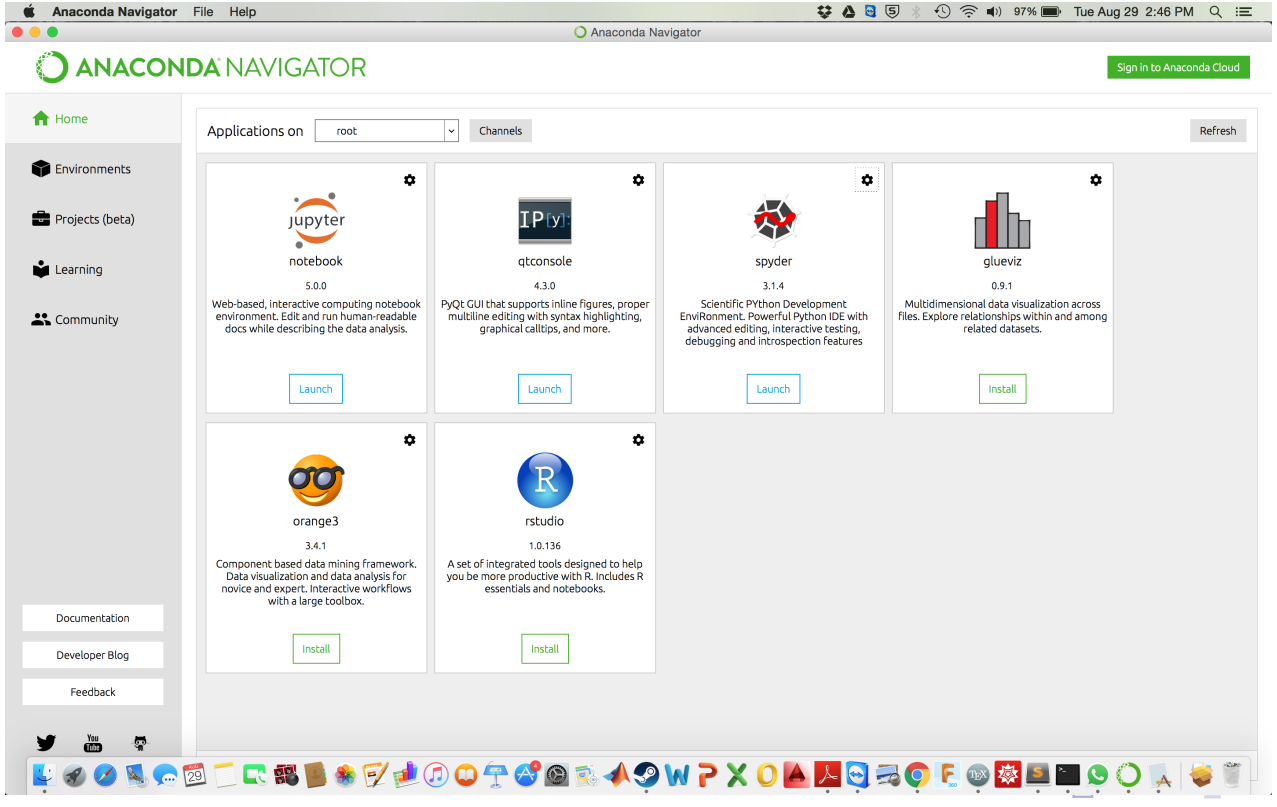
Installation

- Download Python: https://www.python.org/downloads/
- **Mac and Linux users:** you already have some version of the Python compiler in your computer.
- Open Terminal and type 'python' without the quotes
- You should see something like the following screenshot:
- Install Pip (Package manager for Python) by typing *sudo easy_install pip*



Installation: Anaconda

- Another good option is Anaconda: Python data science platform (https://www.anaconda.com/what-is-anaconda/)
- Download from here: https://www.anaconda.com/download/#download
- After installing you will find this in your applications folder: Anaconda-Navigator



Installation: Windows users

- 3 options:

Opt. 1 Install Python compiler and Pip by following the steps available at: https://github.com/BurntSushi/nfldb/wiki/Python-&-pip-Windows-installation

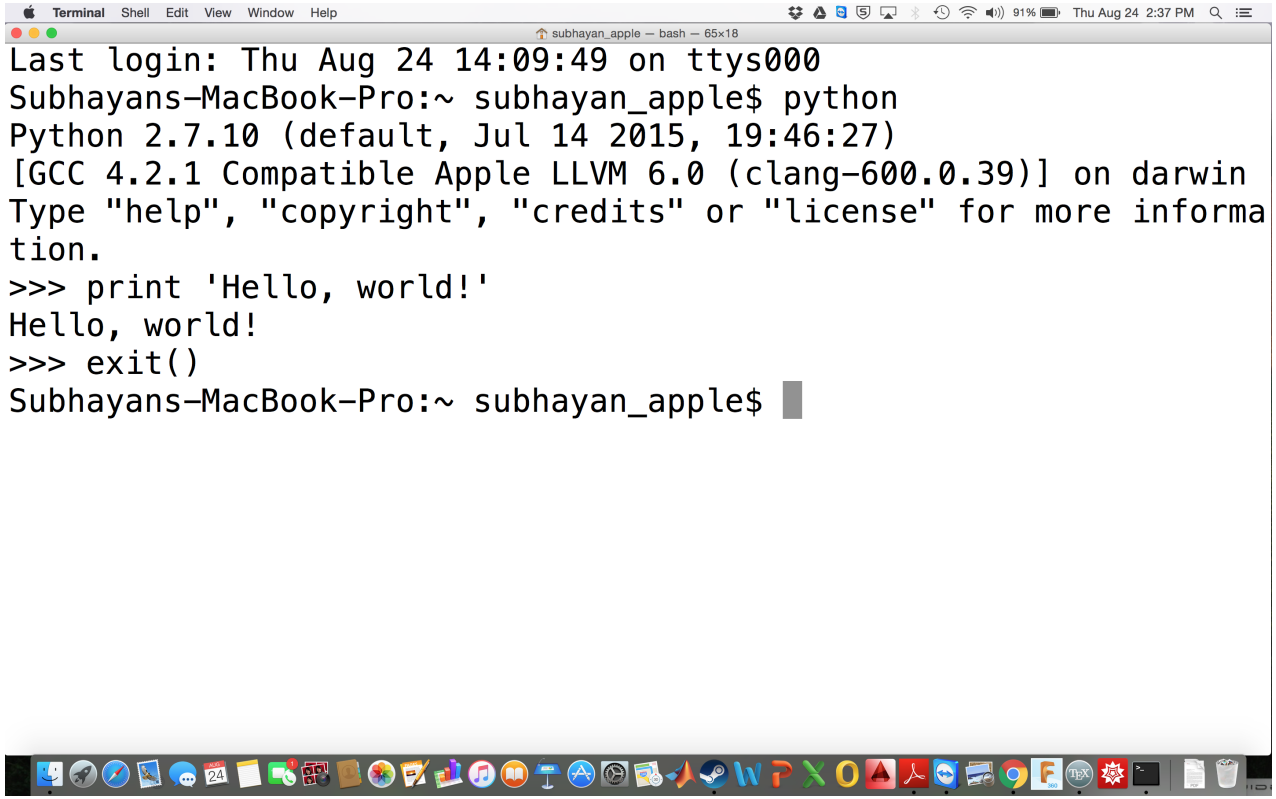
Opt. 2 Install WinPython (http://winpython.github.io/) or Anaconda (https://www.anaconda.com/what-is-anaconda/)

Opt. 3 Use a virtual machine (e.g., Oracle VM VirtualBox) with Linux Ubuntu and follow the steps on the previous slide.

Build the codes

- You can use the terminal to run the Python codes:
  - Type the following lines in the terminal:
    python
    print 'Hello, world!'
    Python 3.6 users: *python*
    print ('Hello, world!')

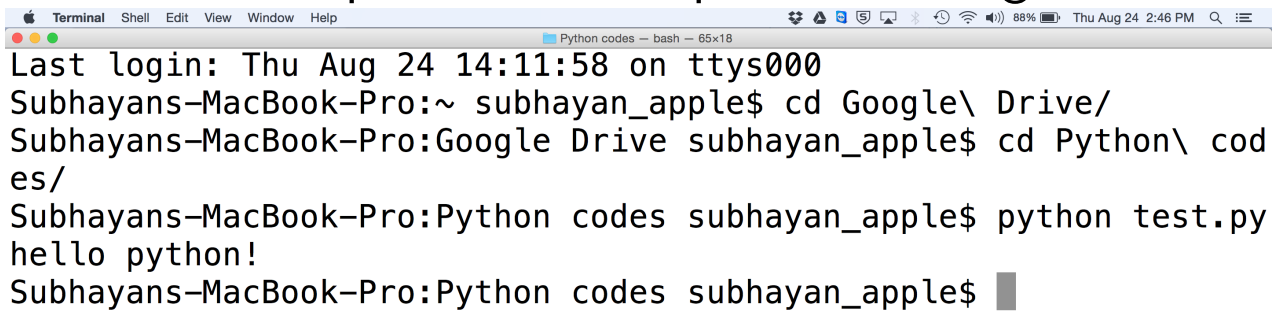
    This should produce an output like the figure here



Build the codes

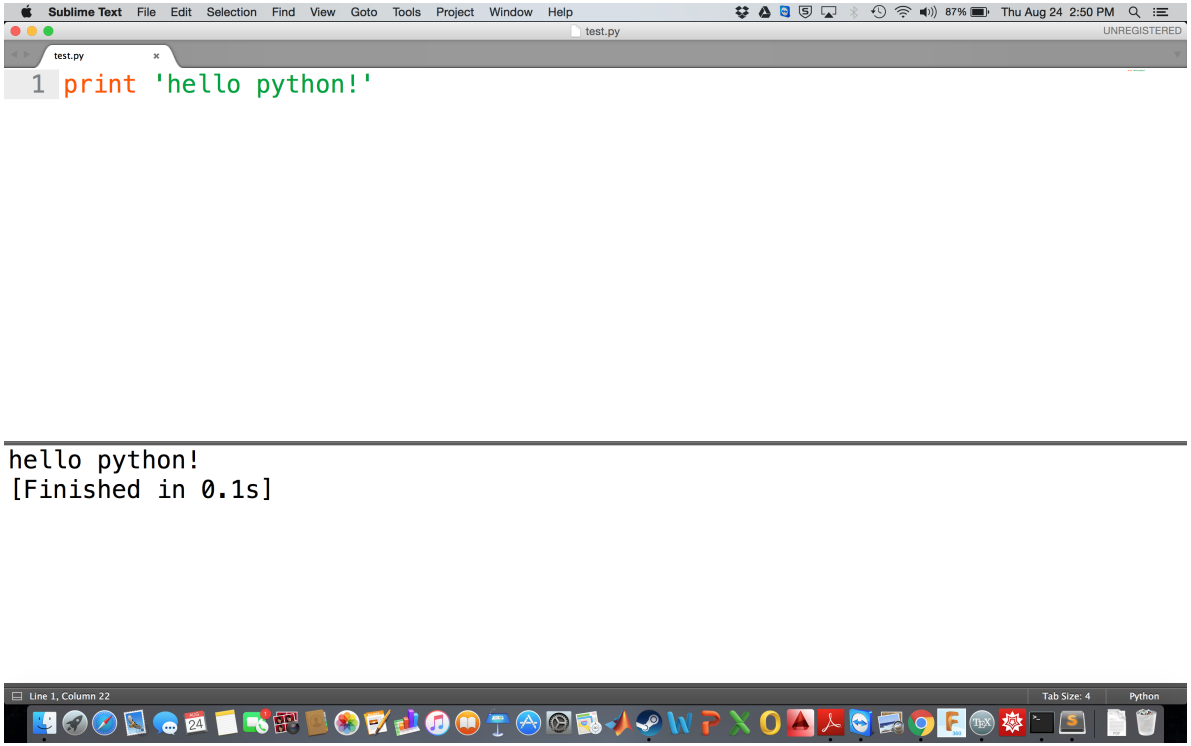
- You can also use the terminal to run the Python codes using a Python script:
  - Type *print 'hello python!'* in a file using a text editor and save it as *test.py*
  - Python 3.6 users: type *print ('hello python!')*
  - Type the following lines in Terminal:
    python test.py

    This should produce an output like the figure here



Using an IDE: Sublime Text

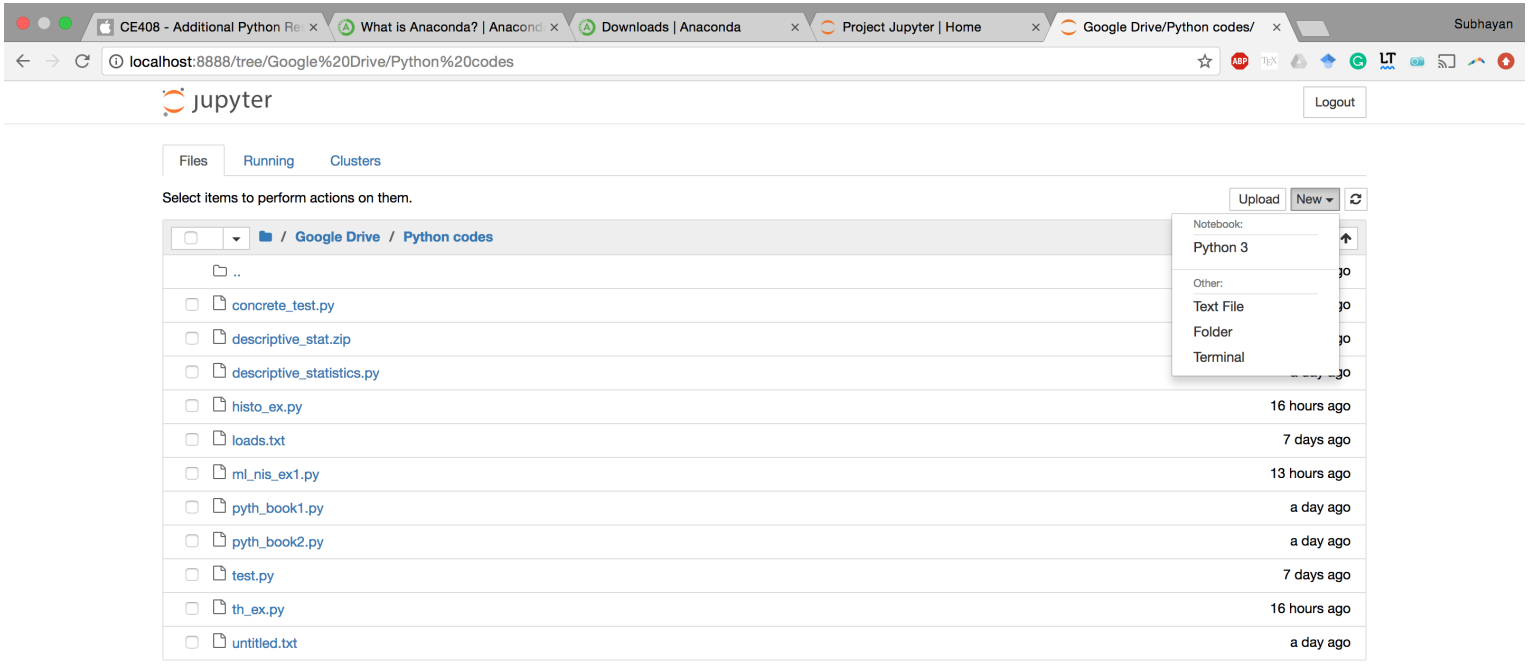
- You can also use any IDE (integrated development environment) – *e.g.*, Sublime Text, Jupyter, Spyder.



- Goto Tools and in the Build system select Python.
- Build the code in Sublime text using Ctrl+B or Cmd+B.
- If you are having trouble building from Sublime Text: https://www.youtube.com/watch?v=6ZpuwW-9T54 (thanks to Mr. Elezar Kenig)

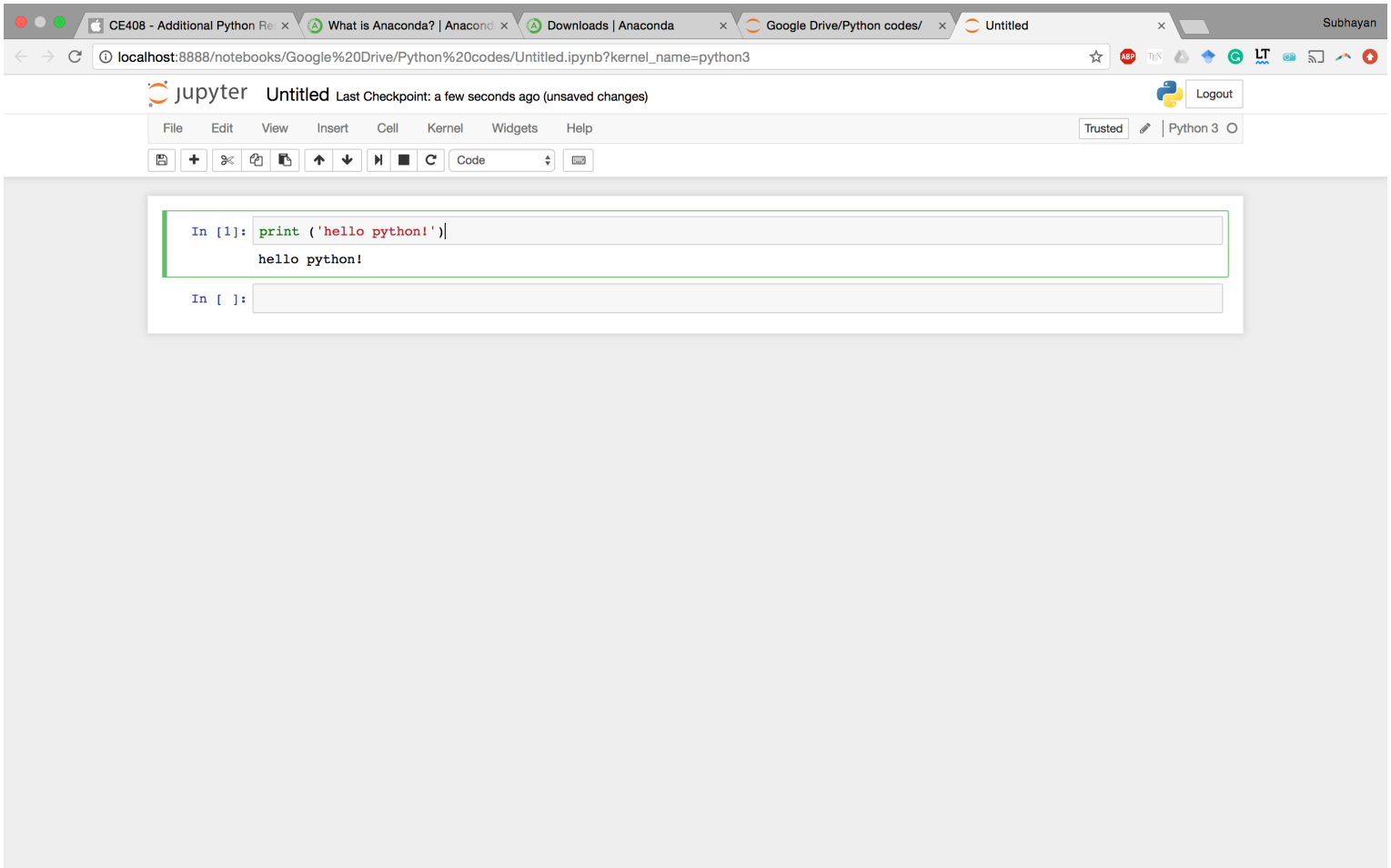
Using an IDE: Jupyter

- The Jupyter Notebook is an open-source web application that can contain live code, equations, visualizations and explanatory text.
- On top right click on the New button and select *Python 3* or *Python 2* depending on the python compiler version you have installed.



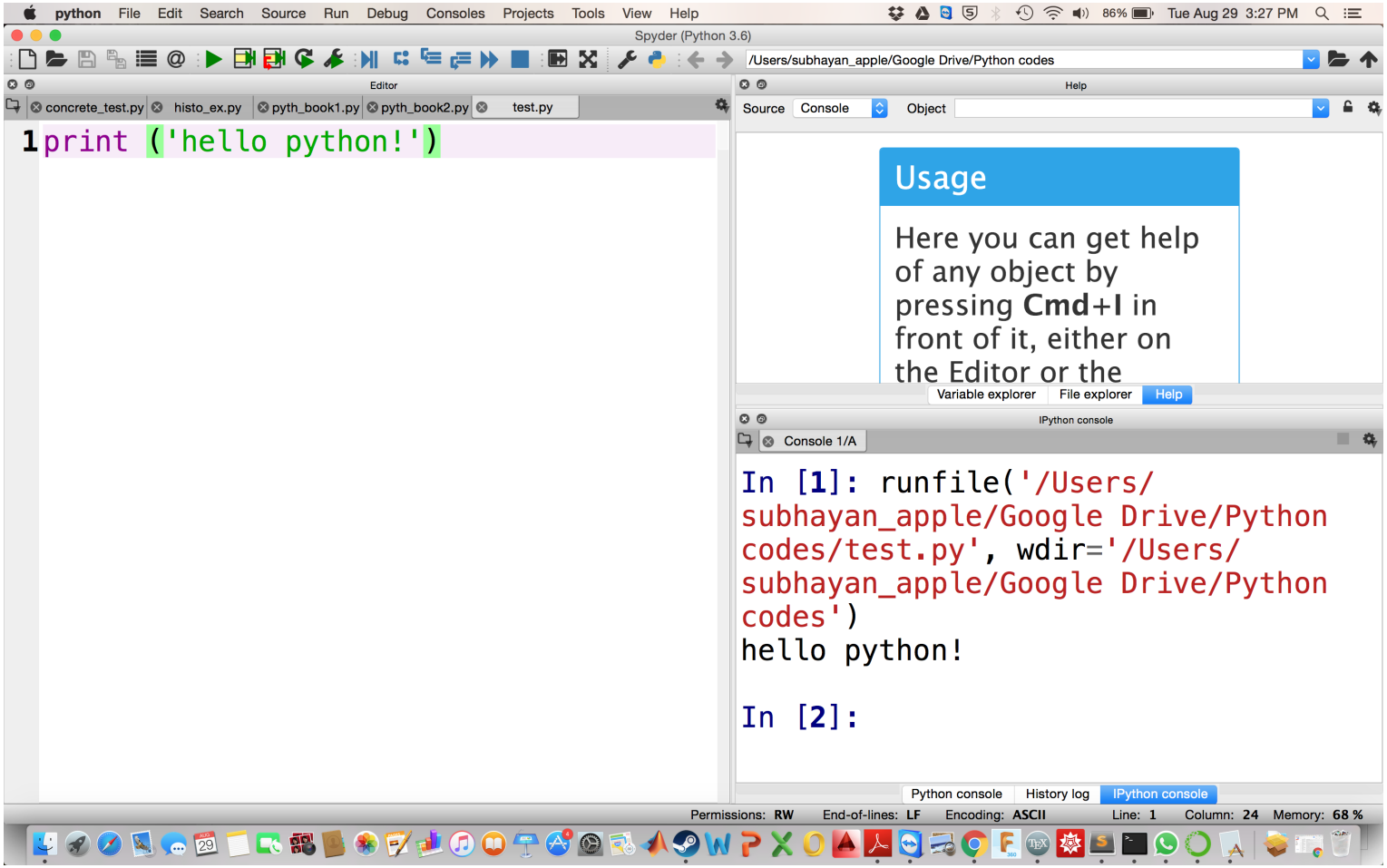
Using an IDE: Jupyter

- Type *print ('hello python')* and click on the next button.



Using an IDE: Spyder

- Type *print ('hello python')* in a new file and save it as *test.py* and press F5



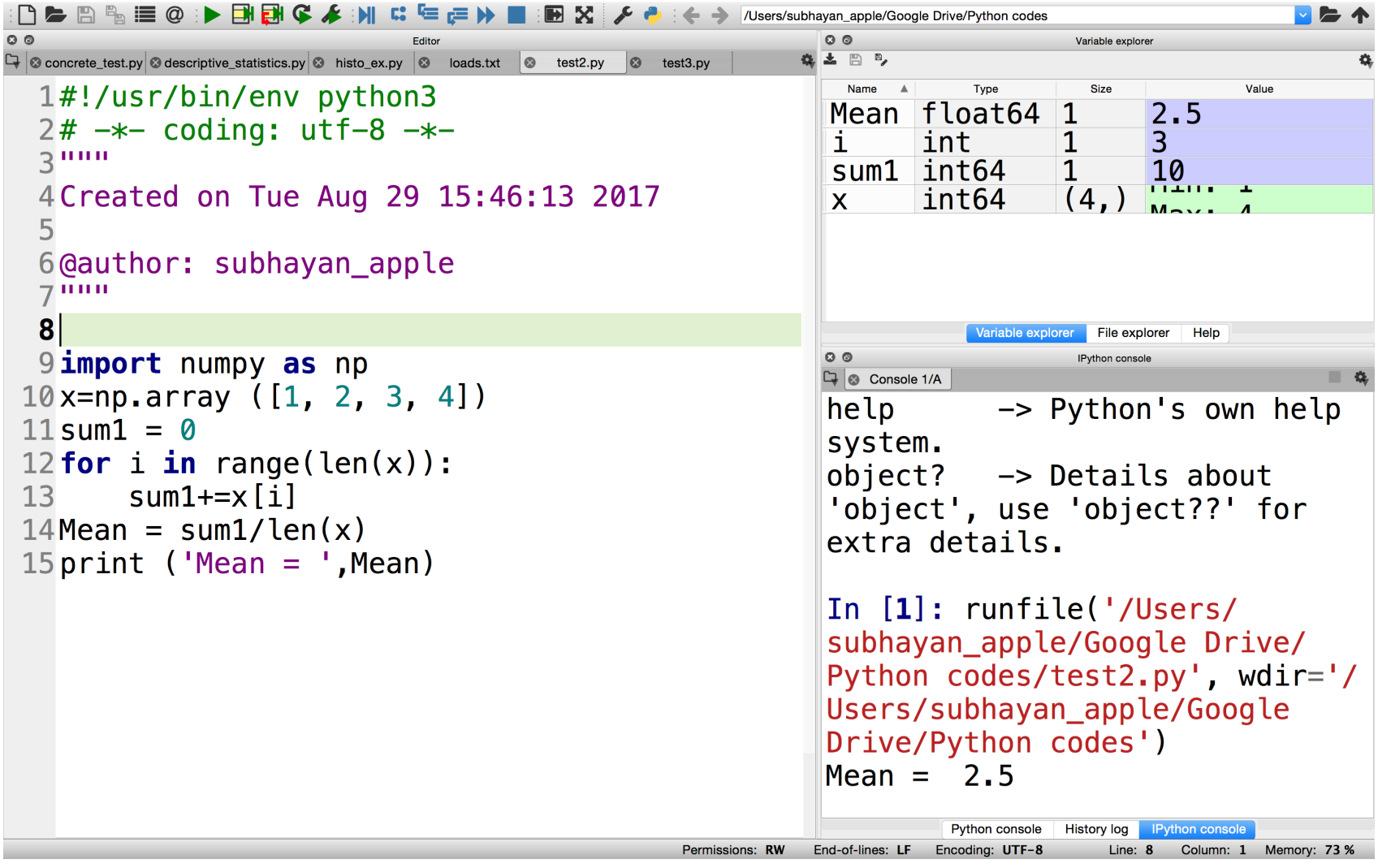
Install Python libraries

- Using pip install numPy, SciPy, and matplotlib (libraries for the Python programming language) by typing the following in the terminal (Linux and Mac users):
  python -m pip install –upgrade pip
  pip install –user numpy scipy matplotlib ipython jupyter pandas sympy nose
- Anaconda users: already has these libraries installed
- Windows users: (Note: WinPython already has these libraries)
- Download .whl files from here:
  http://www.lfd.uci.edu/∼gohlke/pythonlibs/
- Then type similar to the following in the command prompt for each of these packages:
  pip install scipy-0.18.1-cp27-cp27m-win_amd64.whl
- Detailed instructions are available here:
  https://scipy.org/install.html

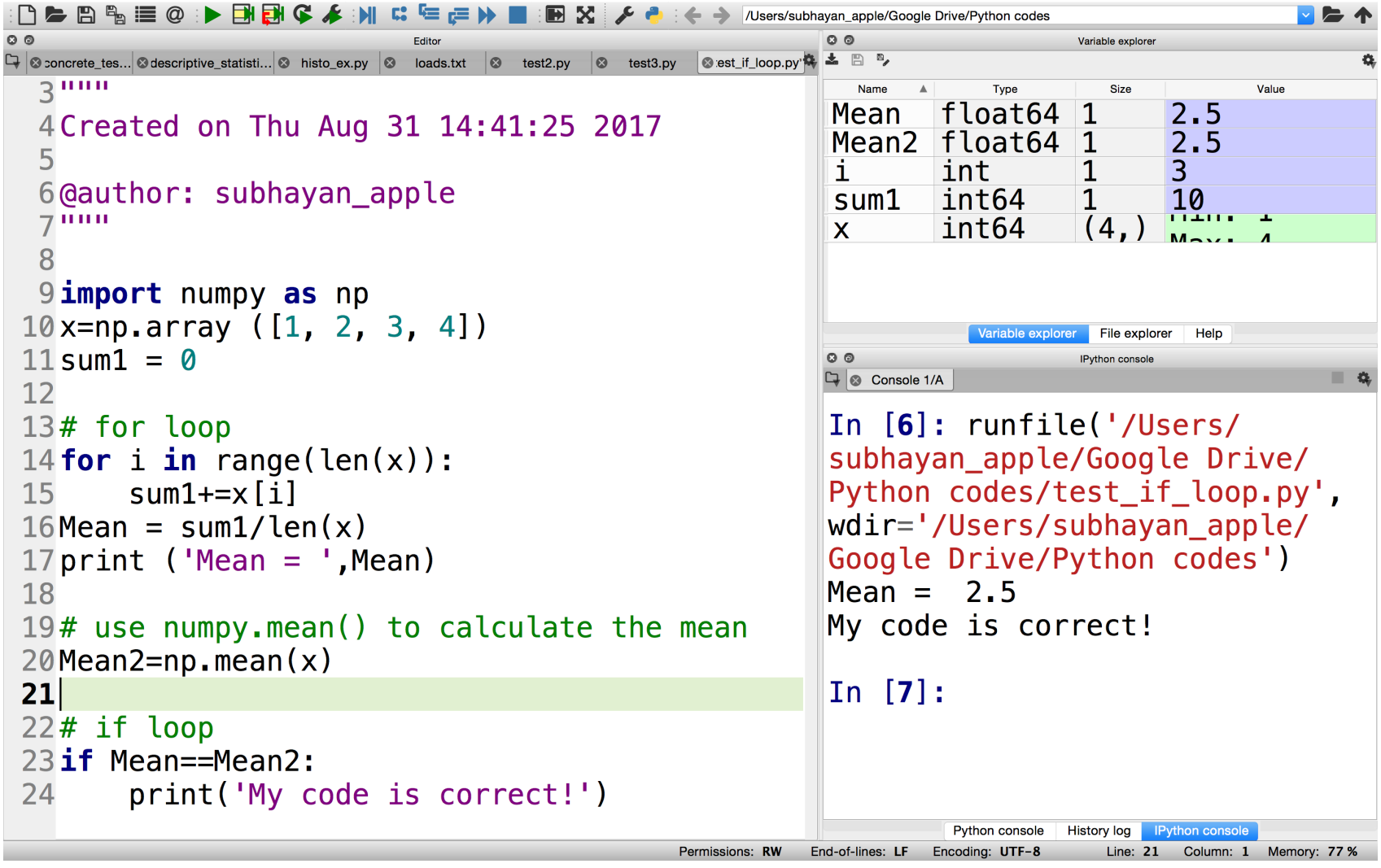
Arithmetic operations

```
# Arithmetic operations
a = 5
b = 10
c = a + b
d = a - b
e = a * b
f = a/b
g = b**a
print('a + b =', c,' a - b =', d,' aXb =', e,' a/b =', f,' b**a =', g)
```

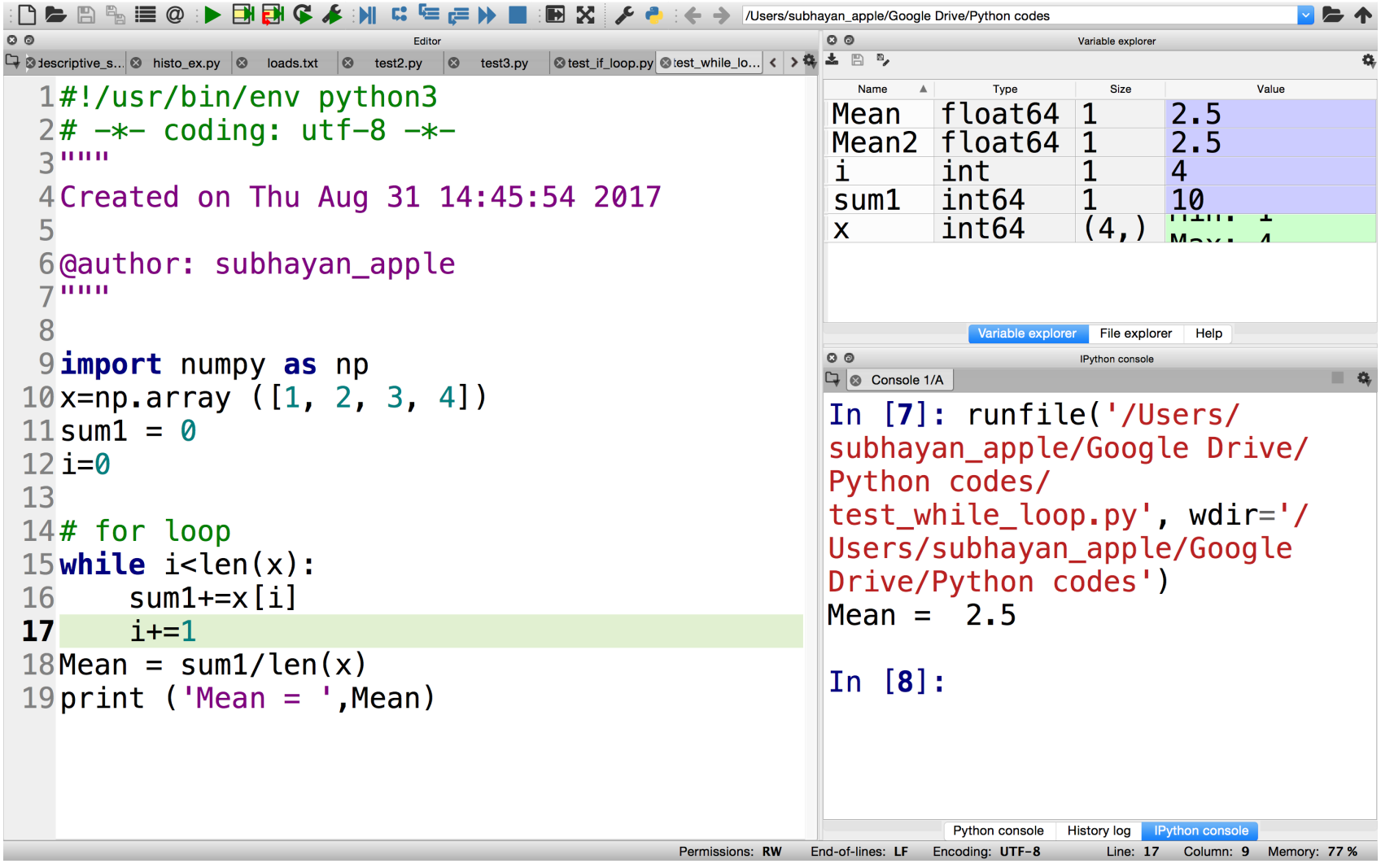
Loop statements: *for*



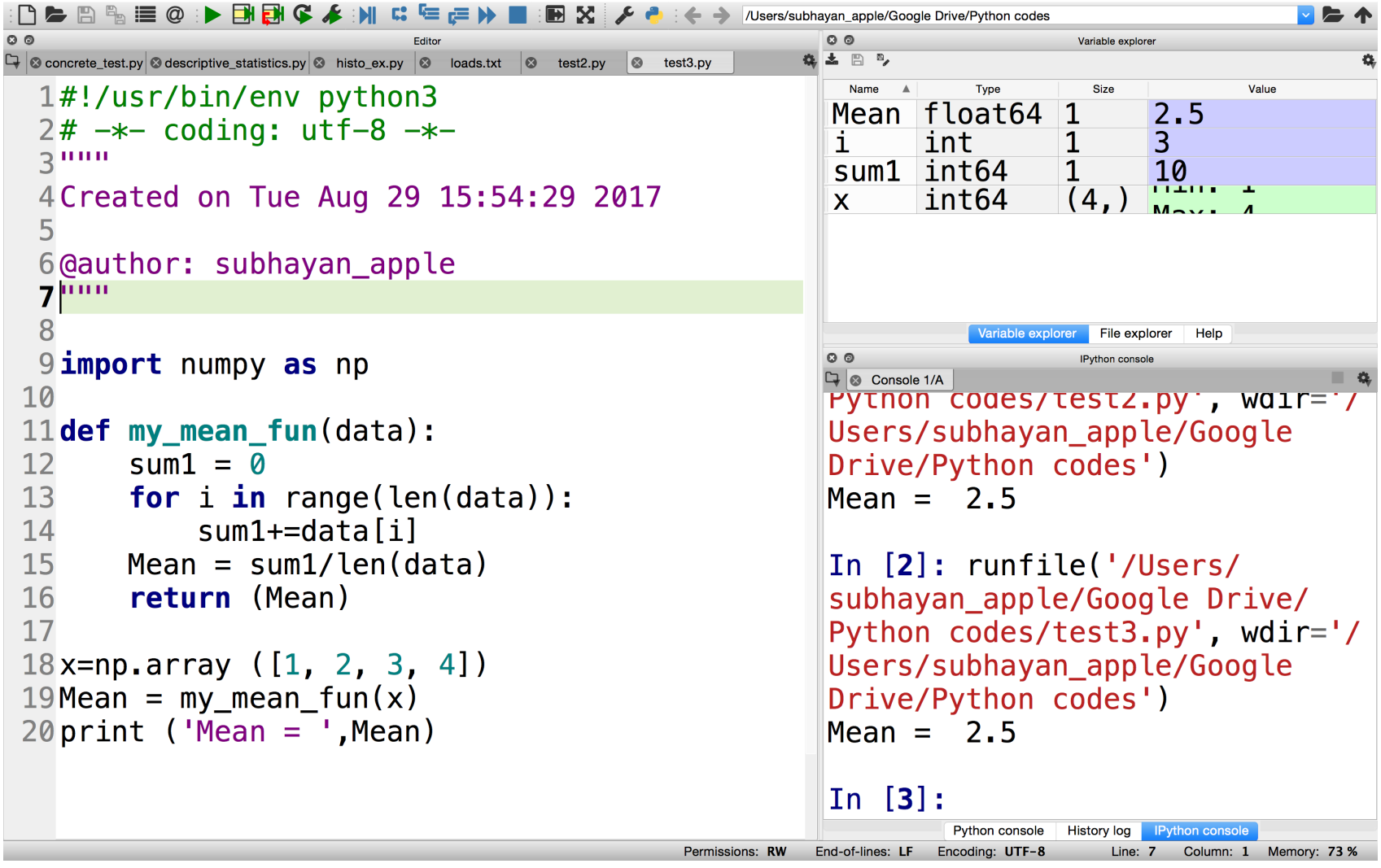
Loop statements: *if*



Loop statements: *while*



Define a function



Codes and Tutorials

- You can find the codes and notes used during the discussion sessions on my website: *www.subhayande.com* under the Tutorials tab.
- Office hours: M 2-4 pm, W 4-6 pm (KAP 115).

THANK YOU