香港浸會大學
HONG KONG BAPTIST UNIVERSITY

Tools Installation

JOUR7280/COMM7780

Big Data Analytics for Media and Communication

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Getting started: Tools

- Talking to your computer: Command line interface (CLI)
- Text Editor: vscode, sublime, notepad++, or others
- Platform for publishing and socializing: Git and GitHub, and Markdown language
- The tool: Python 3.x (Anaconda 3) and Jupyter Notebook

Command Line Interface (CLI) basics

- Open CLI:
  - MacOS: spotlight search – “terminal”
  - Windows: start menu search - "cmd"
- An interesting tutorial (macOS, Windows)

Command Line Interface (CLI) basics

- Basic commands of CLI
- MacOS
  - – pwd
  - – date
  - – mkdir
  - – echo
  - – ls
  - – cd
  - – cp
  - – rm
  - – mv
- Make 10 folders at once: mkdir -p test{1..10}/{1,2,3}

- Windows
  - – echo %cd%
  - – date
  - – mkdir
  - – echo
  - – dir
  - – cd
  - – copy
  - – rmdir
  - – move

Git

- Git is a “version control system”: records changes to a file or set of files over time and users can recall specific versions later.
  - Useful for collaboration project
- Download link (mac, windows)
- Setting up your Git account
  - git config --global user.email "your@email.com"
  - git config --global user.name "your name"

GitHub

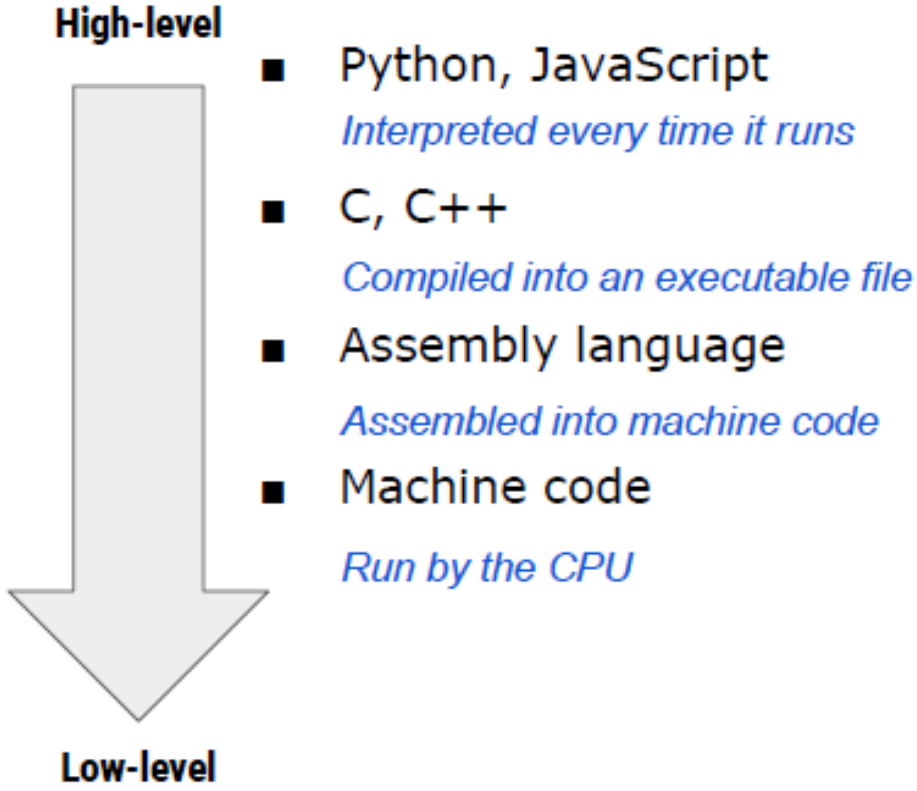
- GitHub is a web-based hosting service for software development projects that use Git version control system." (What is GitHub)
- Push and pull
- Public/Private repositories
- The social aspects of GitHub (share, fork, star)
    - A profile that shows your portfolio

Markdown language

- Markdown is a lightweight markup language with plain text formatting syntax
- readme.md
- Markdown language quick guide [Link]
- Work with markdown language
  - vscode Preview, jupyter notebook
  - GIT MD Syntax [Link]
  - GIT Deeper MD Syntax [Link]
  - GIT MD Emojis! [Link]

Programming Language

- A programming language is a formal language, which comprises a set of instructions used to produce various kinds of



- Python, JavaScript
  Interpreted every time it runs
- C, C++
  Compiled into an executable file
- Assembly language
  Assembled into machine code
- Machine code
  Run by the CPU

n programming language refers to *high-level* ges, such as C, C++, Java, Matlab…

Introduction to Python

- **Python** is a widely used general-purpose, high level programming language. It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation.

Increasingly popular!

Aug 2018	Aug 2017	Change	Programming Language	Ratings	Change
1	1		Java	16.881%	+3.92%
2	2		C	14.966%	+8.49%
3	3		C++	7.471%	+1.92%
4	5	↑	Python	6.992%	+3.30%
5	6	↑	Visual Basic .NET	4.762%	+2.19%
6	4	↓	C#	3.541%	-0.65%
7	7		PHP	2.925%	+0.63%
8	8		JavaScript	2.411%	+0.31%
9	-	⇈	SQL	2.316%	+2.32%
10	14	⇈	Assembly language	1.409%	-0.40%

Jan 2020	Jan 2019	Change	Programming Language	Ratings	Change
1	1		Java	16.896%	-0.01%
2	2		C	15.773%	+2.44%
3	3		Python	9.704%	+1.41%
4	4		C++	5.574%	-2.58%
5	7	↑	C#	5.349%	+2.07%
6	5	↓	Visual Basic .NET	5.287%	-1.17%
7	6	↓	JavaScript	2.451%	-0.85%
8	8		PHP	2.405%	-0.28%
9	15	⇈	Swift	1.795%	+0.61%
10	9	↓	SQL	1.504%	-0.77%

TIOBE Rankings

Why popular & Features

- Code readability, shorter codes, ease of writing
  - fewer lines of code in comparison to languages such as C++ or Java.
- "Simplicity is the best"
  - Closer to English language; Easy to learn
  - More emphasis on the solution to the problem rather than the syntax
- Interpreted language
  - Directly run the program from the source code.
  - No separate compilation and execution steps like C and C++.
- Rich Library Support
  - The Python Standard Library is very vast.

```java
public class HelloWorld
{
   public static void main (String[] args)
   {
      System.out.println("Hello, world!");
   }
}
```

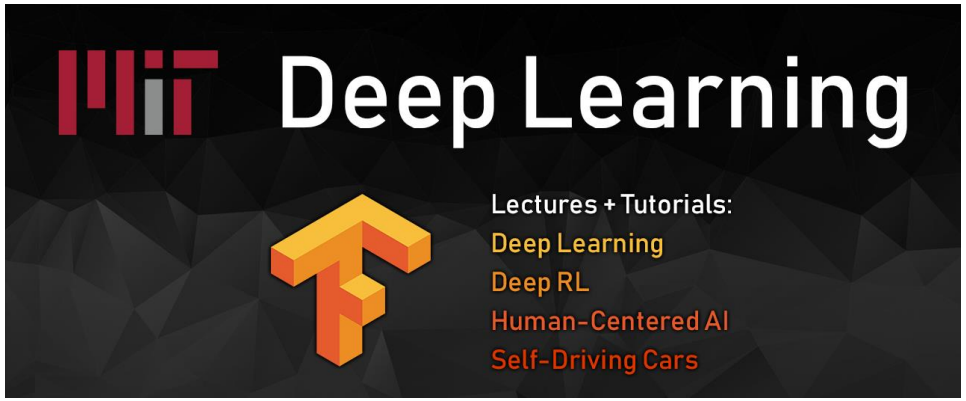
Java Code

```python
print("Hello, world!") # Python version 3
```

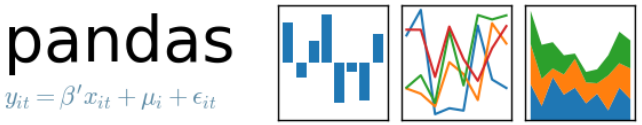
Python Code

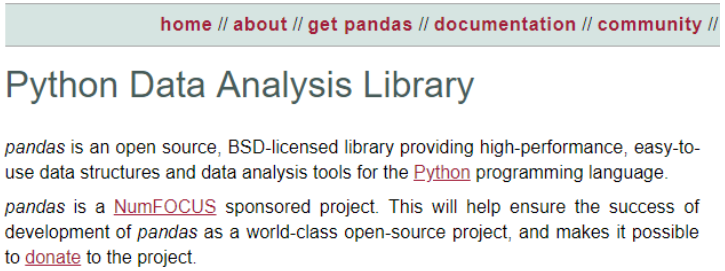
What Python can do

Scientific Computing



Machine Learning

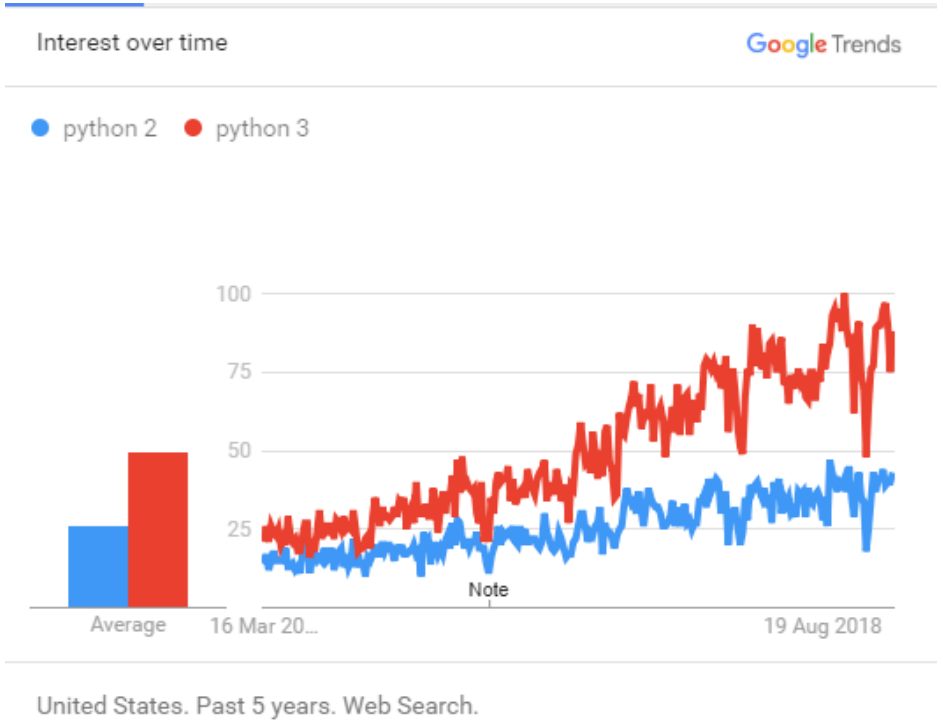




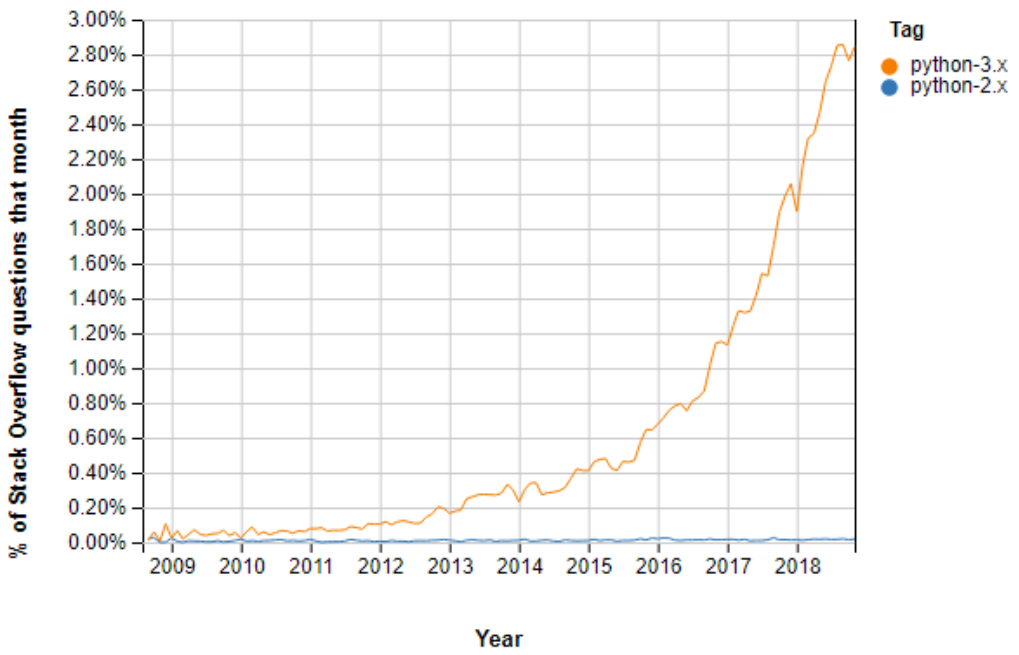
Data analysis

Data Visualization

Python 2 vs 3



Google Trends Python 2 vs. Python 3



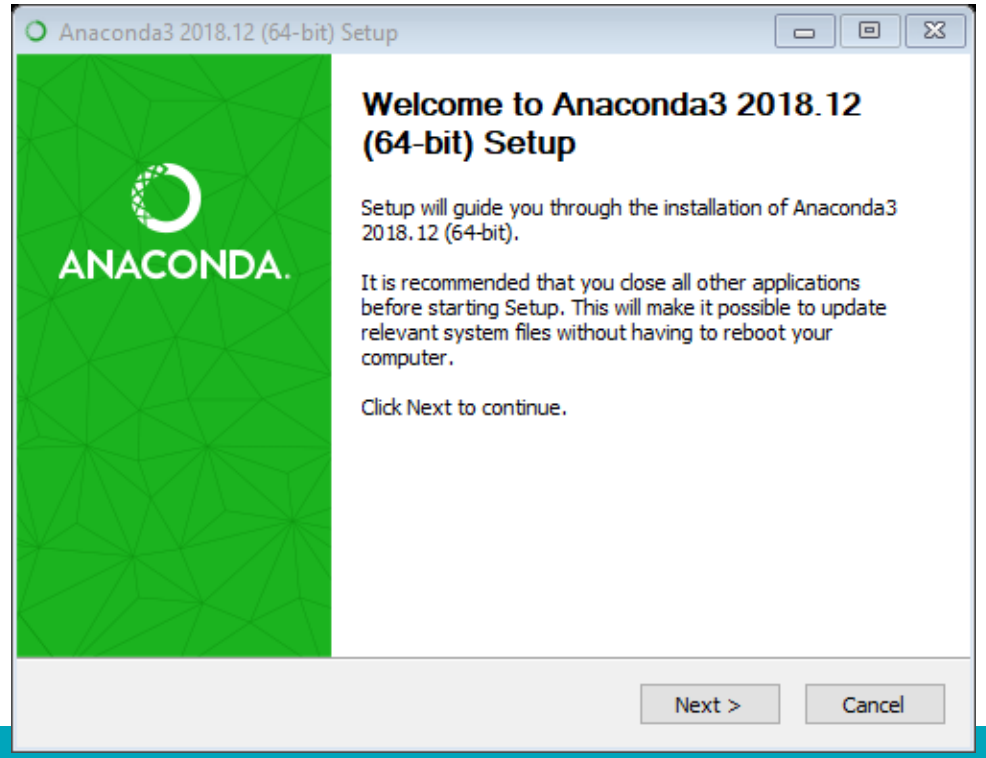
Stack Overflow Questions Python 2 vs. Python 3

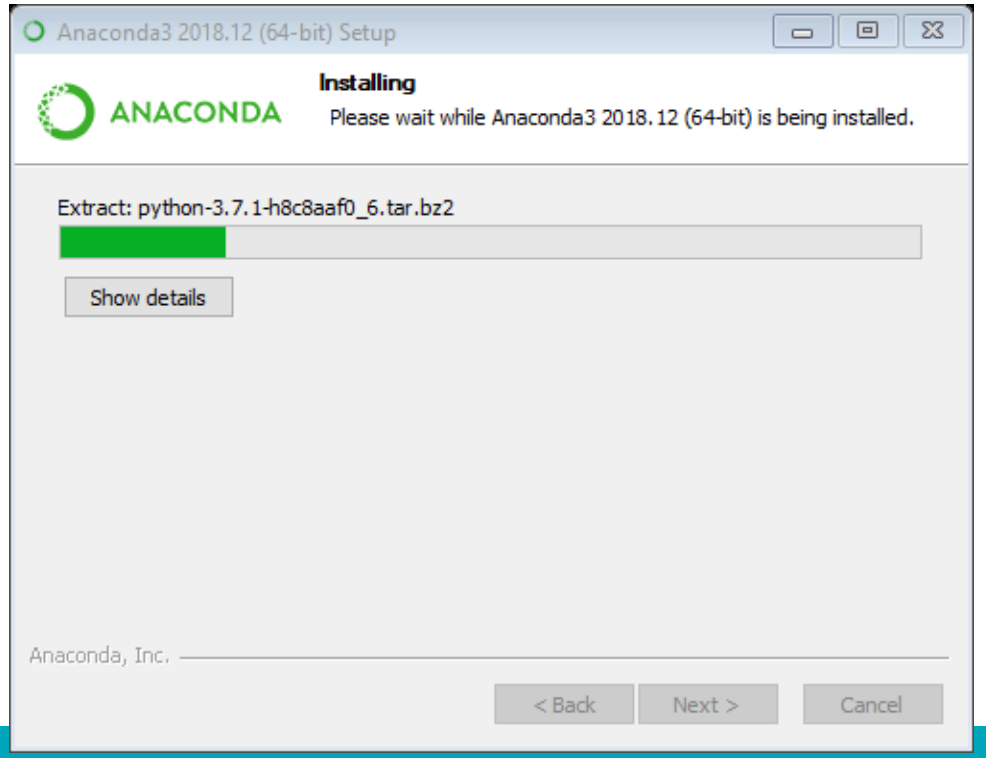
Installing Python and Jupyter Notebook

- Python 3.8
  - Anaconda [Link]
  - A free and open-source distribution of the Python and R programming languages
- Jupyter Notebook
  - Included in the Anaconda installation

Install Anaconda

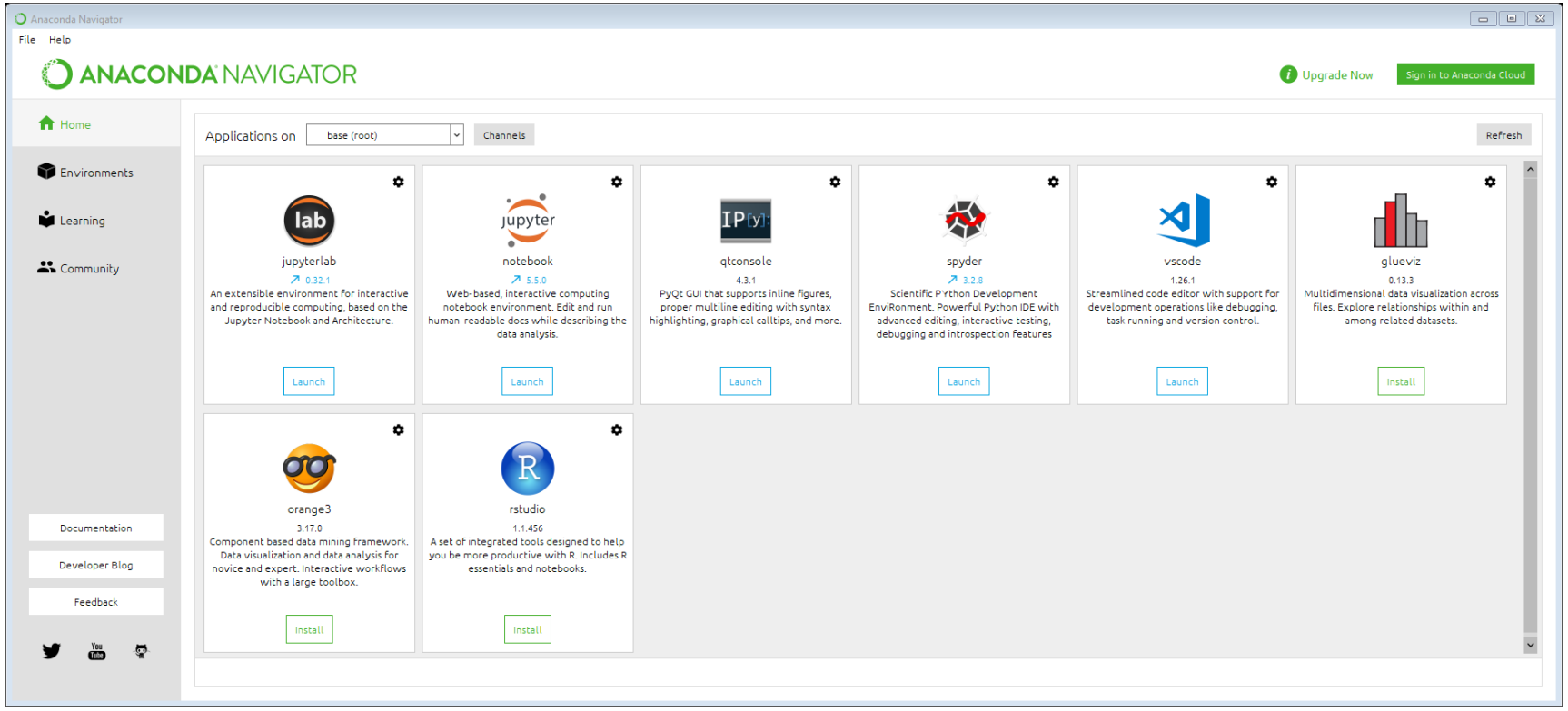
- Run the Anaconda installer.
  - PS: turn off anti-virus software, especially 360 Safeguard (360安全卫士) before the installation
  - PS: if you have installed Python individually before, remove it first





Anaconda

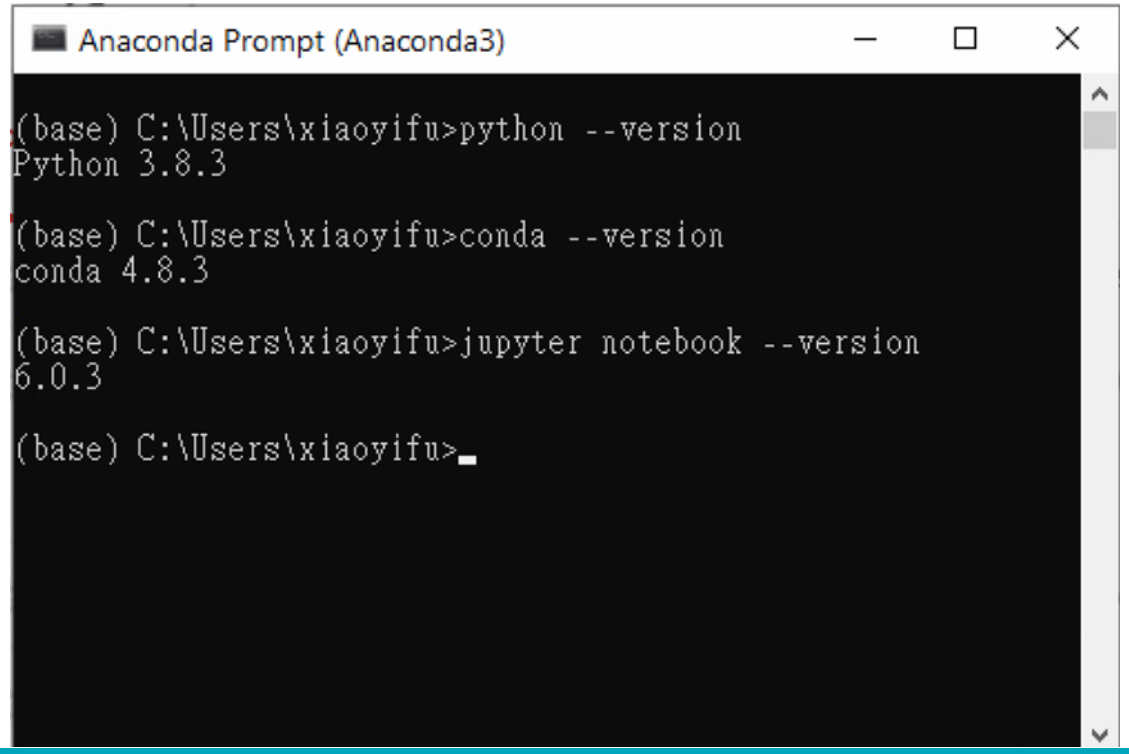
- Open the *Anaconda Navigator* after installation. You can install and launch different environment for later development.



Check your existing versions

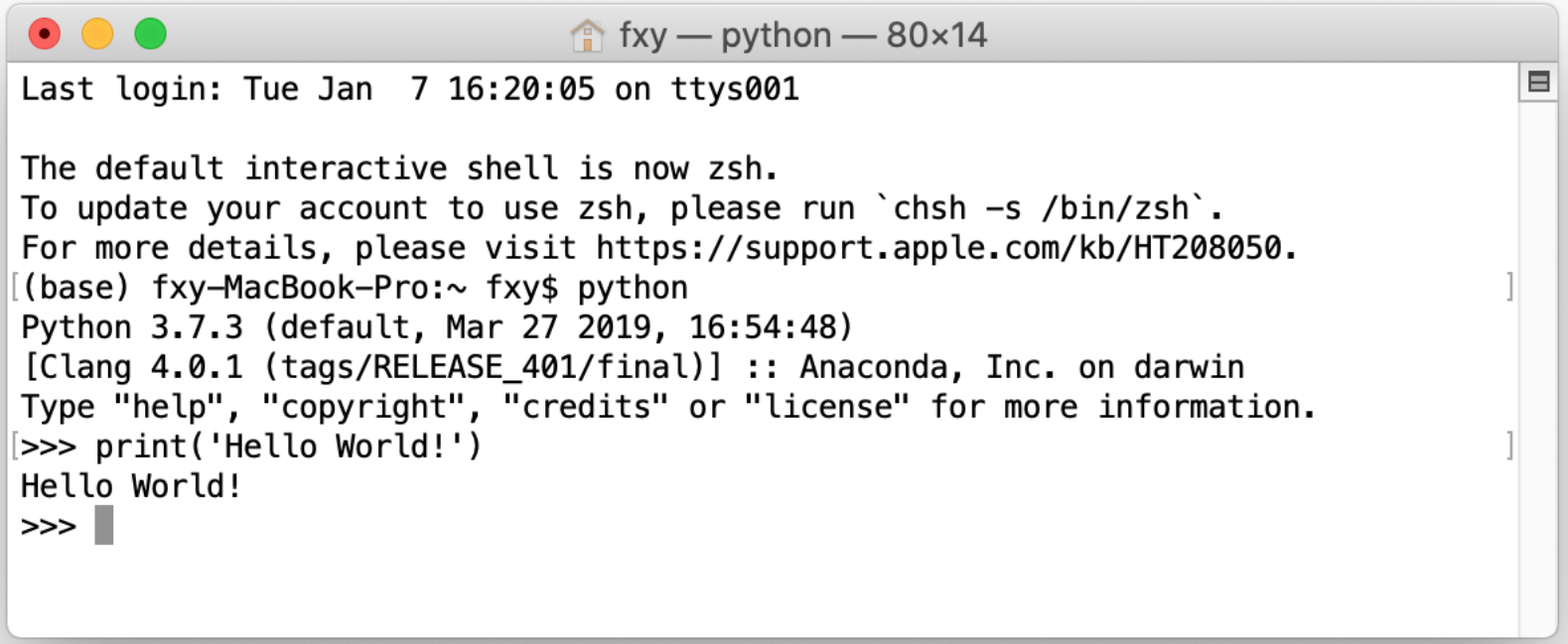
```
In [2]: import sys
        print("Python version: ", sys.version)
```

```
Python version:  3.8.5 (default, Aug  5 2020, 03:39:04)
[Clang 10.0.0 ]
```



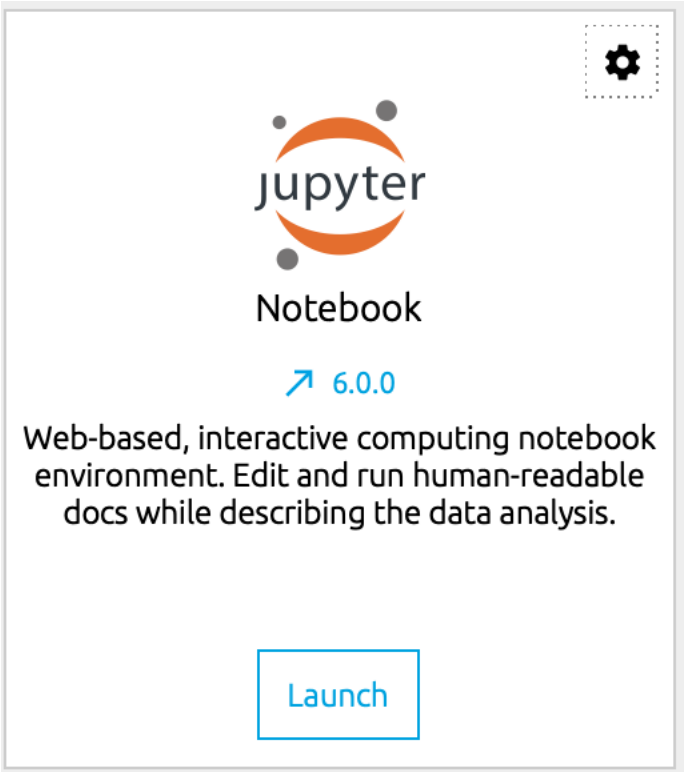
Your first Python program

- Switch to English keyboard before coding!
- Two ways of printing "Hello World!"
  - via CLI



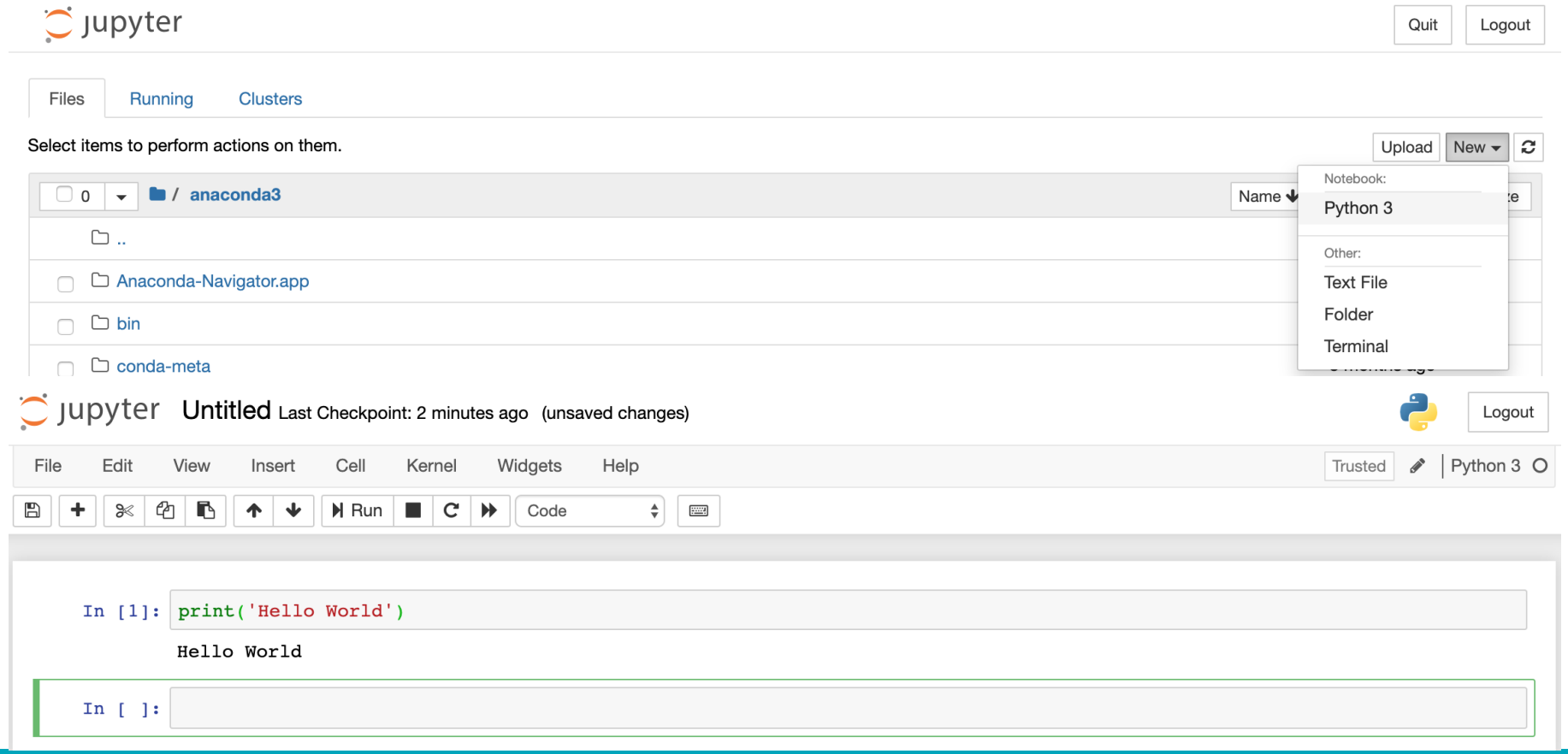
Jupyter Notebook

- Jupyter Notebook
  - Introduced in 2011. Inspired by scientific programs like Mathematica or Sage, the Notebook offers a modern and powerful web interface to Python.
  - Contain both code and rich text elements, such as figures, links, equations, …
  - The ideal place to bring together an analysis description, and its results
  - We will use Jupyter Notebook in this course



Your first Python program

- Two ways of printing "Hello World!"
  - via Jupyter Notebook



Exercise

- Install Anaconda & Jupyter notebook
- Try “Hello World!” program

References

- Anaconda installation FAQ [Link]
- Add Anaconda3 to path (mac) [link]
- Git tutorial [link]
- Change Jupyter notebook working directory [link]
- Learning website
  - https://www.learnpython.org/
  - https://stackoverflow.com/

Thank You