Python Introduction Course

Ronan Paugam

CONTENT

- Quick introduction
- Practical with Jupyter Notebook

Introduction

- Invented in the Netherlands, early 90s by Guido van Rossum
- Named after the Monty Python
- Open sourced from the beginning
- Considered a **scripting language**, but is much more

The python script (**.py** extension) is a file containing the commands that are structured to be executed.

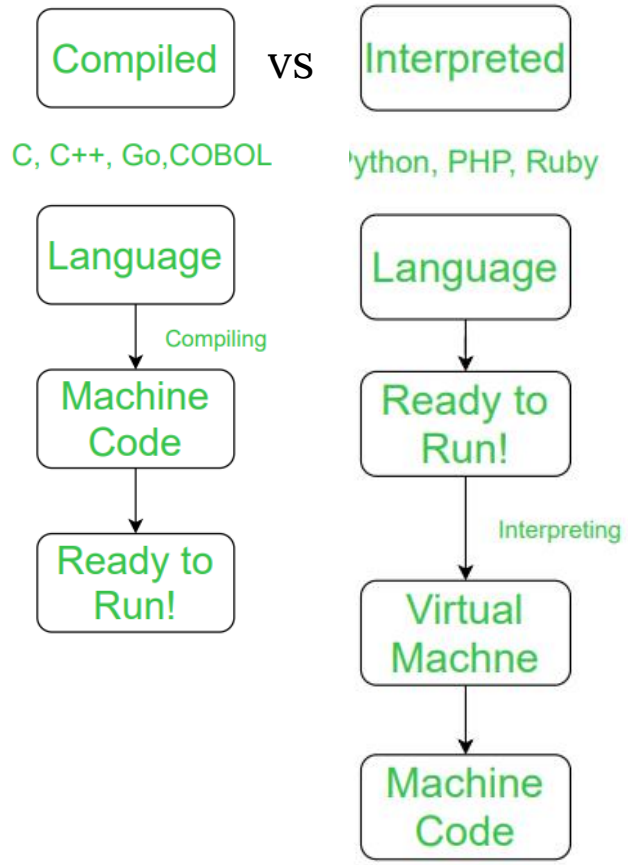
But how do you run it?
What do we exactly mean by running a Python Script

Scripting Language: interpreted vs compiled language

A **scripting language** is a programming language that is used to manipulate, customize, and **automate the facilities of an existing system**. Scripting languages are usually interpreted at runtime rather than compiled. (Wikipedia)

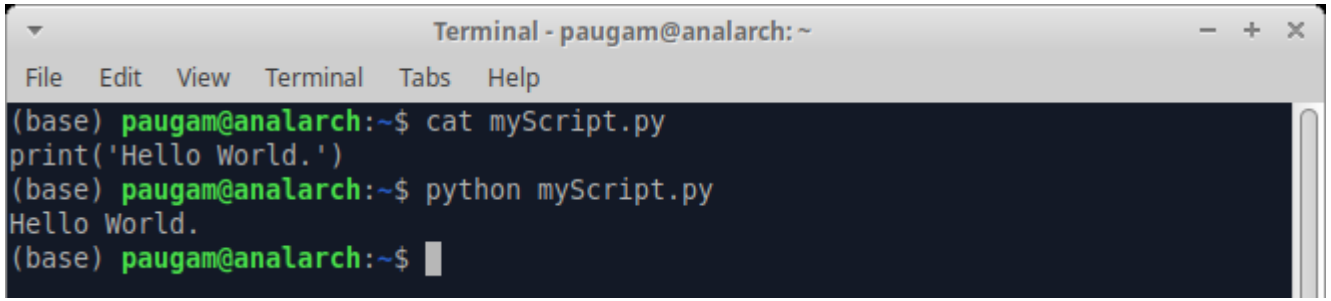
an **interpreter** is a computer program that directly executes instructions written in **scripting language**, without requiring them previously to have been compiled into a machine language program.

Code	Script	Modules
Code is a group of instructions written in any programmer's preferred coding language, for example, C, C++, Java, Python, etc. A compiler or interpreter must make the computer understand the meaning and execute them successfully.	The script is a set of instructions that the computer understands without the help of a compiler or interpreter to perform certain assigned tasks.	Modules are the most independently workable set of computer instructions mostly used to integrate one device with another, with modules containing certain code that is portable, compatible, and efficient. Once developed can be integrated with small changes or no change.



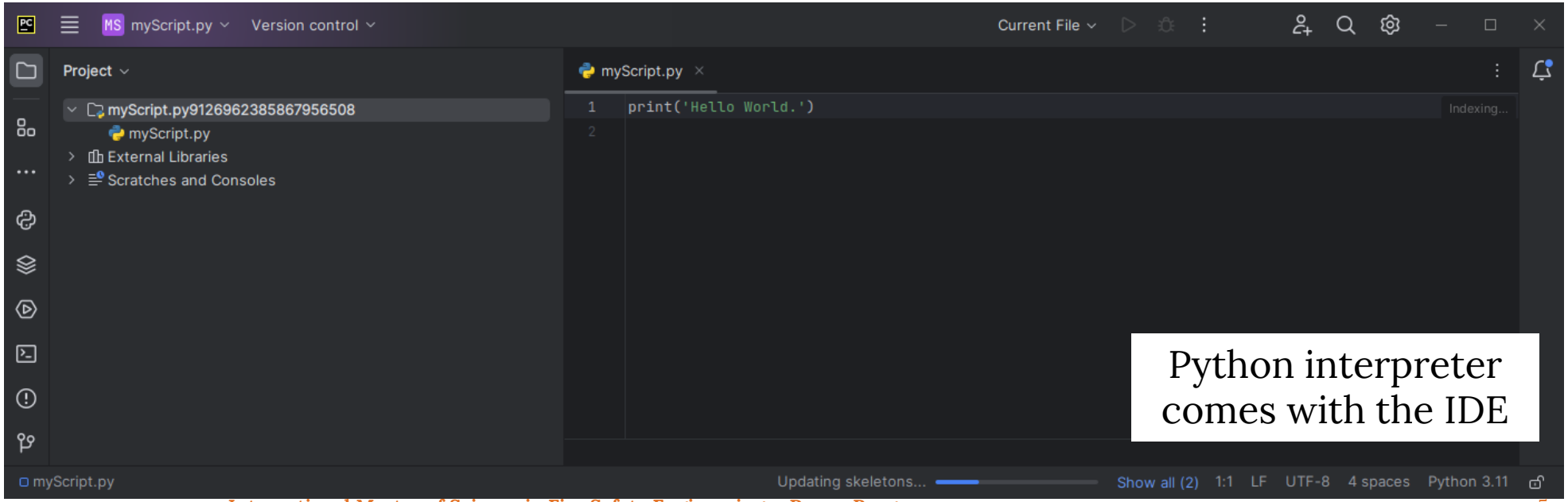
How To run python script

from **terminal**:



Python is **available in all os**. Scripts can be edited with many text editor: e.g. **sublime**.

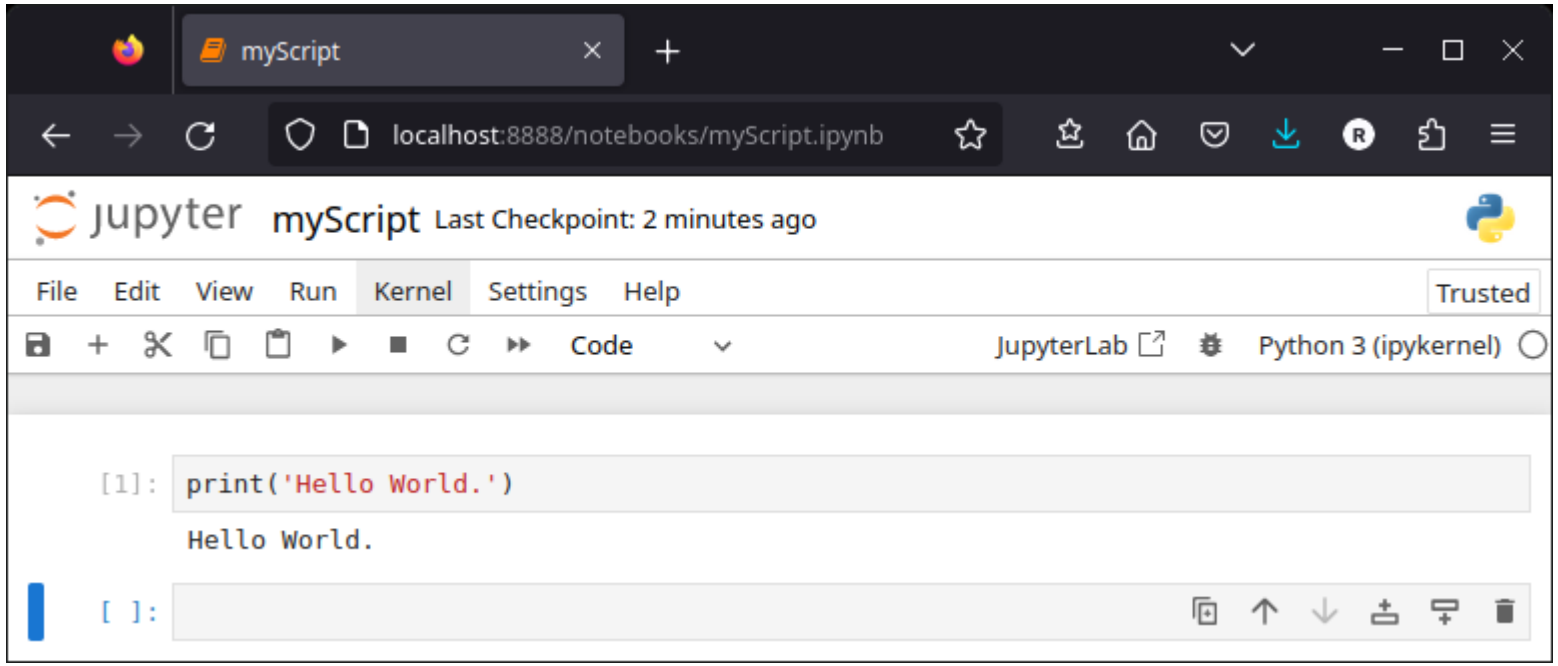
from **IDE** (Integrated development environment Software): example **PyCharm**



Python interpreter comes with the IDE

How To run python script

From **Jupyter notebook**:



Its name and logo are an homage to Galileo's discovery of the moons of Jupiter

A Jupyter Notebook is a browser-based application containing an ordered list of input/output cells which can contain **code**, **text** (Markdown syntax), **graphics**.

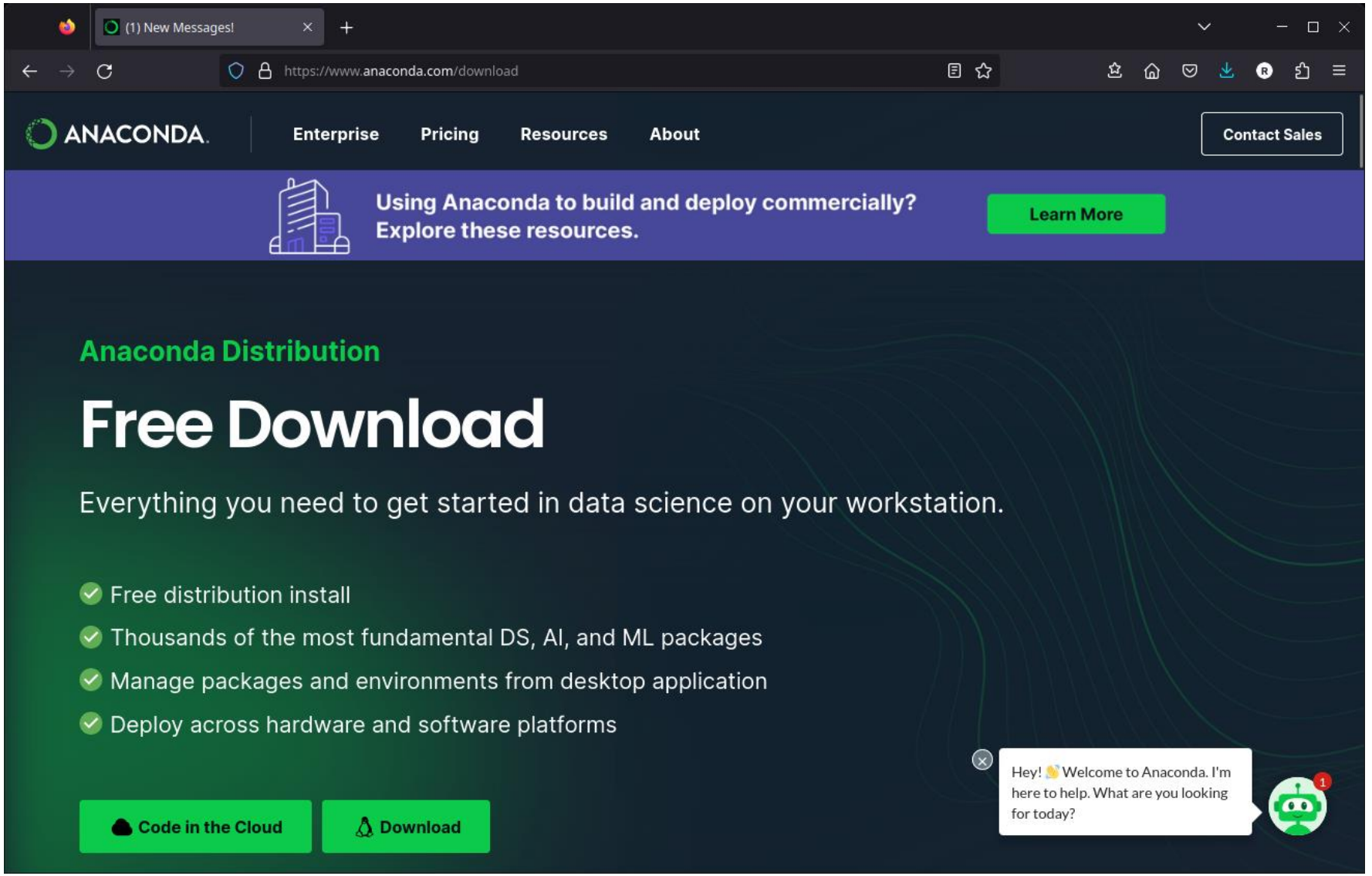
Its File extension is **.ipynb**

How to install python interpreter:

To install simple python interpreter or jupyter notebook, the easiest way is to install a python environment such as **Anaconda**.

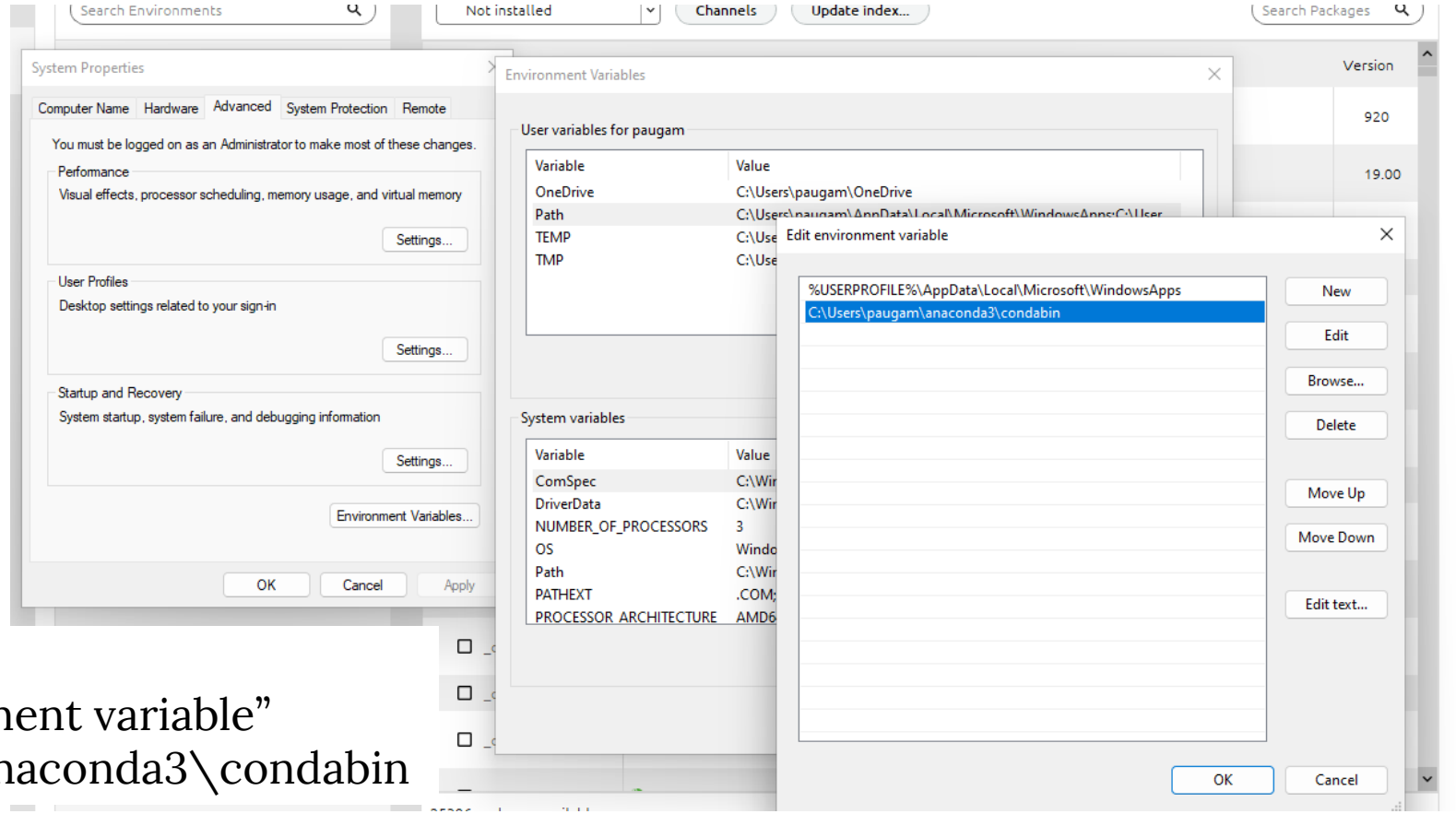
Anaconda allows to install several side by side **environments** with selected modules (i.e. librairies). It ensures version compatibilities between modules.

By defaults, anaconda contains a jupyter server.



How to install python interpreter:

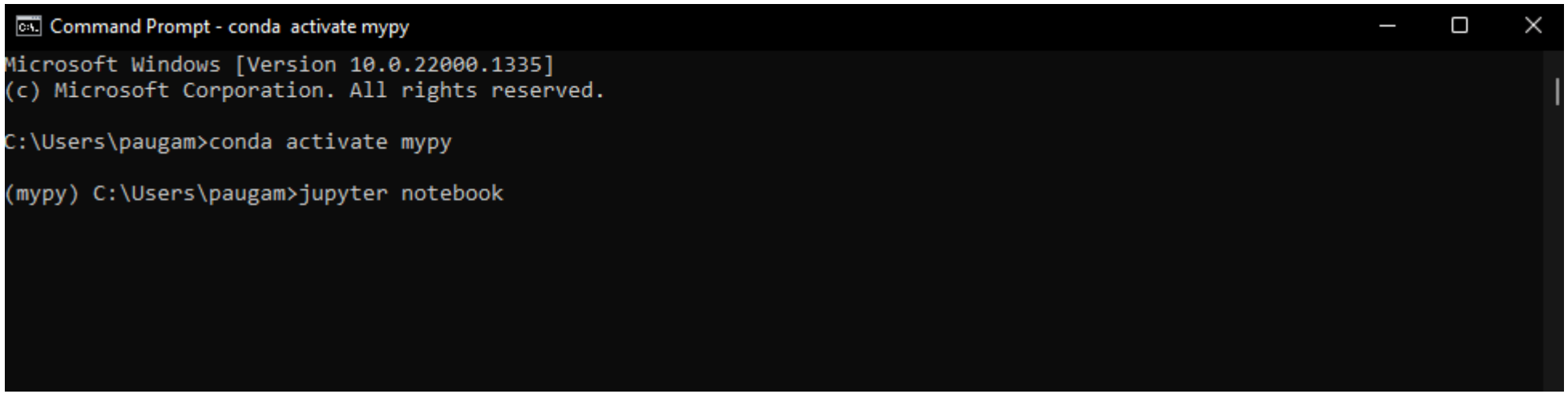
- For the practical you need to install a new environment with dedicated package:
  1. Add new channel: **conda-forge**
  2. Create **new environement**
  3. Add **packages**:
     1. Numpy
     2. Scipy
     3. Geopandas
     4. Matplotlib
     5. Rasterio
     6. opencv
  4. Install by clicking on **Apply**
  5. **Once again** add package
     1. Jupyter
  6. Install by clliking on **Apply**



- Add **condabin** to your os path
  From windows menu enter “environement variable”
  then add C:\Users\yourUserName\anaconda3\condabin

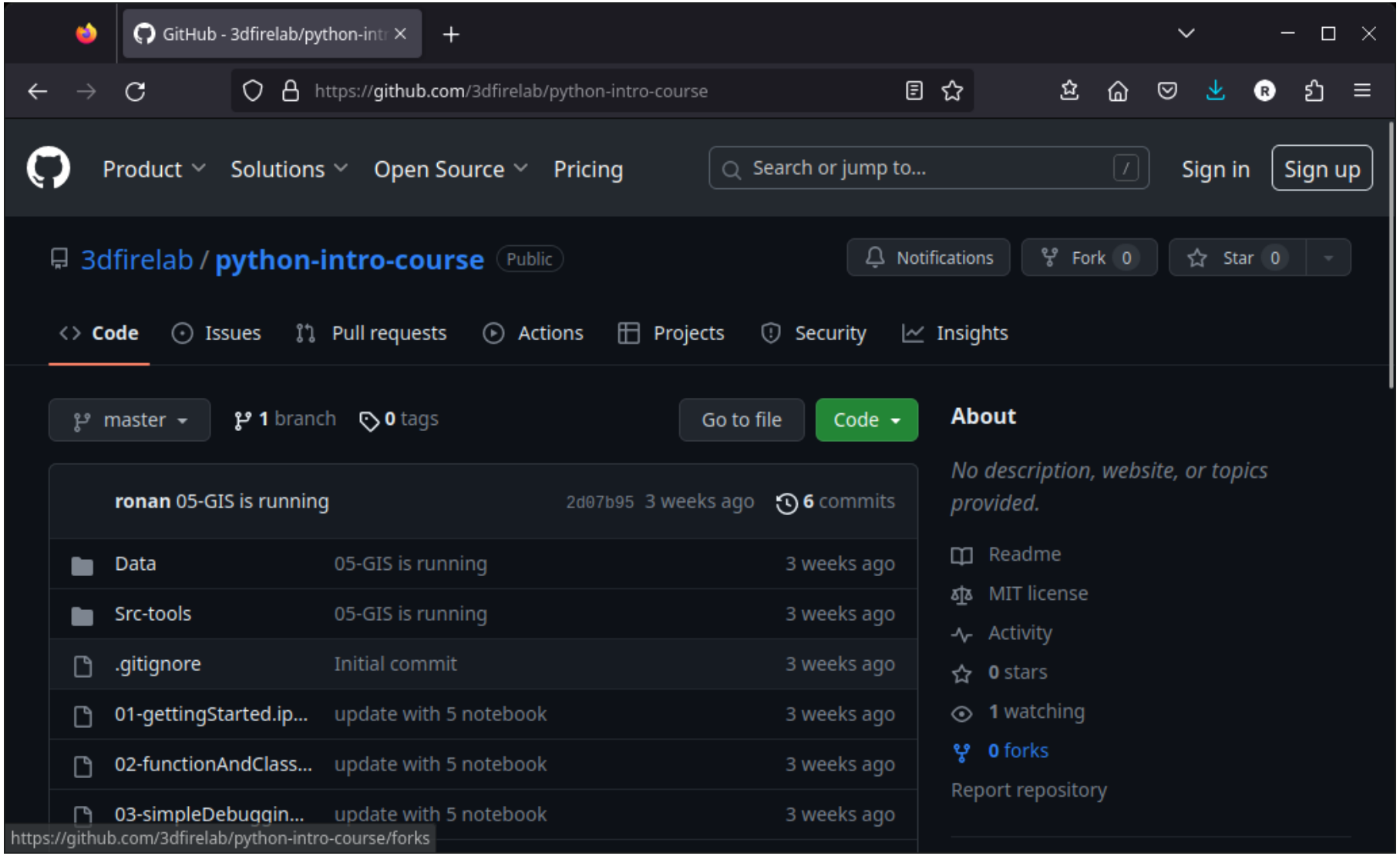
How to start jupyter notebook:

For an ancondac environement named mypy, in a prompt run:



A browser should automatically open.
Then navigate to your notebook (.ipynb) file.

Download Material from github



Practical

01-gettingStarted.ipynb

To get started.

02-functionAndClass.ipynb

Very basic introduction of function and class.

03-simpleDebugging.ipynb

- debugging in jupyterLab.
- The pdb module

04-usingGit.md

basic usage of git. Git is a version control system that tracks changes in any set of computer files,

05-GIS.ipynb

- introduction to module use in Geographical Information System (GIS)
- example of homebrewed module

06-pandasExercise.ipynb

An exercise to analyze data in `Data/listOfWildFire.csv`