Introduction to Deep Learning

Week 1
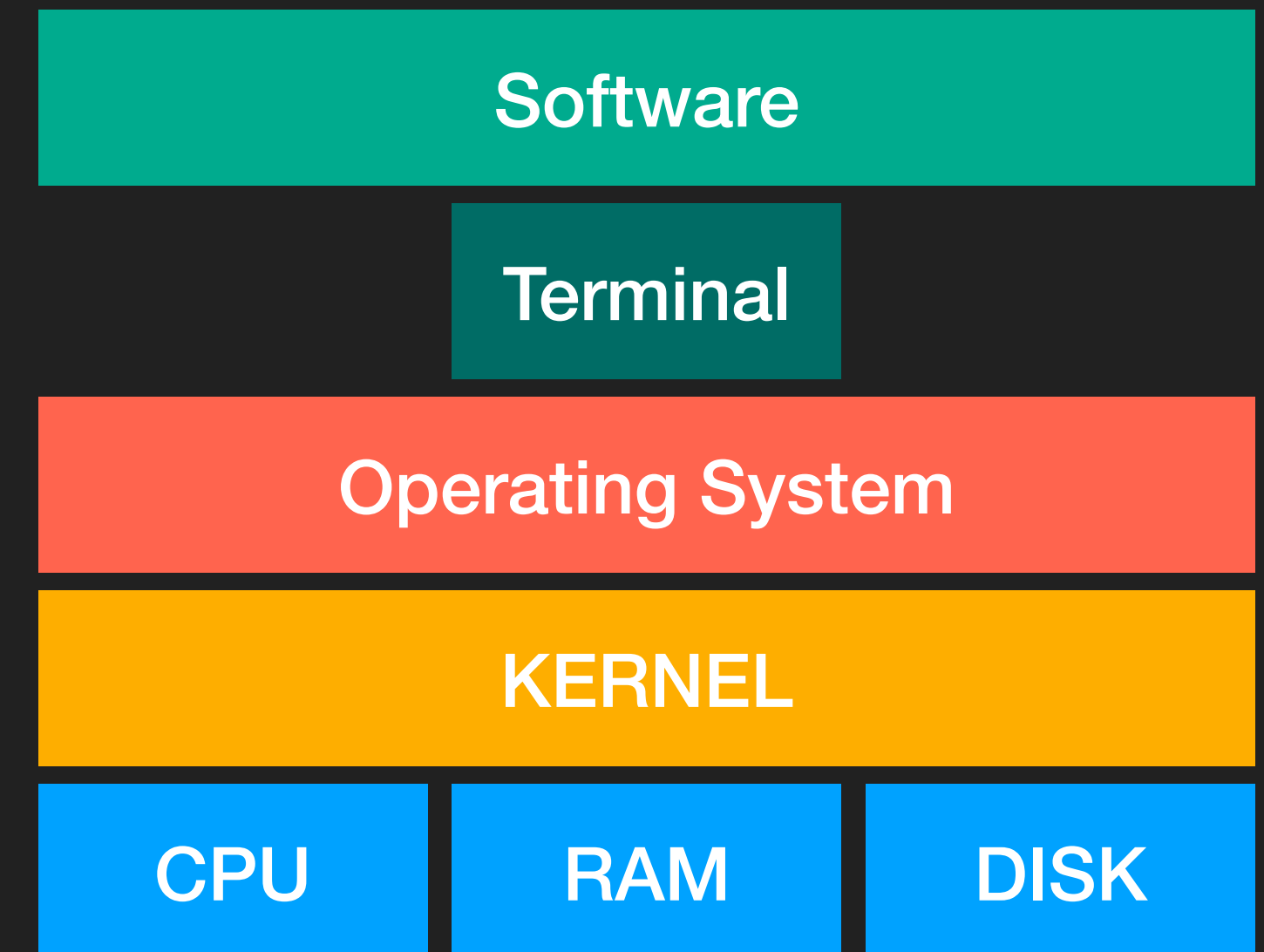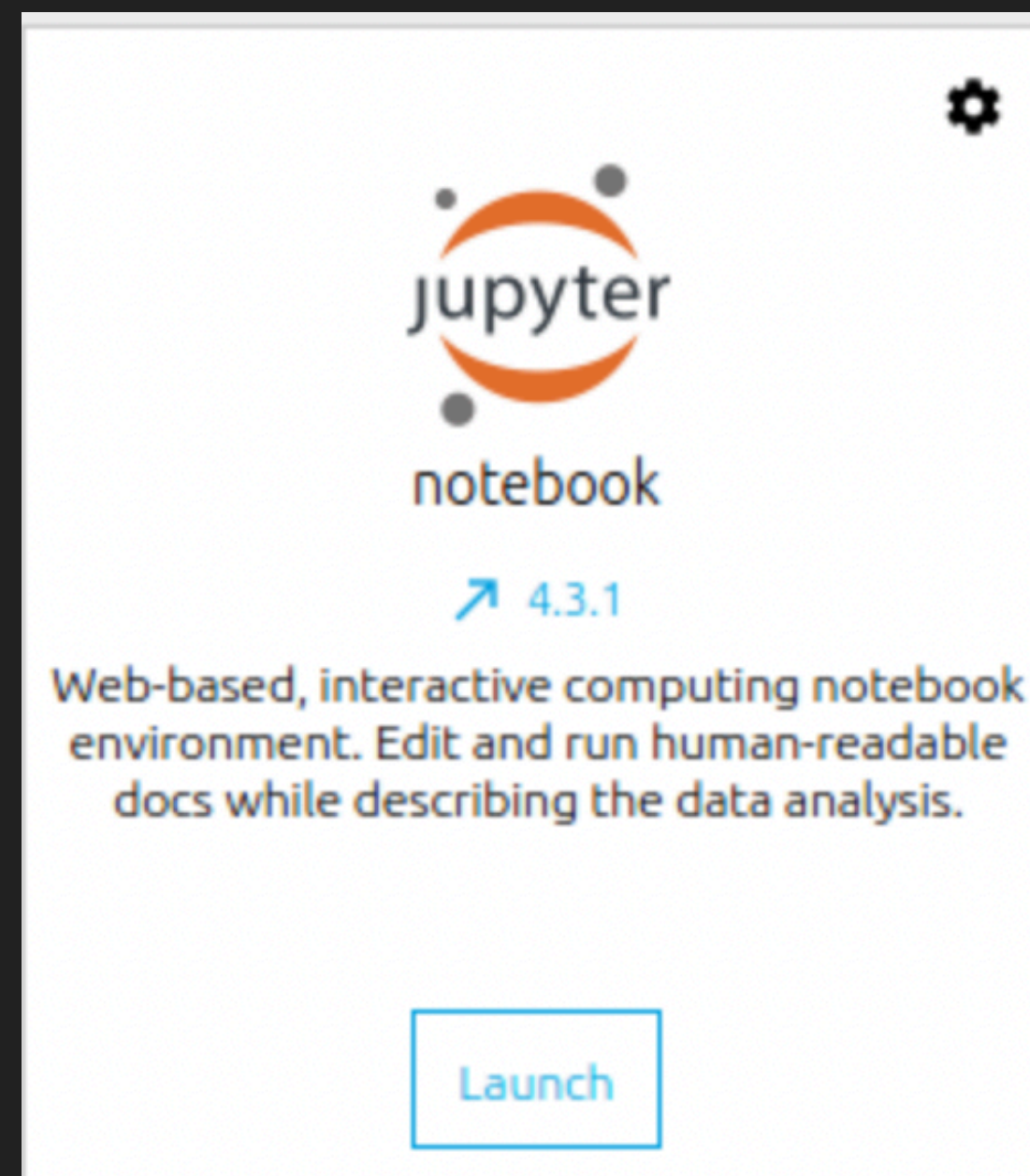
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12/10/2022

1. What to use

- Tools

  - Jupyter Notebooks

- Other Tools

  - Google Colab https://colab.research.google.com/

  - Kaggle https://www.kaggle.com/

  - DataBricks

  - GitHub https://github.com/

- Cloud - NOT for this course!

  - Google Cloud Platform

  - Amazon Web Services

  - Microsoft Azure

Jupyter Notebook, Visual Studio, PyCharm, Spider etc.

| Software |
| Terminal |
| Operating System |
| KERNEL |
| CPU | RAM | DISK |
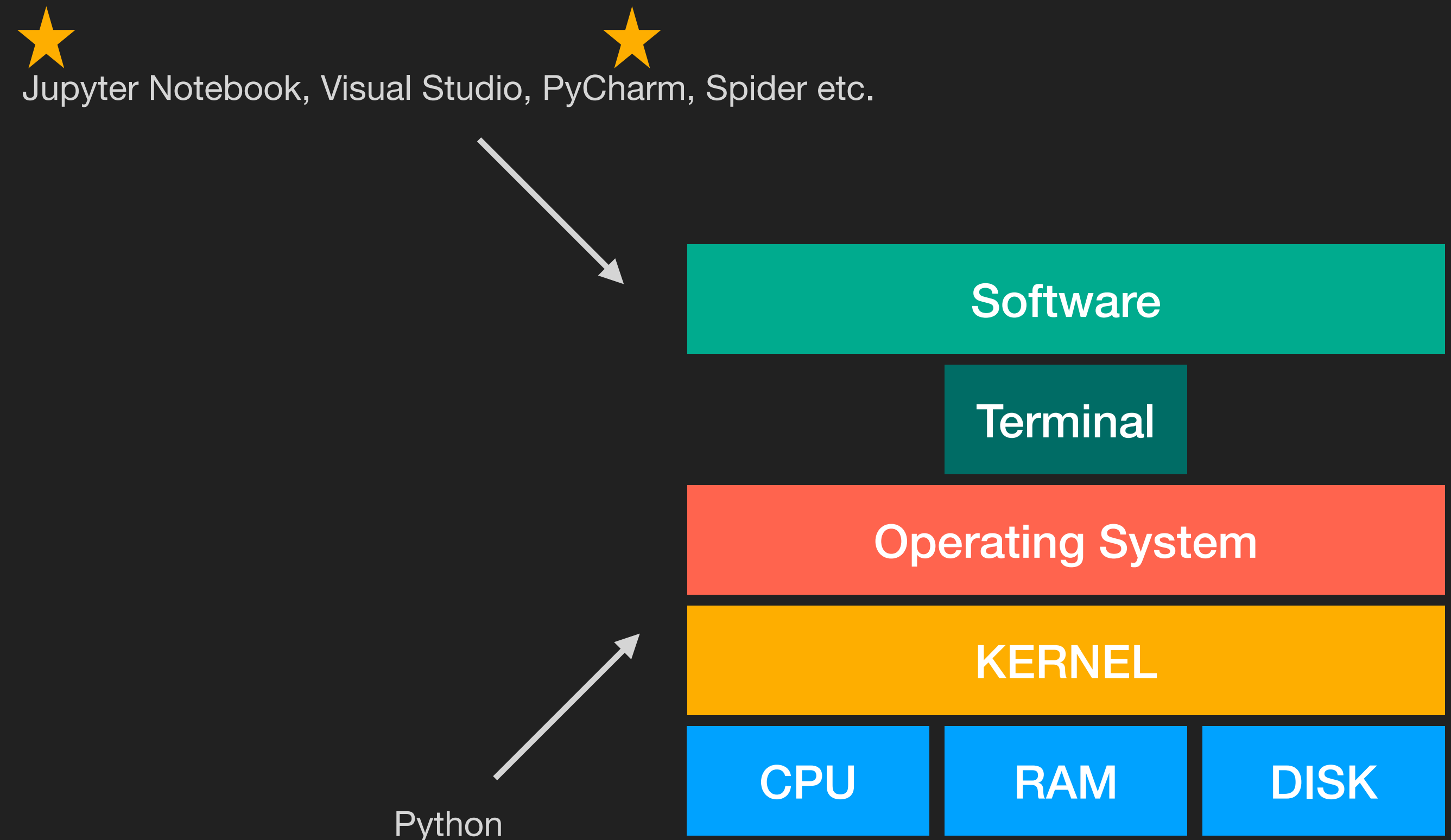
Python

Anaconda distribution : Python + librairies + notebook

- Anaconda will install

  - Python 3.9

  - Libraries (Matplotlib, Scipy, Numpy, Pandas etc.)

  - Jupyter Notebook

- Go to https://www.anaconda.com/ and install it.

- In the anaconda interface you will see several editors that you can use for different purposes.

- We will use Jupyter Notebook

- Which Python version?

Software

Terminal

Operating System

KERNEL

CPU   RAM   DISK

Terminal

```
jupyter notebook
```

```
jupyter notebook mon_notebook.ipynb
```

3

Without Anaconda

1. Install Python

   - https://www.python.org/downloads/

2. `You need to install PIP

   - PIP is the package installer for Python

   - `python -m pip install --upgrade pip`

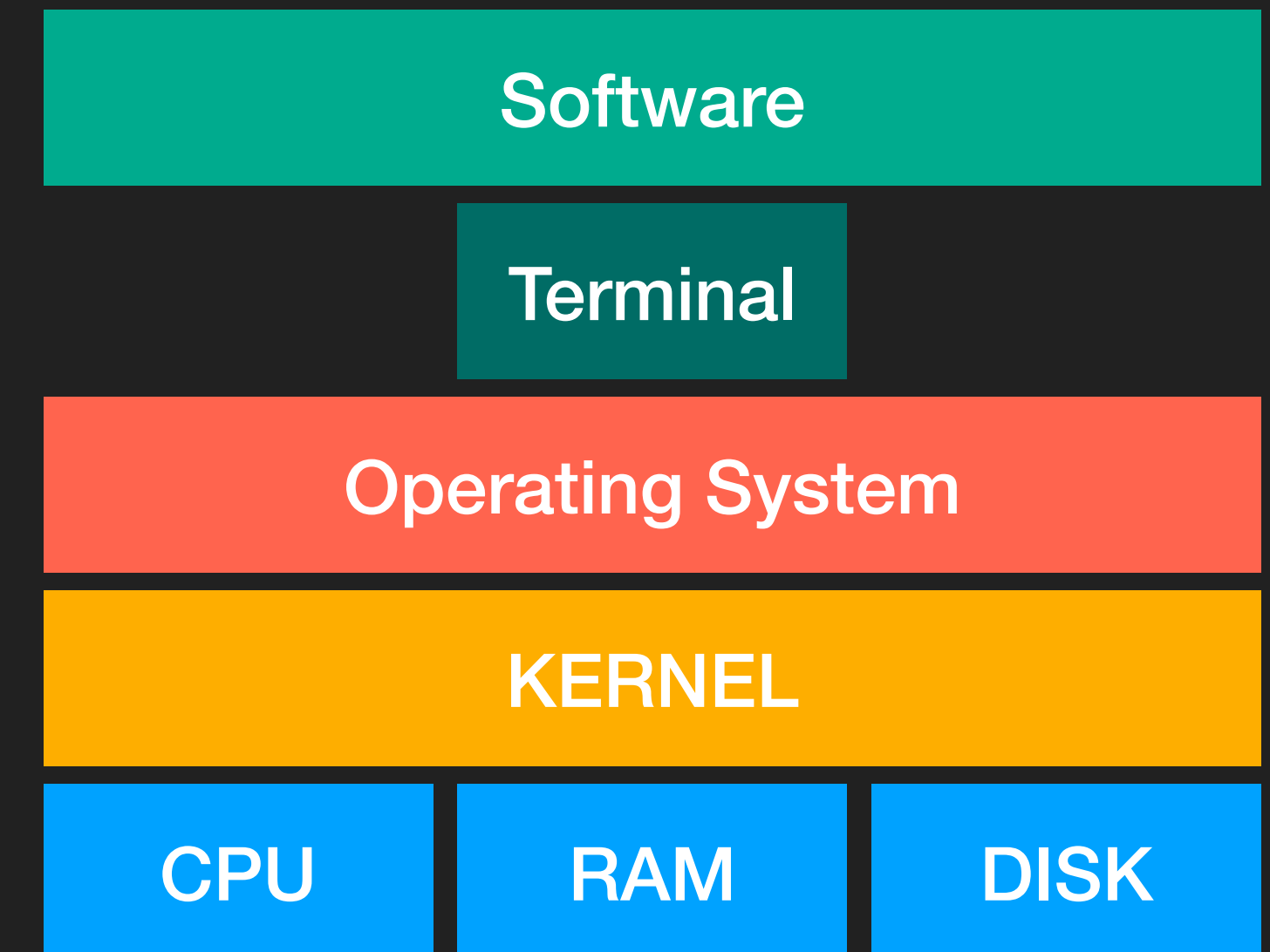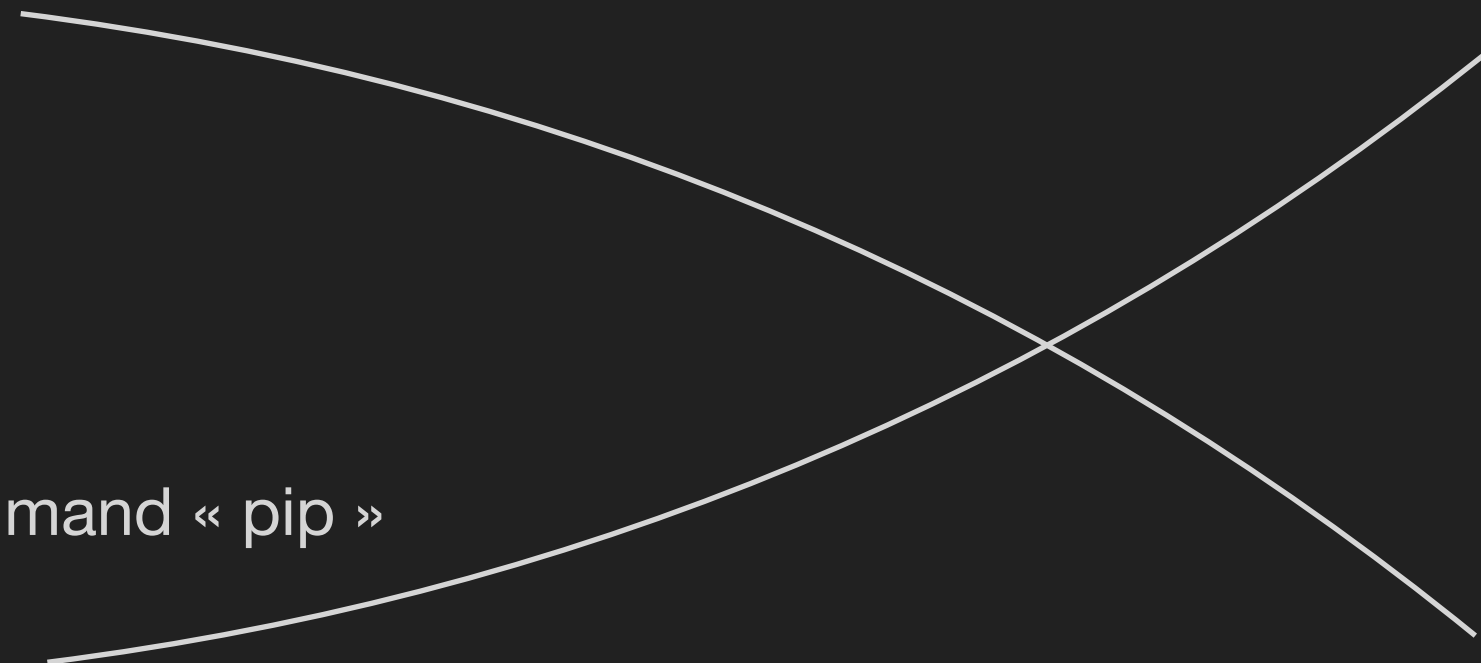3. Now, the terminal will understand the command « pip »

4. On terminal

   - `python -m pip install jupyter`

Terminal

```
jupyter notebook
```

```
jupyter notebook mon_notebook.ipynb
```

Software
Terminal
Operating System
KERNEL

CPU	RAM	DISK

Python packages
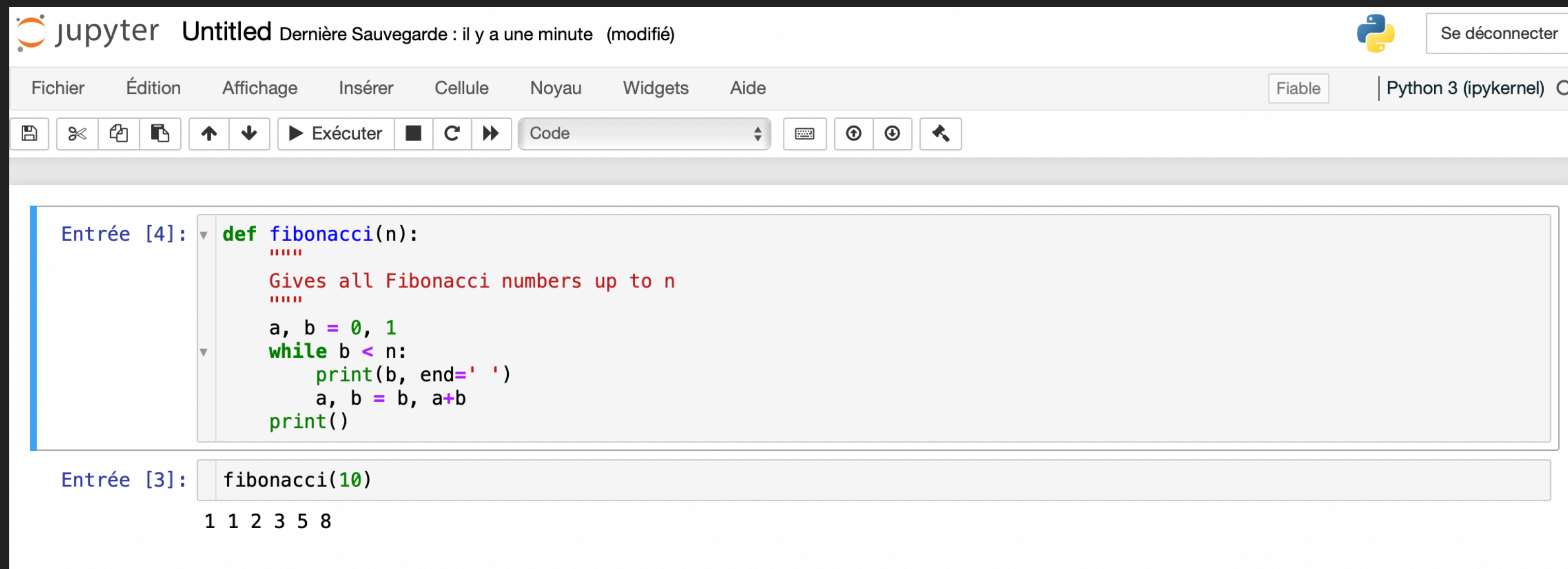
1. Libraries for this course

   1. **pandas** to manipulate dataframes (applies Relational Algebra rules https://en.wikipedia.org/wiki/Relational_algebra)

   2. **numpy** and **scipy** for calculations (Linear Algebra)

   3. **matplotlib** and **seaborn** for visualisation

   4. **scikit-learn** for ML algorithmes

   5. **Tensorflow** and **PyTorch** for deep learning

   6. And more…

2. You can install a library

   - conda install <name of the package>

   - pip install <name of the package>

   - Example: conda install pandas

- Important: Documentation is your best friend. For instance, https://scikit-learn.org/stable/

Jupyter Notebooks

1. Cells: code, markdown,

2. To use LaTex you need MacTex installed in your computer.

3. Examples

4. **.ipynb** files are notebooks

5. How to use **.py** files

6. Recommended : Nbextensions for Jupyter Notebooks

Ressources

1. Corey Schafer's YouTube channel https://www.youtube.com/c/Coreyms

2. Will Koehrsen's kaggle https://www.kaggle.com/code/willkoehrsen/start-here-a-gentle-introduction

3. https://web.stanford.edu/class/cs224n/readings/cs224n-python-review.pdf

4. https://cs231n.github.io/python-numpy-tutorial/

5. …

Dataset Repositories

1. https://archive.ics.uci.edu/ml/datasets.php

2. https://alex.smola.org/teaching/cmu2013-10-701/resources.html

3. https://www.openml.org/

4. …

Data Science pipeline

Nettoyage

Analyse Exploratoire

Feature Engineering

Standardisation

Échantillonnage

Modélisation

Optimisation

Sauvegarde

Dashboard

Note méthodologique

GitHub

HEROKU

1 2 3 4 5 6 7 8 9 10

Les étapes de la modélisation

Déploiement