

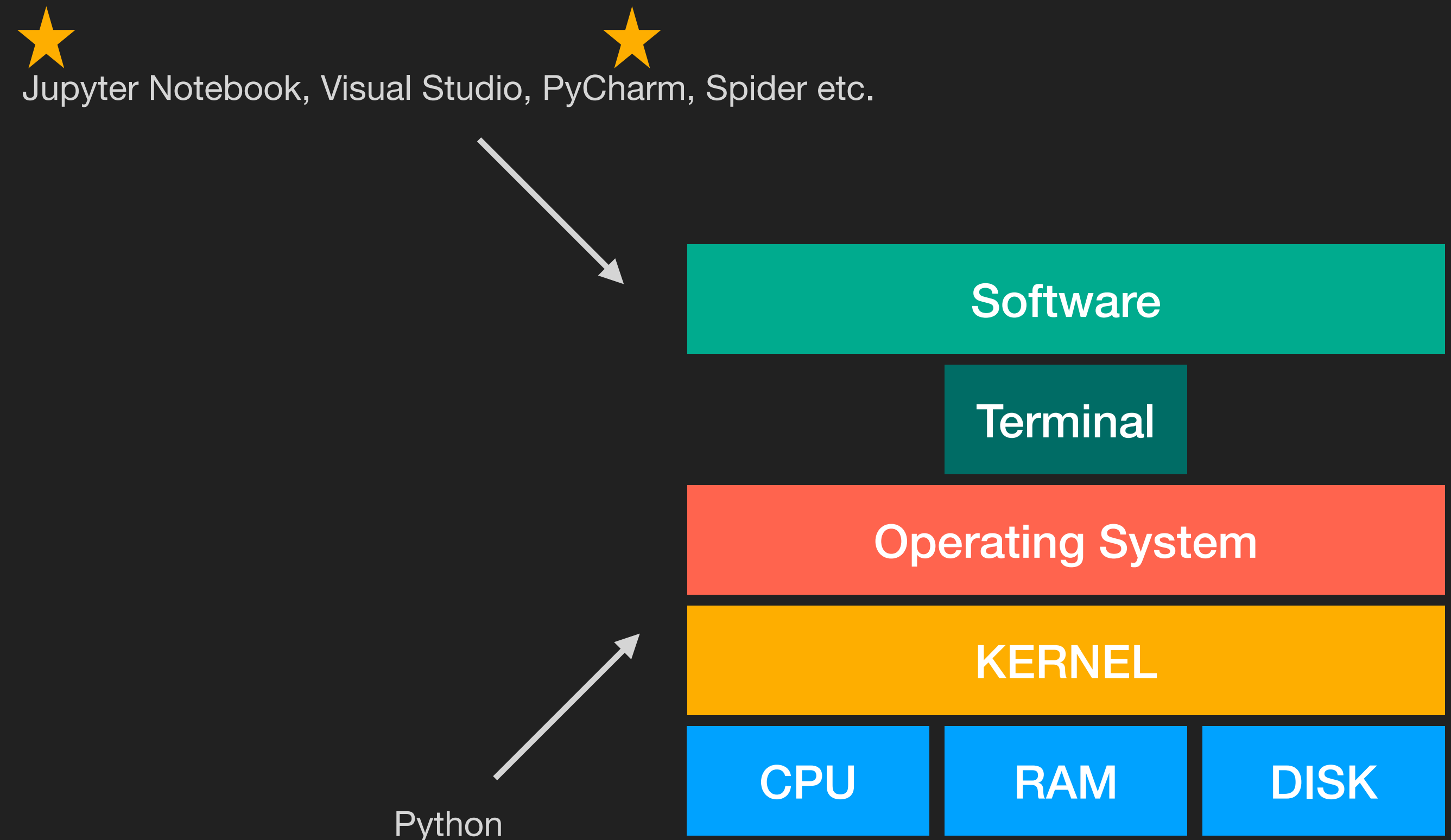


Introduction to Deep Learning

Week 1

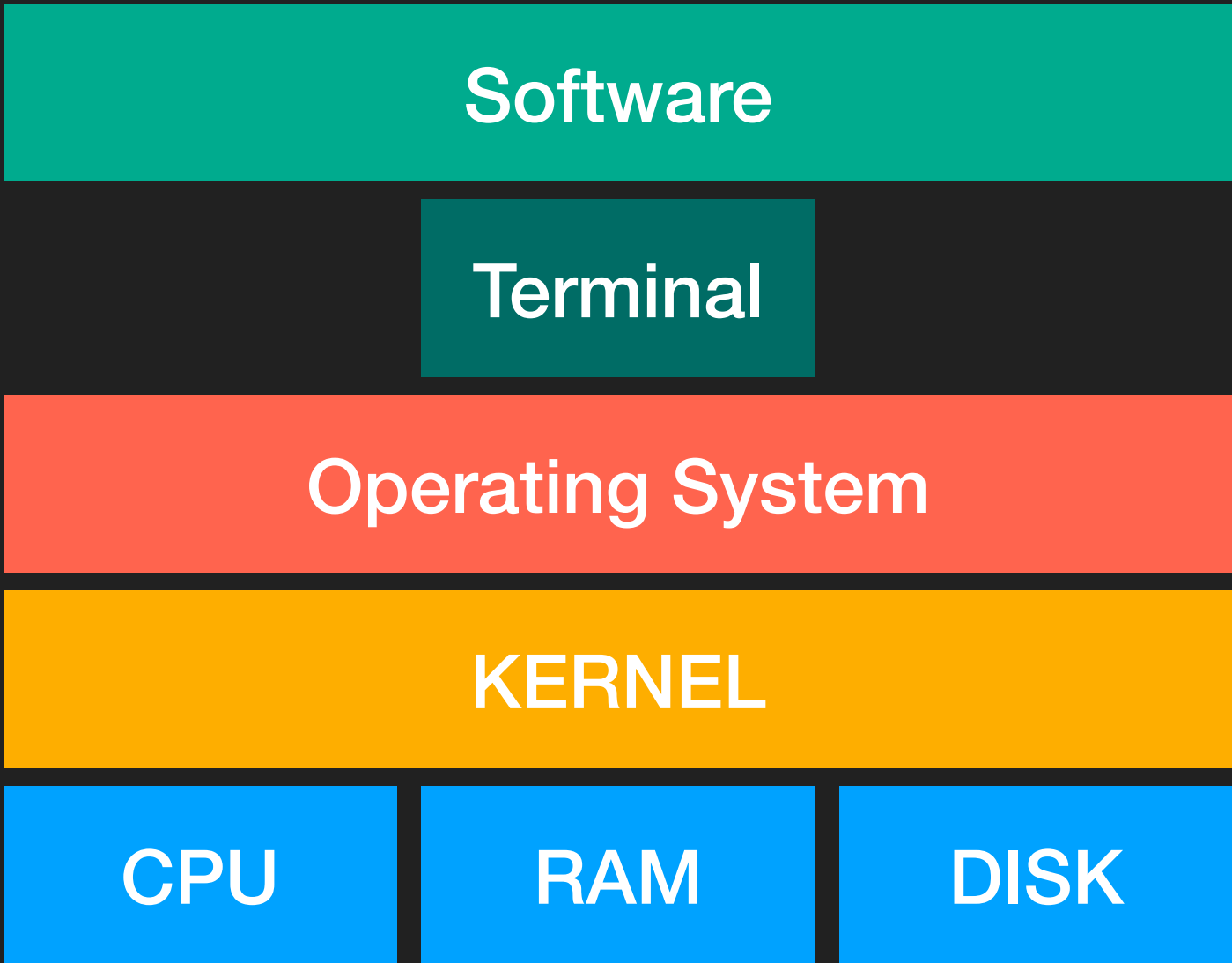
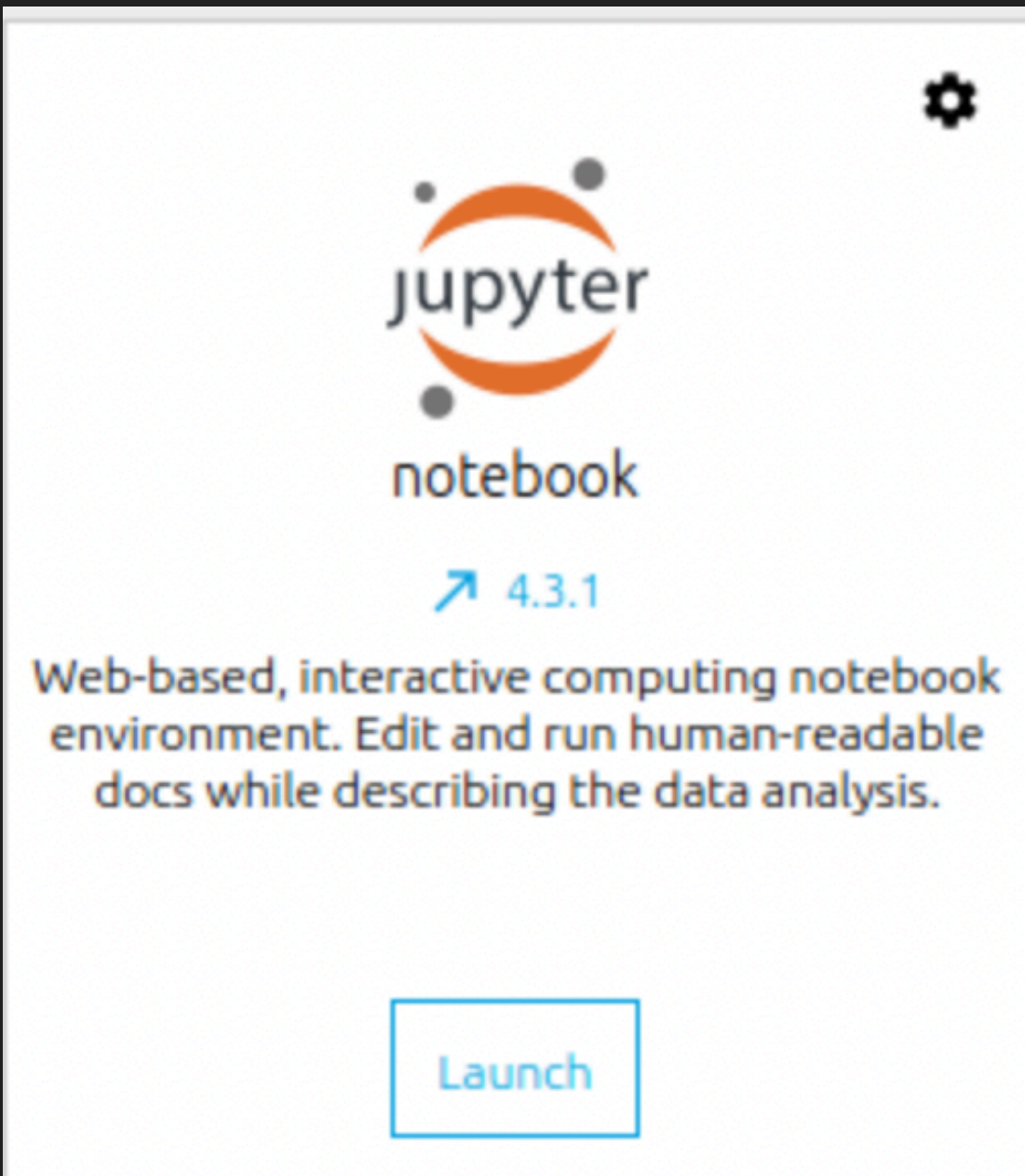
1. What to use

- 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



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?



Terminal

```
jupyter notebook
```

```
jupyter notebook mon_notebook.ipynb
```

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 »

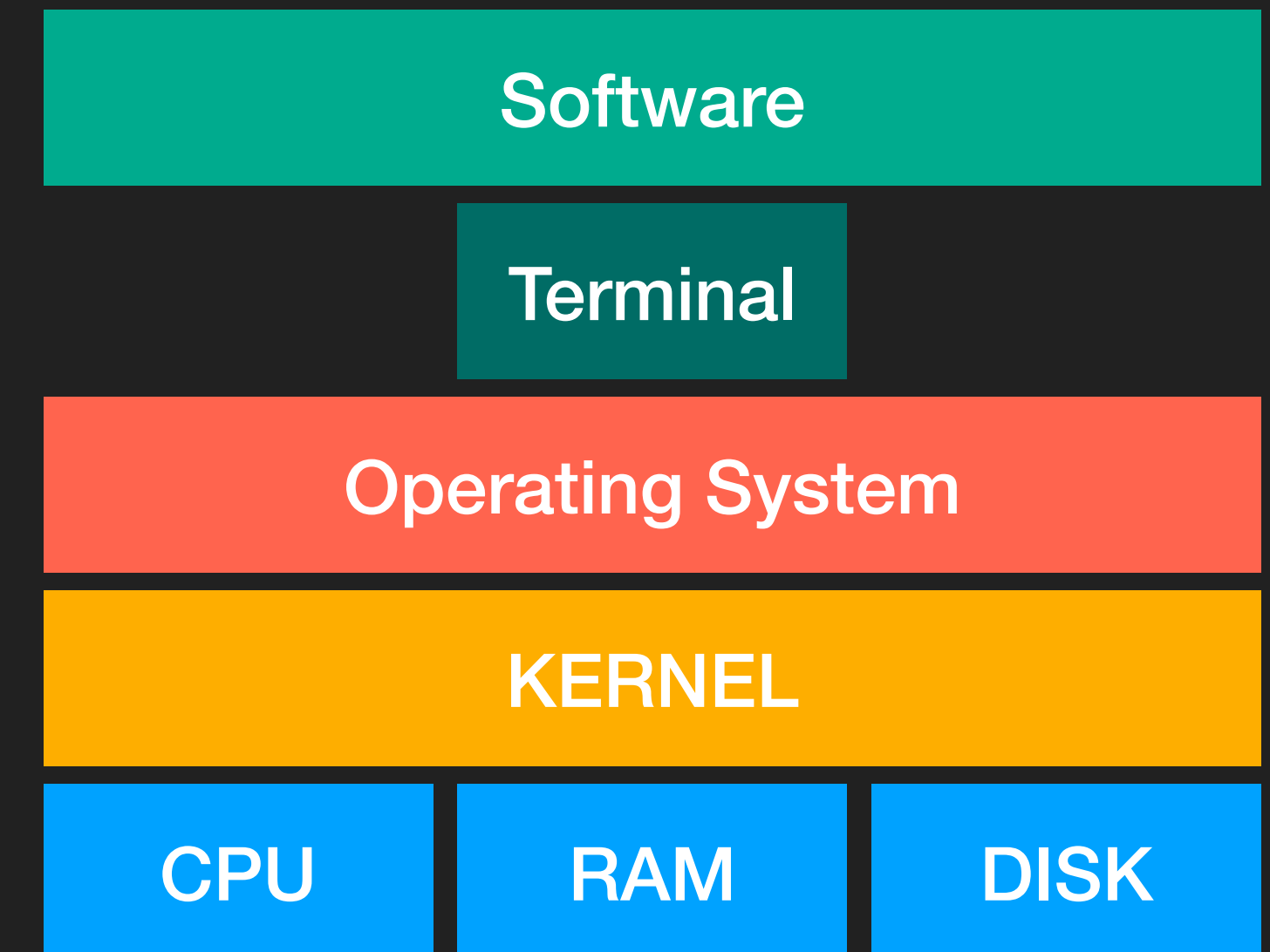
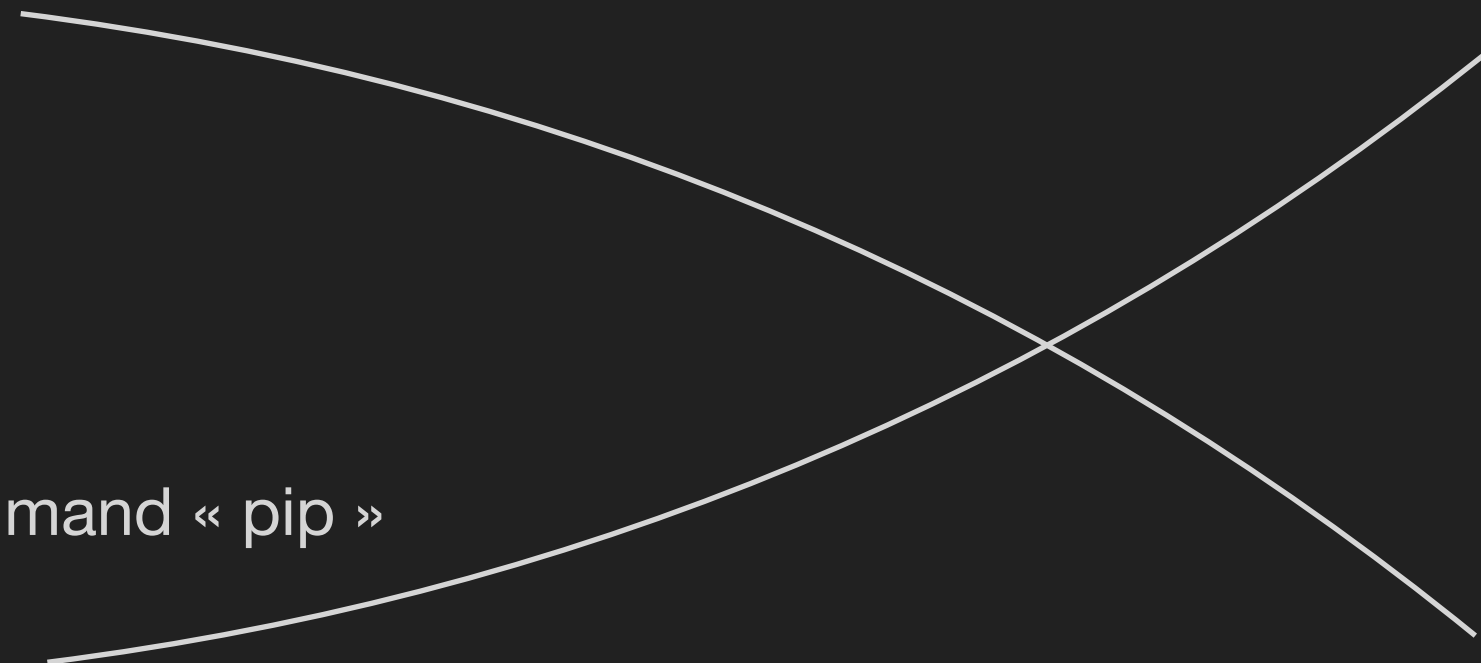
4. On terminal

- `python -m pip install jupyter`

Terminal

```
jupyter notebook
```

```
jupyter notebook mon_notebook.ipynb
```



Python packages

1. Libraries for this course

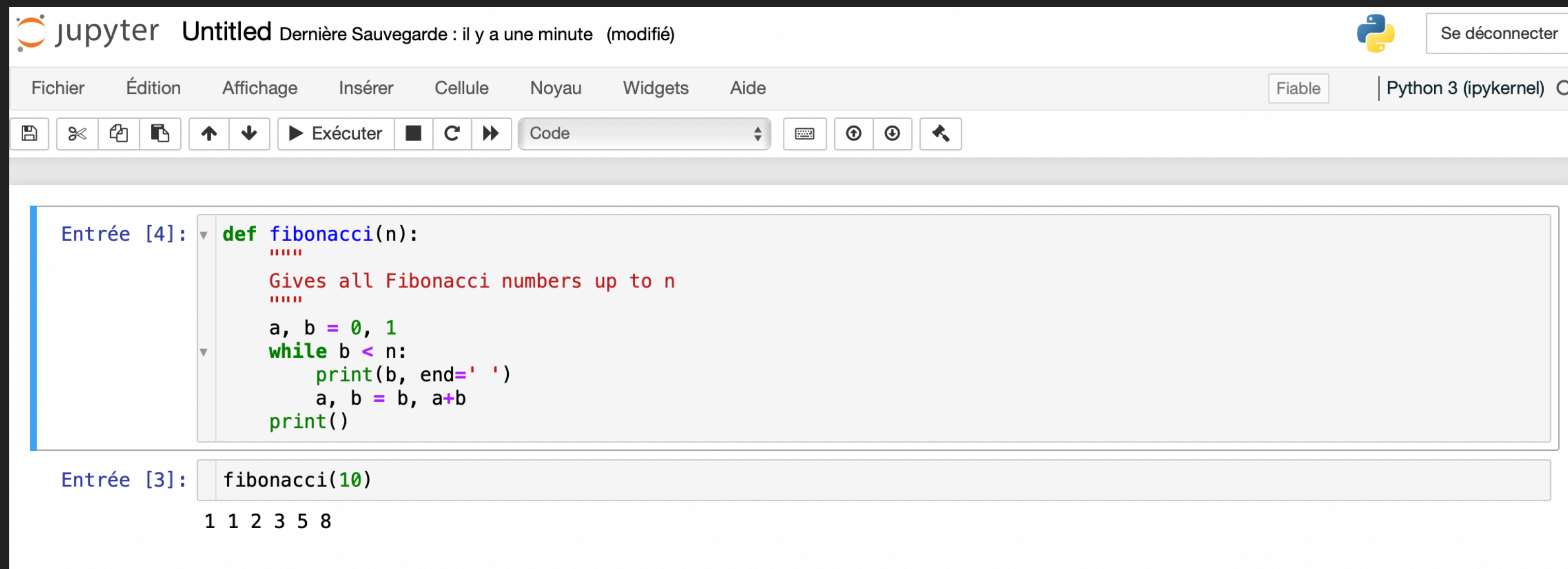
1. **pandas** to manipulate dataframes (applies Relational Algebra rules https://en.wikipedia.org/wiki/Relational_algebra)
2. **numpy** and **scipy** for calculations (Linear Algebra)
3. **matplotlib** and **seaborn** for visualisation
4. **scikit-learn** for ML algorithms
5. **Tensorflow** and **PyTorch** 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



The screenshot shows a Jupyter Notebook interface. At the top, the title bar reads "jupyter Untitled" followed by "Dernière Sauvegarde : il y a une minute (modifié)". On the right of the title bar is a "Se déconnecter" button. Below the title bar is a menu bar with options: "Fichier", "Édition", "Affichage", "Insérer", "Cellule", "Noyau", "Widgets", and "Aide". To the right of the menu bar is a "Fiable" button and a dropdown menu showing "Python 3 (ipykernel)". Below the menu bar is a toolbar with icons for saving, undo, redo, and other actions. The main area of the notebook contains two code cells. The first cell, labeled "Entrée [4]:", contains a Python function definition for a Fibonacci sequence. The second cell, labeled "Entrée [3]:", contains a call to the function `fibonacci(10)`, and its output is displayed below it as "1 1 2 3 5 8".

```
Entrée [4]: def fibonacci(n):  
            """"  
            Gives all Fibonacci numbers up to n  
            """"  
            a, b = 0, 1  
            while b < n:  
                print(b, end=' ')  
                a, b = b, a+b  
            print()  
  
Entrée [3]: fibonacci(10)  
1 1 2 3 5 8
```

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

