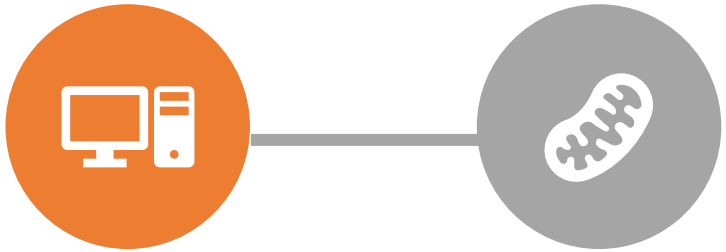
Python Tsunami

Installation and Tools

– April 21st-23rd –

UCPH HeaDS

How do I work with Python?



SETTING UP PYTHON

VIRTUAL ENVIRONMENTS

JUPYTER NOTEBOOKS

GOOGLE COLAB

Setting up Python

Pros:

- Your **own local** installation
- Easy **access to data** stored locally
- More **control** over installed versions
- **Not difficult** if done **right**

Cons:

- May require solving **issues** (sometimes obscure) if **incorrectly installed**
- Each **Operating System** (Windows, MacOS, Linux, …) may require **specific steps**

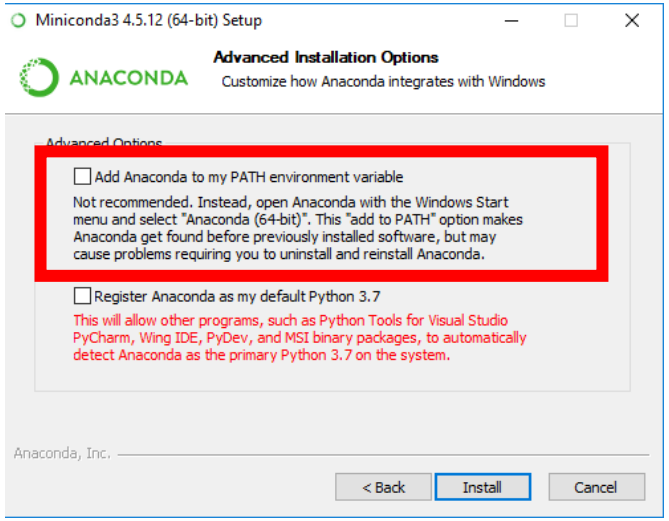
Setting up Python

- **Installation:**
  - **Miniconda:** a free minimal installer for **conda**

an open source **package management system** that quickly **installs**, **runs** and **updates** packages and their dependencies. Runs on **Windows**, **macOS** and **linux**.

https://docs.conda.io/en/latest/miniconda.html

- **Find your Operating System**
- **Download Python 3.8**
- **Install it following the steps and make sure to check:**



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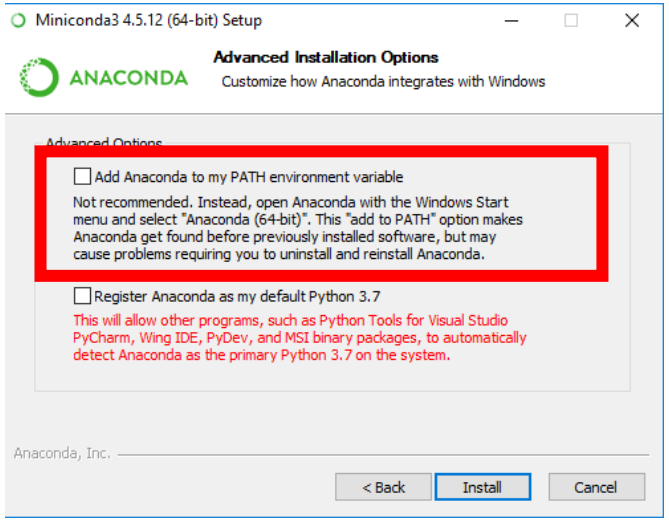
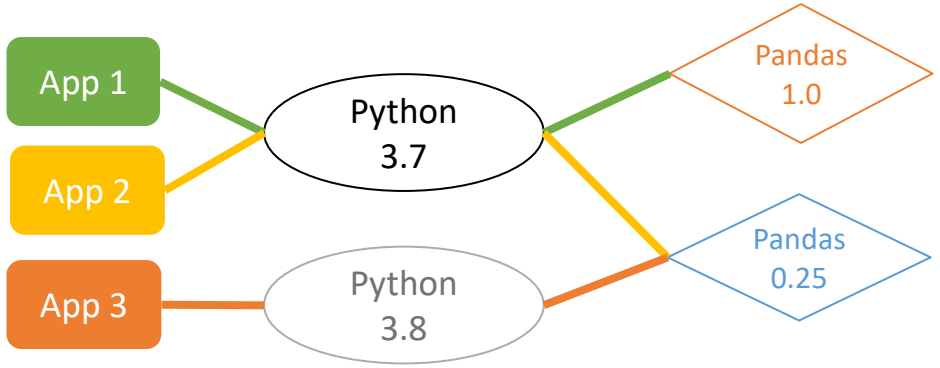
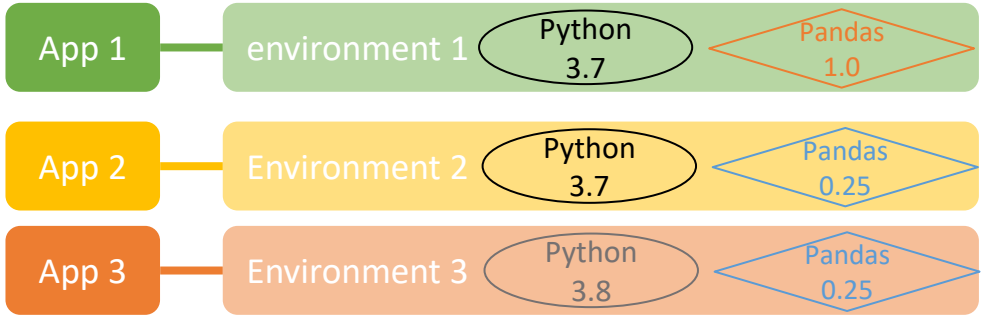


Virtual Environments

- **Python apps** will often use **packages and modules** that are **not part of the standard library**
- Apps sometimes need a **specific version of a library**
- This means, **one single Python installation may not meet the requirements of every application**



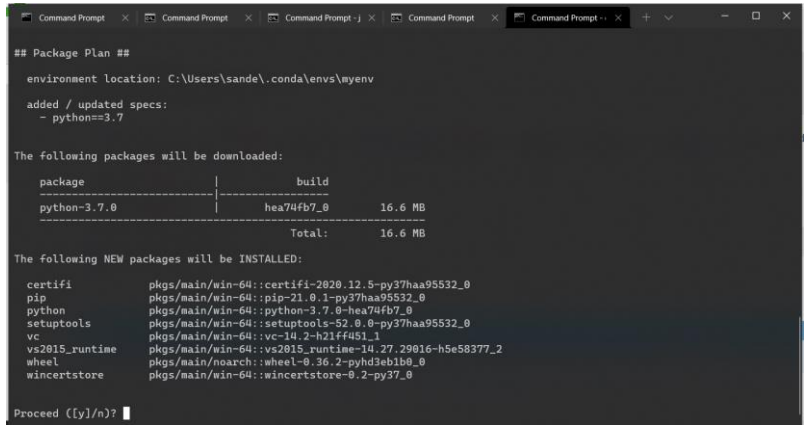
- The **solution** is to **create a virtual environment**, a self-contained directory that contains **a Python installation** (version) and the **necessary packages**



Virtual Environments

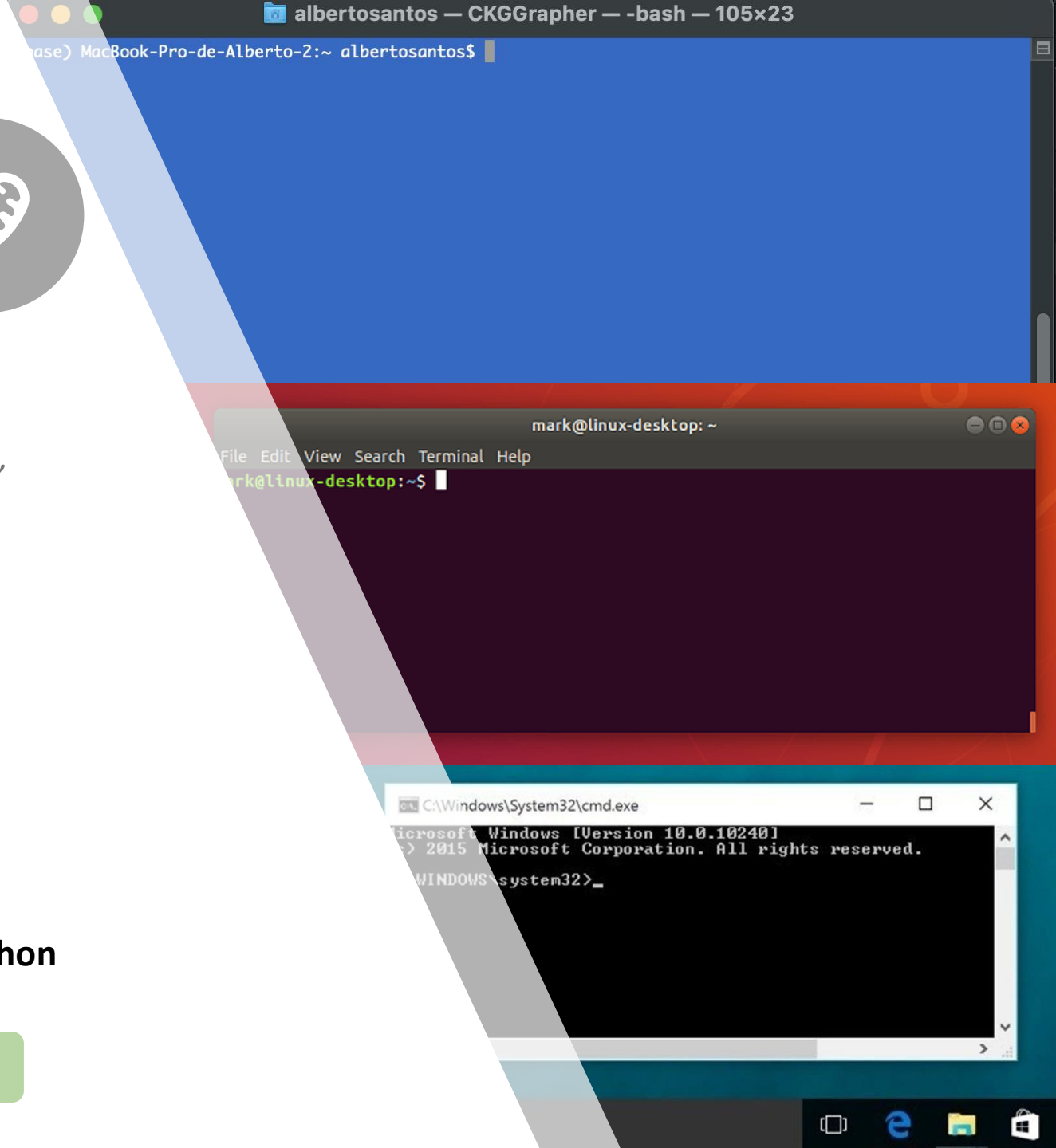
- Let's create a virtual environment:
  - To **create an environment** we use:

  conda create -n name_env python==version
  - **Open a Terminal** window
  - Type *conda create -n myenv python==3.7* and *'y'*

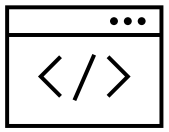


  - **To** activate the **environment type:**

  conda activate myenv
  - Now, if we type *python* we have the **right python version**

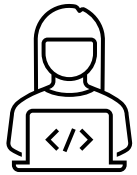


What tool do I use for coding?

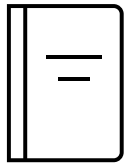


- **Terminal** → 2 options:
  - **Shell**: *python*
  - **Interactive** shell: *ipython*

- Simple **text editors:**
  - **Notepad++**
  - **Vim**



- **Integrated development environments** (IDEs) → Several options:
  - IDLE
  - PyCharm
  - Spyder
  - Visual Studio Code



- **Notebooks**

Jupyter Notebooks

The **Jupyter Notebook** is **an open-source application** to **create and share** documents that contain **code, equations, visualizations and text** (markdown)

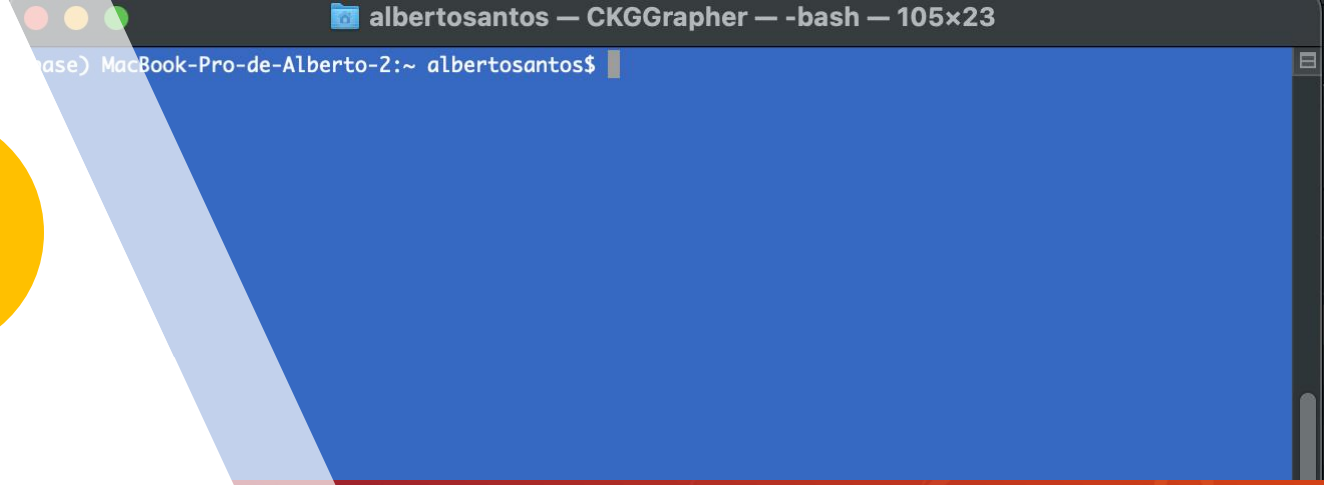
Jupyter Notebooks

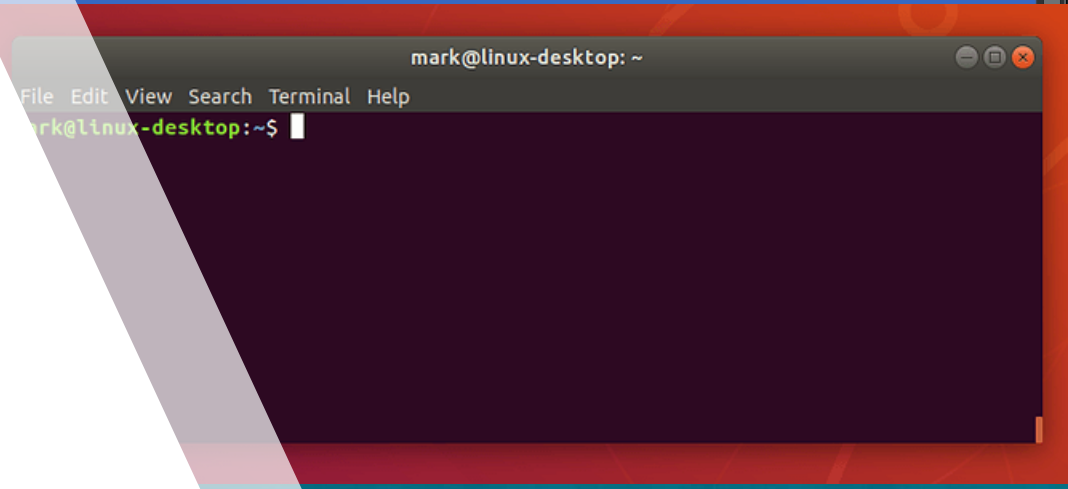
- Let's install Jupyter Notebooks:
  - Open a Terminal window
  - Activate your environment:

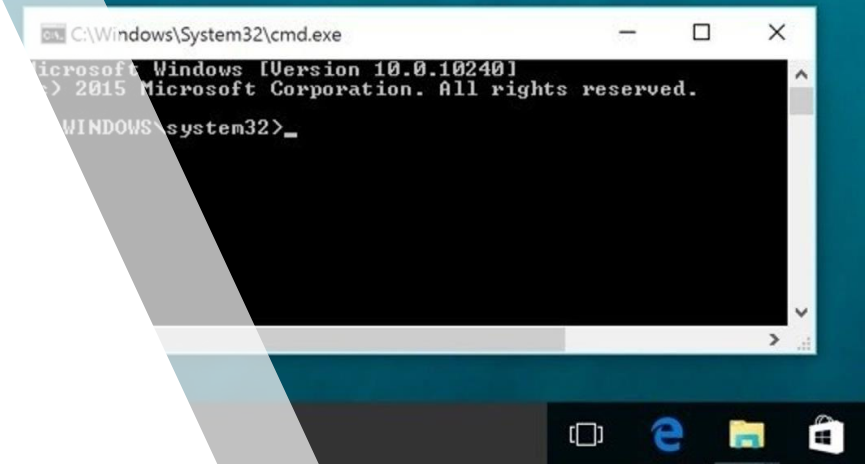
  conda activate myenv
  - Use *pip* to install Jupyter*:

  pip install notebook
  - To start notebooks:

  jupyter notebook







*This is where some OS may start complaining

Google Colab

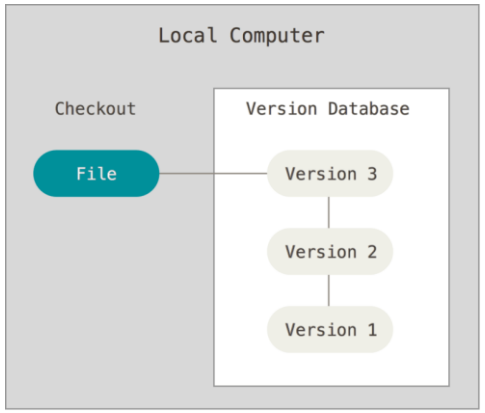
- **Colab** (Colaboratory) is a tool to **write**, **execute** and **share python code** through the **browser**
- Colab is especially well suited to **machine learning**, **data analysis** and **education**.
- Colab is a **hosted Jupyter notebook service** that requires **no setup** to use, while providing **free access** to computing **resources** including GPUs
- It is **connected** to a **Google account** and **data** can be **accessed** through **Google Drive**.

https://colab.research.google.com/

Taking Control of Your Code

Version control

- It is a system that **records changes** to a file or set of files over time so that you can **recall specific versions** (history)



- **Important** in coding, especially when the code is accessed by “many” people (>1)
- A good way to **share your code** with others

- **Git** is a software for **tracking changes** and **coordinating** work among collaborators developing code
- **GitHub** facilitates access to Git’s functionality

https://github.com/Center-for-Health-Data-Science/PythonTsunami

Recommended

git & GitHub Workshop

How we learned to stop worrying and love the git

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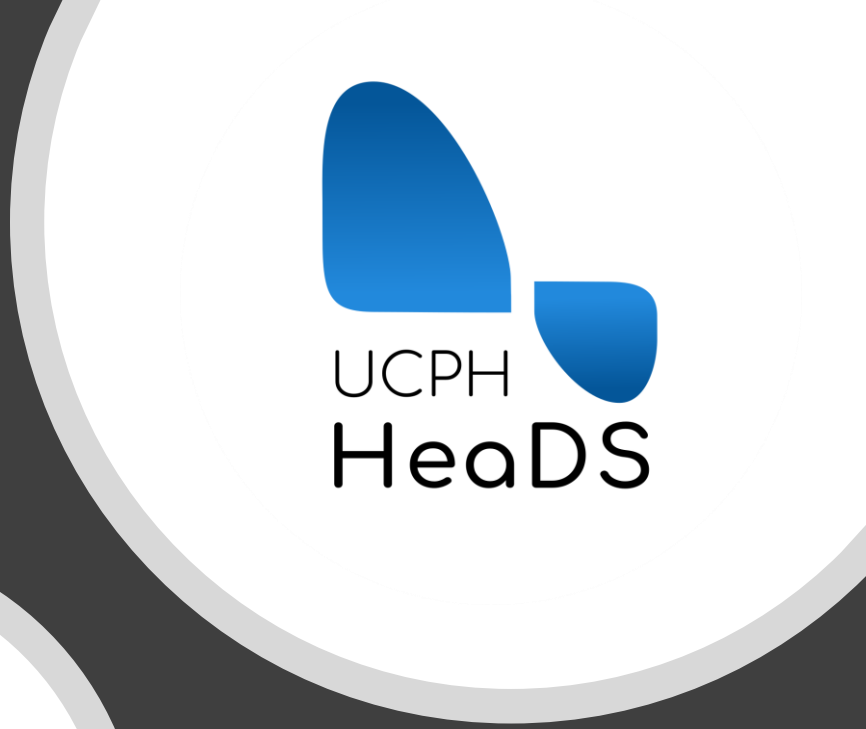
BIG DATA
INSTITUTE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