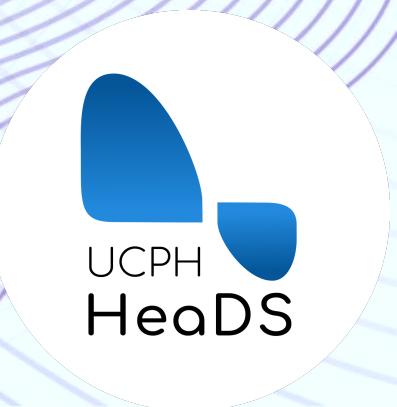


Python Tsunami

– November 3rd-5th –



How do I work with Python?



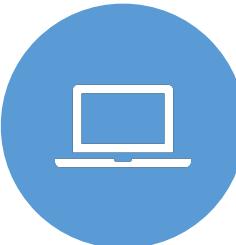
SETTING UP
PYTHON



VIRTUAL
ENVIRONMENTS

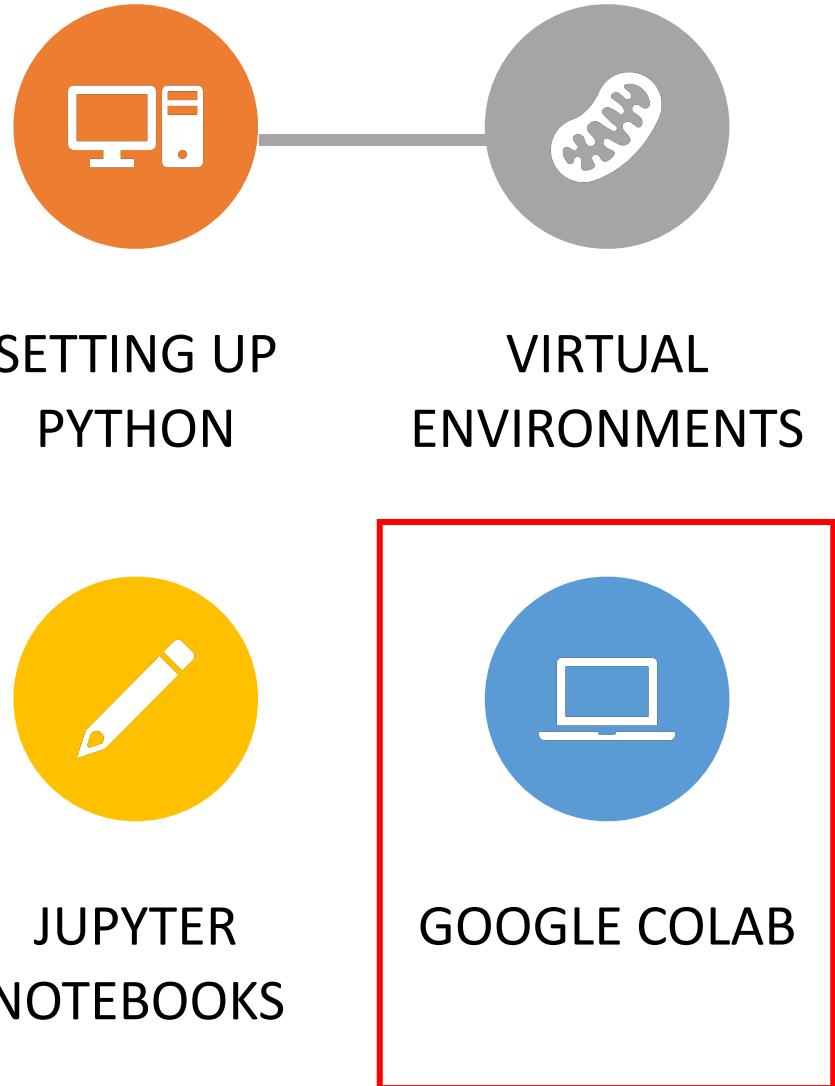


JUPYTER
NOTEBOOKS



GOOGLE COLAB

How do I work with Python?



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



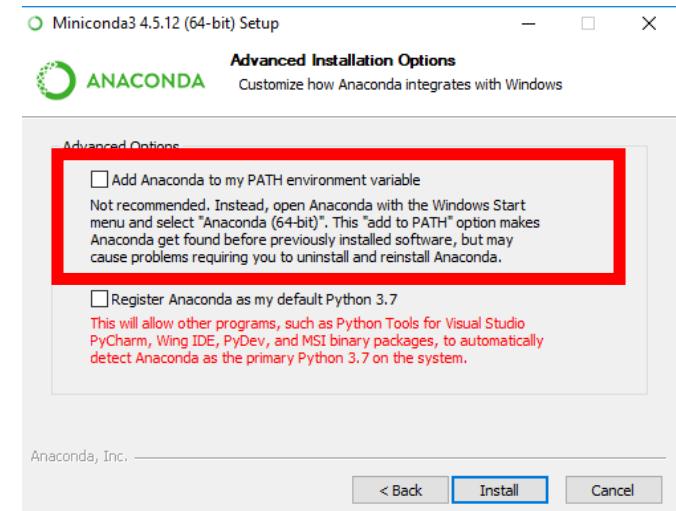
- **Installation:**

- **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:**



Setting up Python



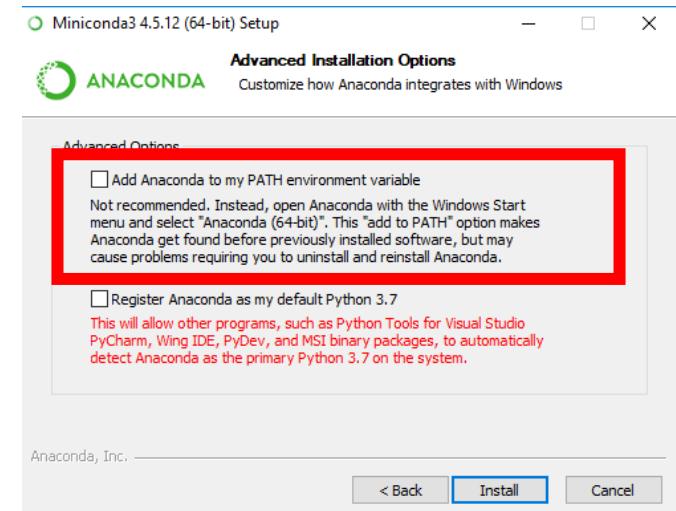
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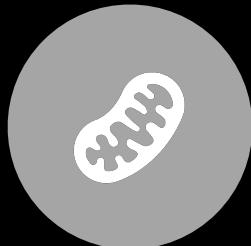
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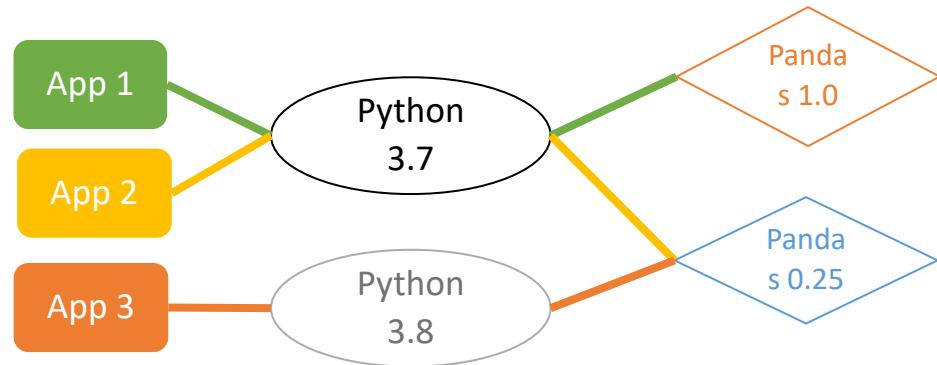
- **Find your Operating System**
- **Download Python 3.8**
- **Install it following the steps and make sure to check:**



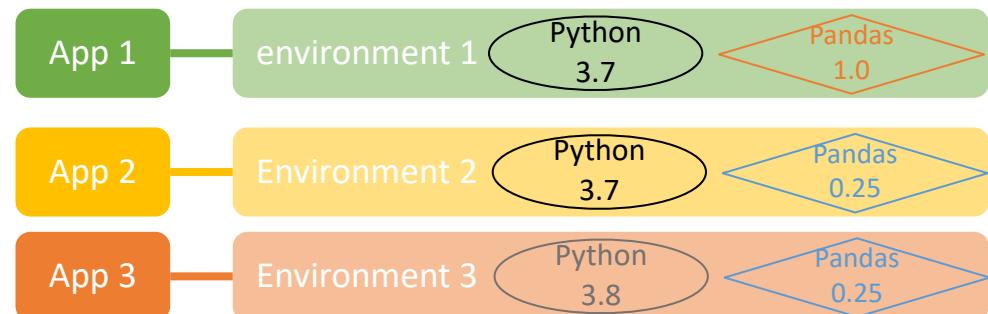
Virtual Environments



- 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**



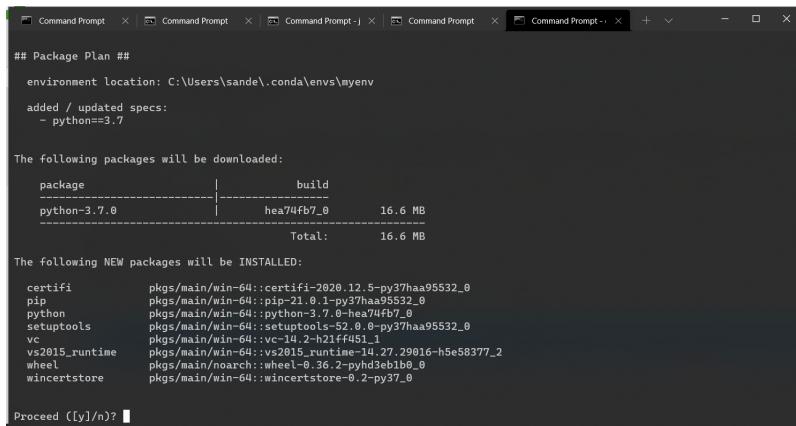
- The **solution** is to **create a virtual environment**, a self-contained directory that contains a **Python installation** (version) and the **necessary packages**



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'



```
## Package Plan ##

environment location: C:\Users\sande\.conda\envs\myenv

added / updated specs:
- python==3.7

The following packages will be downloaded:
  package          | build
  python-3.7.0    | hea74fb7_0      16.6 MB
                                                               Total: 16.6 MB

The following NEW packages will be INSTALLED:
  certifi          | pkgs/main/win-64::certifi-2020.12.5-py37haa95532_0
  pip              | pkgs/main/win-64::pip-21.0.1-py37haa95532_0
  python           | pkgs/main/win-64::python-3.7.0-hea74fb7_0
  setuptools        | pkgs/main/win-64::setuptools-52.0.0-py37haa95532_0
  vc               | pkgs/main/win-64::vc-14-h21ff451_0
  vs2015_runtime   | pkgs/main/win-64::vs2015_runtime-14.27.29016-h5e58377_2
  wheel            | pkgs/main/noarch::wheel-0.36.2-pynd3eb1b8_0
  wincertstore     | pkgs/main/win-64::wincertstore-0.2-py37_0

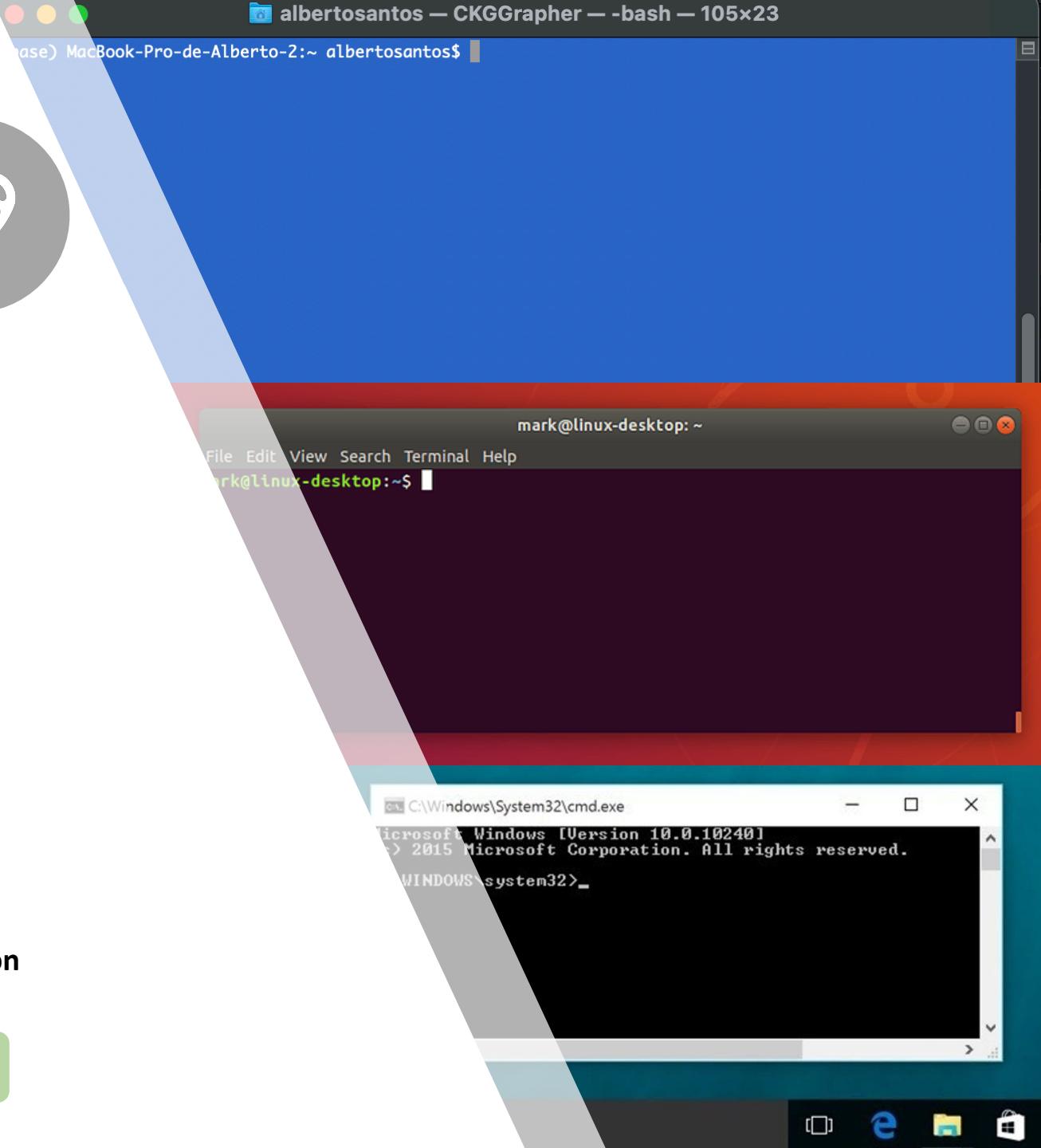
Proceed ([y]/n)?
```

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

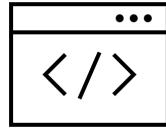
App 1

environment 1

Python
3.7



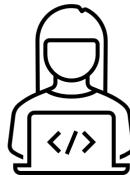
What tool do I use for coding?



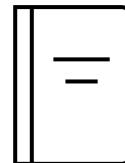
- **Terminal** → 2 options:
 - **Shell:** *python*
 - **Interactive shell:** *ipython*



- 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:

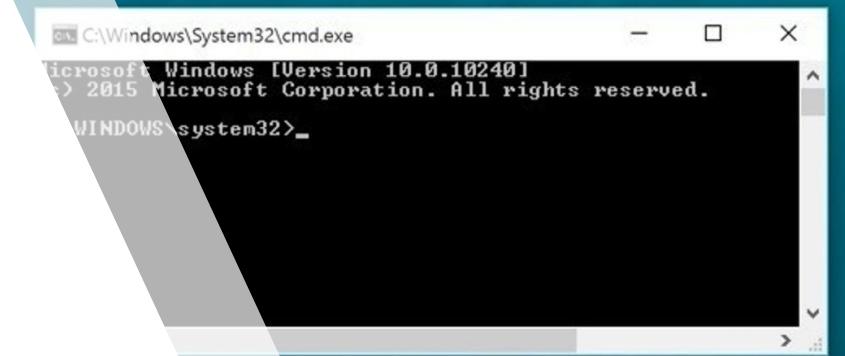
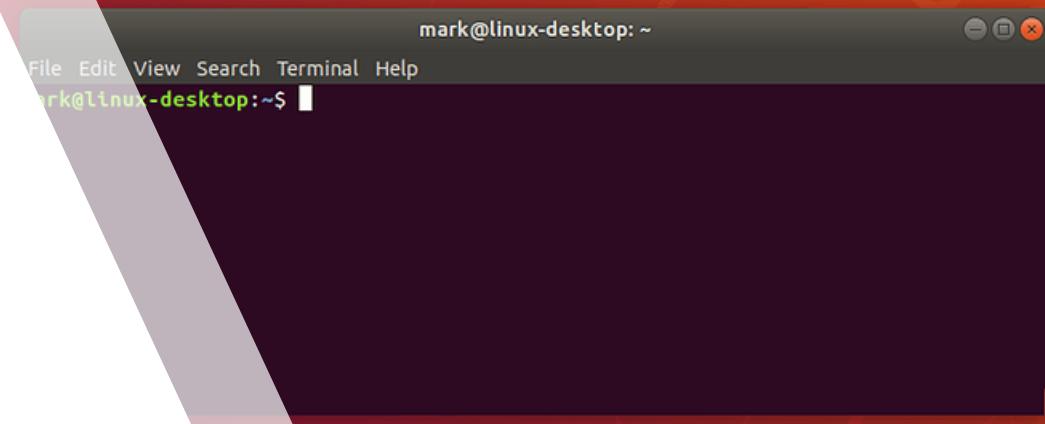
conda activate myenv

- Use *pip* to install Jupyter*:

pip install notebook

- To start notebooks:

jupyter notebook



Google Colab



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**.

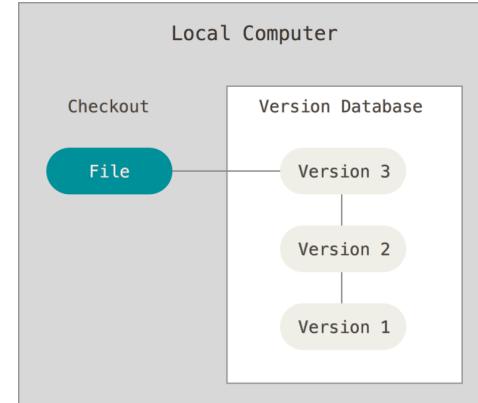
<https://colab.research.google.com/>

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



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



