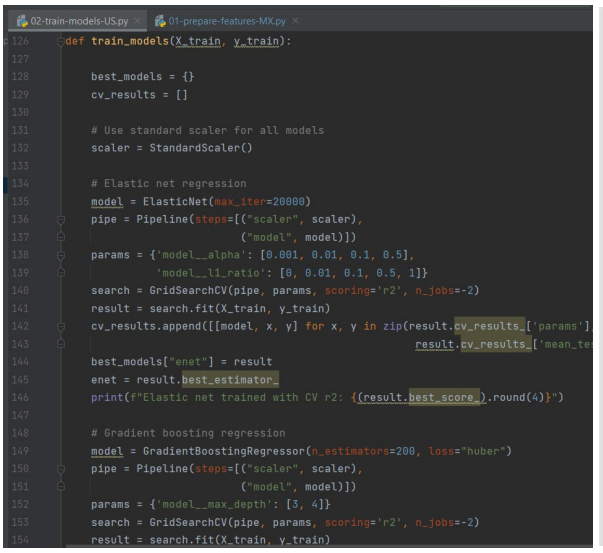
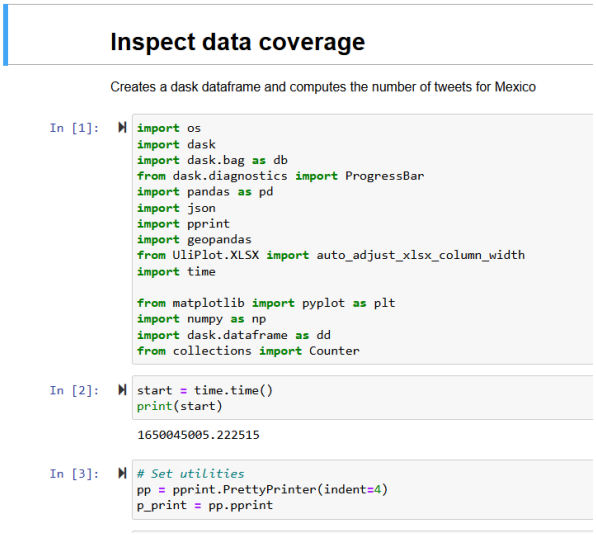
Setup of Python programming environment

There are two common ways of working with Python: through regular Python files (file extension .py) or through so-called *Jupyter notebooks* (file extension . ipynb):





Python file *Jupyter Notebook*

For the Python Tutorials, we will work with Jupyter notebooks. They allow you to execute code interactively in your browser and to combine it with formatted text cells. If you have never heard of them, you can watch this video for an introduction:

- https://www.youtube.com/watch?v=HW29067qVWk (30 min)

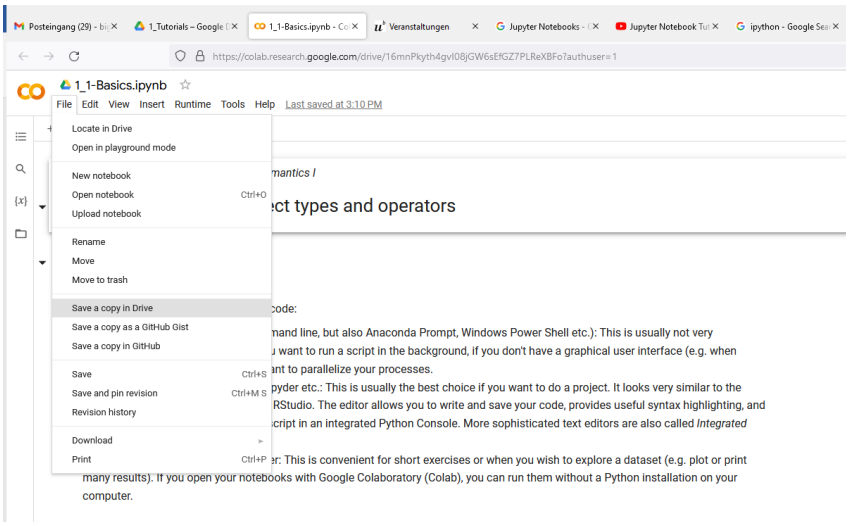
For this course, you can choose one of the following two ways to run the notebooks:

1. With Google Colaboraty («Colab»): Google provides free computing power to run Jupyter Notebook in the Google Cloud (rather than on your computer). This allows you to create, edit and execute notebooks without a local Python installation. All you need is internet access, a Google account and some space on Google Drive.
2. With a local Python installation on your computer: You can install Python and Jupyter Notebook on your computer. The notebooks will still be opened in your browser, but they are executed using your local Python installation (and no internet access is needed). If you install Anaconda, you can download Python, Jupyter notebook as well as editors such as Pycharm or Spyder all in one go. This is convenient, as you may want to use such editors to run regular python scripts rather than notebooks in future projects.

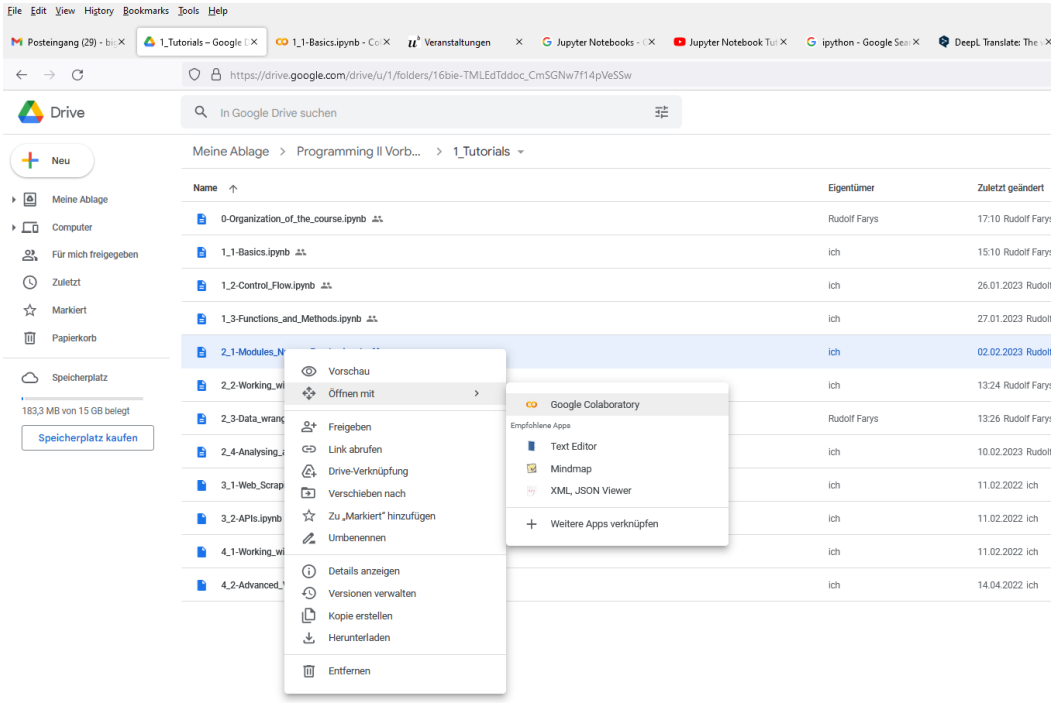
1. Google Colab

To work with Colab, you first need to log in to your Google account. Then you can create, open or upload notebooks directly here: https://colab.research.google.com/notebooks/. These will then be stored on Google Drive.

You can also create, open and edit the files directly on Google Drive. Select “Save a copy in Drive” to add a copy of an existing notebook (e.g. a course tutorial notebook) to your Google Drive:



You can open and modify your notebooks directly from Google Drive:



If you would like to know more, you can find a brief introduction to Colab here:

- https://colab.research.google.com/notebooks/intro.ipynb#scrollTo=GJBs_flRovLc

Test: Add a copy of the following to your Google Drive:

- https://colab.research.google.com/drive/1ZfviQ3TIBNtObg0jvyeZTCU6sbUzHfd9?usp=sharing

If you are able to perform the instructions provided in the notebook, everything works fine!

2. Anaconda & Jupyter Notebook

Anaconda is a data science platform for Python and R that conveniently combines different applications (including Jupyter Notebook) and simplifies the installation of packages. You can use the following link to download it:

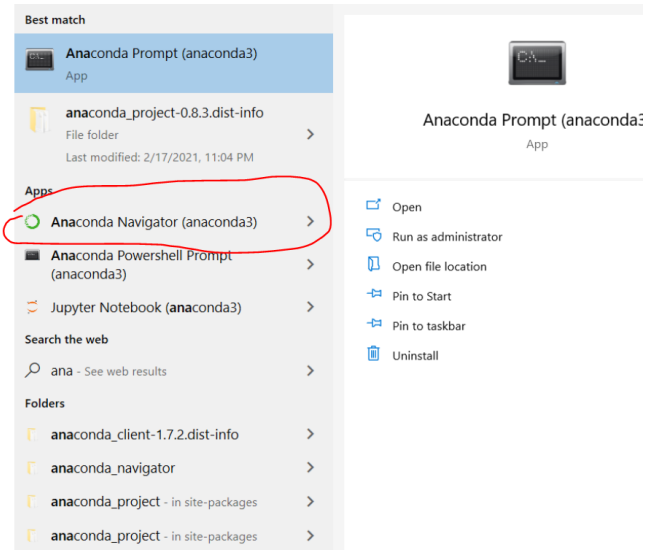
- https://www.anaconda.com/products/individual

Select the version that is appropriate for your computer and follow the steps in the installation procedure. The default options should work well.

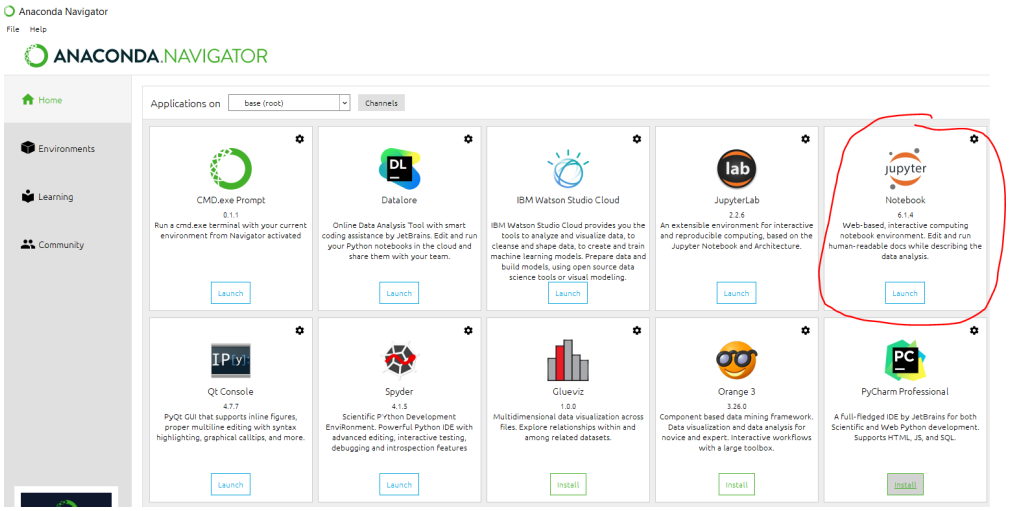
On Youtube, you can find many useful tutorials about installing and using Anaconda:

- Windows: https://www.youtube.com/watch?v=5mDYijMfSzs
- Mac: https://www.youtube.com/watch?v=daVgEXjv6DE

Once the installation is complete, you can open the «Anaconda Navigator»:

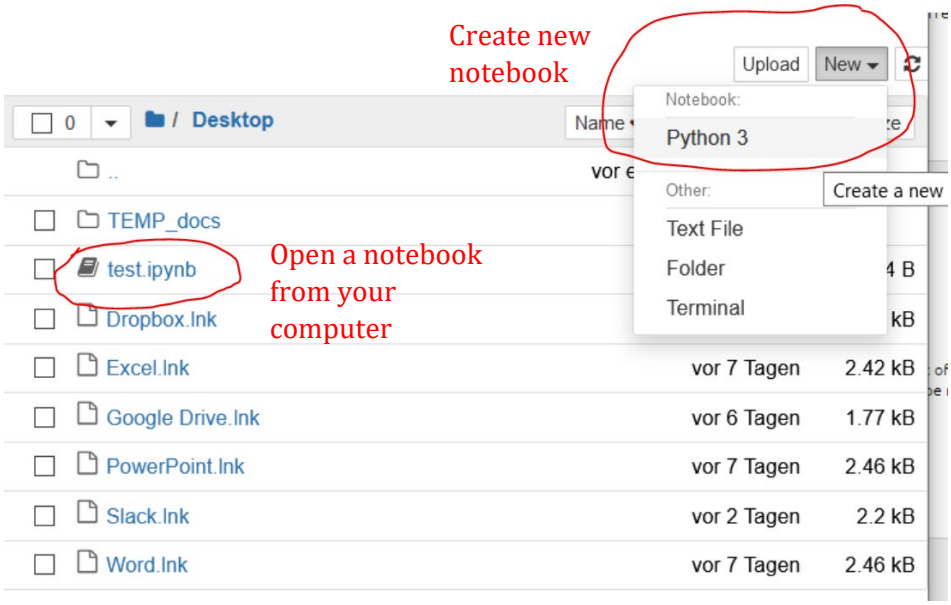


There, you can start Jupyter Notebook:



Sidenote: You can also use the Anaconda Prompt command line and start Jupyter Notebook through the command `jupyter notebook`.

Now you can open the notebooks that are saved on your computer (by clicking on them) or create new notebooks:



Important: Notebooks have the file extension .ipynb and only they can be opened with Jupyter Notebook. To open, modify and execute regular Python files (extension .py) you can use applications such as Pycharm or Spyder.

Test: Save the following notebook to your computer and open it with Jupyter Notebook:

- https://colab.research.google.com/drive/1ZfviQ3TIBNtObg0jvyeZTCU6sbUzHfd9?usp=sharing

If you are able to perform the instructions provided in the notebook, everything works fine!