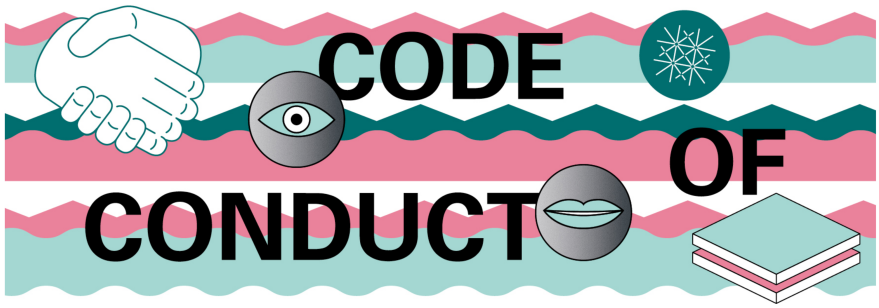
Lecture Week 1

1. Jupyter Notebook and Python Scripts

- aim of the course
- lecture and exercises
- ECTs
- quick introduction: Jupyter-Notebook and Python Script



Be an active part of this culture.
Live the values of our Code of Conduct!

Code of Cunduct Help

What do we want to teach you?

- learn to work with python
- good documentation
- working with GitHub
- AI assisted programming

- learn the basics with us
- explore and learn more on your own

→ provide you a foundation for further learning in python and related technologies

Lecture and Exercises

- 90min a week
  - 45 min: lecture (therory and examples)
  - 45 min: solving excersies, asking questions
- hand in excersies via GitHub (next week)
- exercises markt as *Bonus* or * are not mandatory

ECTs

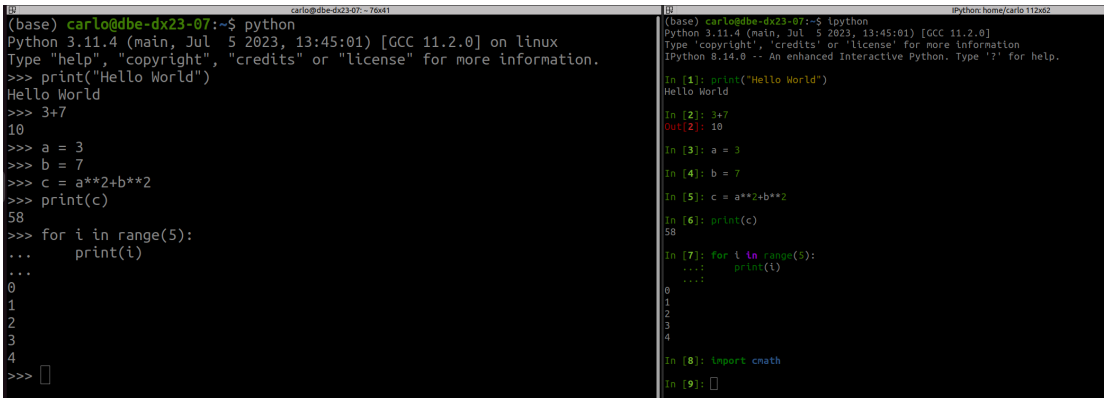
- 3 ECTs
- hand in exercises (200 Points)
- Quizes during the semester
- Maybe a programming task

Overview

- Who uses Linux, Windows, and Mac?
- Who has already executed a python script?
- Who has already written a program?

https://adam.unibas.ch/goto_adam_svy_1642247.html

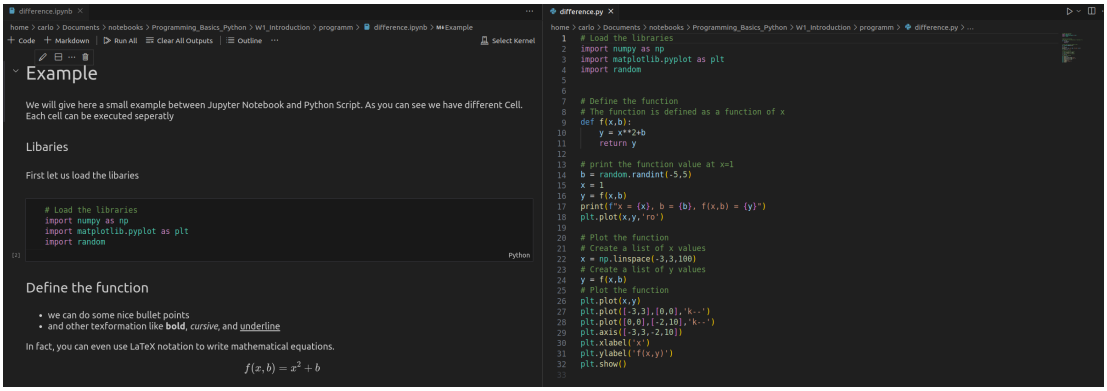
1.1 Python and iPython



See example video here (4:23min).

Feature/Aspect	python	ipython
Interface	Basic command line.	Advanced with auto-complete.
colors	no colors	colorcoded for better overview
Run Python-Script from terminal	`python [name].py`	`ipython [name].py` or `%run [name].py`
Run Jyper Notebook from terminal	-	`ipython [name].ipynb` or `%run [name].ipynb`

1.2 Jupyter-Notebook and Python Script



Feature/Aspect	Jupyter Notebook	Python Script
File Format	`.ipynb`	`.py`
Ease of Use for Beginners	High (interactive nature)	Medium (lack of immediate feedback)
Interactivity	High (Cell-by-cell execution)	Low (Runs from start to finish)
Suitability	Data analysis, Academia	General programming, Automation
Documentation	Rich (Supports Markdown, LaTeX, etc.)	Plain text only
Content Support	Rich (Images, videos, equations)	Code only
Scalability	Best for small to medium projects	Suitable for all scales

Feature/Aspect	Jupyter Notebook	Python Script
Version Control	Difficult (due to JSON format)	Easy (plain text format)

You can find an expleantion in this three videos: Example_1 (4:52min), Example_2 (5:51min), and Example_3 (3:44min).

1.3 Editors

Jupyter Notebook: https://jupyter.org/

- Small Introduction: Open (2:37min), Example (3:38min)

VS Code: https://code.visualstudio.com/

- Small Introduction: Example (12:03min)

PyCharm: https://www.jetbrains.com/pycharm/