Python Basic Programming – Learning Materials

The **Python Basic Programming** course is a **self-paced** beginners course in Python programming. It assumes **no** prior programming skills. It teaches students – ground up –basic Python programming skills, centered around *four* concepts:

1. Variables
2. Control Flow
3. Code Organization
4. Basic Plotting

The notebooks (the files with `.ipynb` extension) you'll find in this course are intended as **Learning Materials**; they demonstrate coding concepts and allow interactive experimenting by the student. A student can run code snippets shown in the materials *inside the same notebook*, and will thus be able to experiment with the Python code snippets – *live* – , thereby learning how the code works –*through interaction with the materials* – .

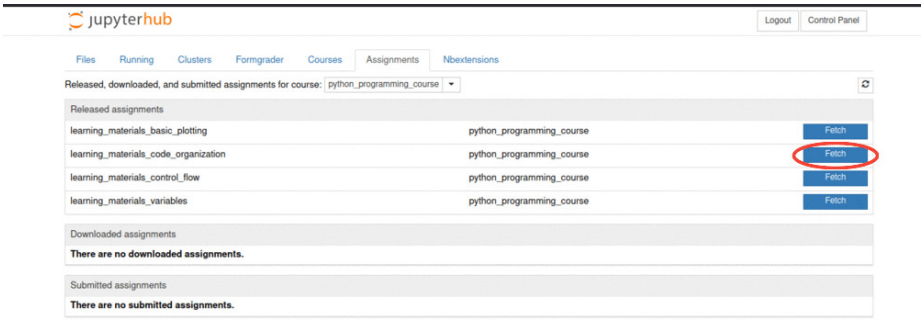
In the notebooks with the Learning Materials: technically speaking, the code is organized in the form of a **Jupyter Notebook**. A Jypyter Notebook is an interactive workbook, organized as a series of consecutive runnable *cells*. We use (clusters of) such cells to:

1. introduce *a new code concept*, or application of coding concept, in words (i.e. as text);
2. present a Python code snippet to demonstrate the concept or application. Code is *runnable*, producing *output*, and can be *modified by the student*, so as to learn all the details and study the effects of changes and variations. Experiments are usually announced in the notebook by a **DO THIS:** directive, prompting students for action
3. present overviews, diagrams, schemes, hints, remarks, etc. in a way that supports for easy lookup in experiments and later on.

The learning materials and entrance tests can be accessed through the `Assignments` tab, further detailed in section *How to acquire the course files* below.

Course files and dashboards

After logging in to the JupyterHub server, the entrance test and learning materials will be available as assignments. To access them, first switch to the `Assignments` tab. You can then see the learning materials as assignments. Click on the `Fetch` button beside the assignment to download it into your directory as shown in the screenshot below:



Once fetched, the assignments can be viewed in the `Files` tab and you can access them and edit them.

Each of the learning materials folders has a file - `CT_concepts_dashboard.ipynb` with a single cell. Upon running this cell, an HTML file will be generated in the same folder with a dashboard for the corresponding Computational Thinking concepts, along with an explanation of each concept and feedback. These dashboards can help you check your progress and decide if you are ready to move on to the next module.

This course tracks the learning process through micro-interactions such as copy, paste, cell runs, etc. In order to enable the tracking of these micro-interactions, each of the learning materials notebooks contains a cell that begins with `%%html`. *Please ensure to run this cell before proceeding with each notebook!*

After each round of completing the learning modules, an overview dashboard is available where you can check on your own progress and find some advice on how to improve. This dashboard can be accessed via the file `CT_practices_dashboard.ipynb` with a single cell. Upon running this cell, an HTML file will be generated in the same folder.

Note: The Computational Thinking practices uses logs that are not available in real-time, owing to the limitations of the technology used. The updated log files will be uploaded every 3 hours on weekdays at 10AM CEST, 2PM CEST and 6PM CEST. In case you would like to view the dashboard at any other moment of time, please drop me an email at b.agarwal@student.tudelft.nl and I will get back to you at the earliest possible.