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Business Analytics & Machine Learning
Python tutorial

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In many of the upcoming exercise sheets, we will include Python-based exercises which give you the opportunity to get hands-on experience. They are meant to complement the theoretical aspects which are provided in the lectures.

This exercise sheet should help you to get started with Python. First, we will guide you through the setup of a Python environment which includes most of the required packages for the course. The second exercise gives you the opportunity to get familiar with the programming language. Of course, we can only cover a small portion of what makes Python "Python"; so we encourage you to have a look at one of the many Python tutorials out there and dive deeper.

For students who are already well-versed in Python, this sheet might not provide many new insights. Still, we kindly ask you to skim through the provided files to make sure you are prepared for the semester.

Exercise P.1 *Python Setup*

Please have a look at the provided Markdown (`.md`) file and follow the steps which are described there. If you are already very familiar with Python and virtual environments, feel free to use your own setup, but make sure to install all required packages for the course. Note that we cannot assist you in case there are difficulties with a custom setup, though.

What is a Markdown file?
Markdown files are conceptually similar to regular text files (such as `.txt` files). However, they provide some syntax which allows simple text formatting, e.g. bold text, headings, tables, etc. Markdown files are not executed and you can usually open them with any text editor, e.g. Windows' built-in "Editor". Only with a specialized editor, they can show their strength, though. Text formatting is only shown if your editor supports it. "Visual Studio Code" and "PyCharm" are two examples.

Exercise P.2 *Python introduction*

We provide a Jupyter notebook which introduces the basic concepts and syntax of Python. You should be able to view and execute this notebook after having successfully completed the *Python Setup*.
Use the command

```
jupyter notebook <path to BAML/>
```

to start a Jupyter session. In the opened browser tab, navigate to the notebook and open it.

What is a Jupyter notebook?
Jupyter notebooks are a combination of text and code: They support Markdown for text and Python for coding. In contrast to pure text files, notebooks can be executed by letting a Python kernel run their code. A great advantage of notebooks is that you can execute "cells" independently while having a shared variable memory. This can be used to interactively write and run code while documenting everything with natural language.