

A(E)3M33UI — Exercise A: Python and friends.

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1 Python Info

Python is *interpreted, dynamically typed* programming language:

- Versions: 2.7.x (current 2.7.9), **3.4.x** (current 3.4.2)
- <http://python.org>, <http://docs.python.org>
- Suggested textbook: Mark Pilgrim, *Dive into Python* (available in PDF).
- V české verzi knihu vydalo sdružení CZ.NIC (knih je dostupná v PDF).
- Working interactively in shell vs. writing and running scripts.
- Python packages and modules, **import**.
- Python scientific stack: Numpy, Scipy, matplotlib, pandas, ...
- Python distributions: “official” Python, Canopy, Anaconda, **pyzo**, ...

2 Python basics

For a basic use of Python you should know about the following topics:

- Python as a calculator, interactive use via Python shell
- Variables and types of values
- Data structures: list, tuple, dictionary; **zero-based indexing**
- The role of **indentation** in Python: **for**, **if**, **while**
- Functions, named arguments, default argument values.

3 Homework 1

You will not learn to use Python, if you will not use it. You should spend 6 hours of home work per week preparing for the course. Use these 6 hours in the next week to learn about the above mentioned topics, read the book or other tutorial and **try the examples yourself!**

You can use the *Dive into Python 3* book. The important topics are covered in the following chapters and sections:

- **Chapter 1: Your first Python program**
Functions and their arguments, docstrings, importing modules, everything is an object, indenting code, everything is case-sensitive, running scripts.
- **Chapter 2: Native datatypes**
Especially lists, tuples, dictionaries (at least basic usage).
- **Chapter 11: Files**
Opening and closing text files, with statement, specifying an encoding, reading line by line. For now, you can ignore binary files.

If you still have some time left, learn about the following:

- Chapter 4: Strings
Interesting reading, but we will need probably only a few string methods, like `str.split()`, `str.strip()`, etc.
- Chapter 7: Classes and iterators
This particular topic is IMHO not explained very nicely in the book. We will probably use classes only a few times and in a very simple way.

Each language has some unique features that distinguish it from the others. In case of Python, these are IMHO described in

- Chapter 3: Comprehensions, and
- Chapter 6: Closures and generators.

There is no need to hand-in or upload anything, but **I strongly urge you to put your hands on Python**, try it, explore it, and **ask questions on the forum!**