Advanced Python (code: PYTHON-ADV)

Overview

This training focuses on teaching the **advanced possibilities** of the Python language. During the course we will venture far beyond writing simple scripts and we will study the secrets of *profiling*, *concurrent programming* and *metaclasses* usage.

We will discuss *efficiency*, both memory and computational, we will take a look at some less known but very powerful Python libraries. Completing our **Advanced Python** course will give you solid foundations to implement real *business applications* using Python language. All classes include **many practical examples** and exercises, to illustrate the discussed issues.

All our trainers are both experienced teachers and experienced Python developers.

Duration

3 days

Agenda

1. Iterators and context managers
   — Introduction to iterators
   — Passing data to iterators
   — Practical examples
      — Memory efficiency
      — the _itertools_ module
      — modularizing the code
   — Iteration protocol
      — Implementing your own iterator
      — Context managers and _contextlib_
2. Encodings, serialization, binary data
   — Unicode and encoding methods
   — Correctly managing binary and text data
   — Other text codecs
   — Reading binary structures
   — Serializing Python objects with _pickle_
      — Pickle's safety
      — Serializing your own data types
3. Types, classes, metaclasses
   — Defining types in runtime
   — Introspection of objects and classes
   — When to use metaclasses
   — Examples
4. Testing
   — How tof write correct tests
   — Libraries used for testing
      — standard _unittest_
      — _nose_ and _tox_
   — Checking code coverage
      — coverage.py
      — Line coverage vs branch coverage
5. Advanced tools
   — The IPython interpreter

- — Virtual environments and virtualenv
- — Python's built-in debugger - pdb
- — Debugging Python from gdb
6. Profiling
  - — Types of profilers in Python
    - — Built-in profiler
    - — Statistical profiling
  - — Interpreting Python profiles
  - — Optimizing Python code
  - — Decompiling, reading opcode, the _dis_module
  - — Memory profilers
    - — _objgraph_
    - — _dowser_
    - — _heapy___
7. Concurrency
  - — Introduction to GIL
  - — Common problems with parallel execution
    - — Locks
    - — Mutexes and semaphores
    - — Conditions
  - — Libraries for concurrent programming
    - — using threads, the _threading_module
    - — using processes, the _multiprocessing_ module
  - — Using concurrency to make programs faster

During our courses we use the latest Python version (branch 2). In case of on-demand courses, it's possible to use any version required by the Client, according to his needs.

Target audience and prerequisites

Basic knowledge of the Python language.

Certificates

Course participants receive completion certificates signed by ALX.

Locations

- — Warsaw (English) – Jasna 14/16A
- — Online (English) – your home, office or wherever you want
- — any other location (London, UK, EU) on request

Price

990 EUR

The price includes:

- — course materials,
- — snacks, coffee, tea and soft drinks,
- — course completion certificate,
- — one-time consultation with the instructor after course completion.