Python: Advanced

Hands-on course of 4 days - 28h
Ref.: PYA - Price 2024: CHF2 390 (excl. taxes)

EDUCATIONAL OBJECTIVES

At the end of the training, the trainee will be able to:

Rigorous implementation of recognized design patterns

Use the advanced techniques of the Python language: Context Manager, metaclasses, closures, advanced functions

Optimize the performance of your programs with the help of monitoring and parallelism

Package and deploy Python artifacts

Exploit libraries that help make the language a success: scientific computing, Artificial Intelligence, XML, networks

TEACHING METHODS

The course is made up of theory, illustrated by examples of code, then strengthened by creating a mini-project (70% hands-on work).

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@ORSYS.fr to review your request and its feasibility.

THE PROGRAMME

last updated: 07/2021

1) Important reminders about the language.

- Assignment by reference and mutable/immutable data types.
- Passing arguments, default values and local variables.
- Class and instance variables.
- Advanced slices and data structures.
- Introspection.
- Advanced elements of control structures: the else clause of "for, while, try/except" statements.

Hands-on work : Optimization: intersection of lists and computing algorithm complexity.

2) Advanced features

- Advanced use of decorators (generation to consumption, consumer pipeline).
- Decorators and design patterns.
- Closure.

Hands-on work : Chaining data consumers. Subscription to events via decorators.

3) Advanced Object-Oriented Programming

- The properties.
- Iterators.
- Multiple inheritance and its shortcomings.
- Context managers.
- Abstract base classes and methods (ABCs).
- Metaclasses.

Hands-on work : Implement a metaclass to create singleton classes.

4) Deployment and quality

- Installing third party libraries (pip, easy_install).
- The Python Package Index (PyPI).
- Packaging your libraries (distutils, setuptools).

- Deploying a standalone environment (virtualenv and buildout).
Hands-on work : Packing a library and putting it on Pypl.

5) Parallelism: Optimizing the performance of your programs

- Profiling your programs with Timeit and cProfile.
- Parallelization: Avoid multithreading and go for multiprocessing.
- Distributed computing with the Celery library.
Hands-on work : Distribute and consolidate (Map Reduce) computing with Celery.

6) Libraries that help make the language a success

- Scientific computing and statistics with Numpy, Scipy, Matplotlib and Pandas.
- Artificial Intelligence and learning algorithms with Scikit-Learn.
- Finding information in XML files with ElementTree.
- Network: tcp relay with Twisted and SNMP monitoring with PySNMP.
Hands-on work : Extracting information from XML log files, filters and statistics on the collected data and graphical representation using information trends.

DATES

REMOTE CLASS
2025 : 18 Feb, 20 May, 26 Aug,
09 Dec