

Advanced Python Programming

Level: intermediate / advanced

Length: 35 - 40 hours

Course Objective: approach more advanced issues regarding the language and use of it in several context

What You Will Learn

- Language related issues: Python' support for object oriented programming like metaclasses & abstract base classes, generator functions expressions, decorators, context managers
- Implementation of several design patterns in Python
- Use of Python in concurrent programming, XML processing, work with databases, work with regular expressions

Who Can Attend: Python programmers who want to study interesting aspects of the language, how it is used for solving some common problems

Prerequisites

- Knowledge of Python at least at medium level
- Comfortable with XML, how it is used
- Basics of working with databases, familiar with a particular product (Oracle, MS SQL Server, etc.), familiar with SQL language
- Familiar with sockets

Required facilities: VGA projector, white board, computers with Python installed and an IDE (PyCharm)

Related courses: Fundamentals of Python

Description

This course is a continuation of “Fundamentals of Python”, the attendees will enhance their skills regarding Python by studying more advanced language constructs and by applying Python to solve problems in several common contexts.

The course is highly interactive, with focus on practice.

Contents

1. Introduction, outline the main language elements.
2. Functions
 - 2.1 Callables in Python: functions, lambda expressions, functors
 - 2.2 Decorators – predefined & user defined; applied to functions and classes, ways to implement them
 - 2.3 Context managers – predefined & user defined; how to use them in order to automate the applying of actions
 - 2.4 Generators: functions & expressions; strategy of lazy producing the information; consuming the info with the standard for
3. Classes
 - 3.1 Special functions – how Python uses them to support standard mechanisms; how user defined classes get a standard behavior by defining such functions
 - 3.2 Metaclasses – standard & user defined; the mechanism of runtime producing classes, how to benefit of metaclasses
 - 3.3 Class factories – how to construct a class based on runtime information
 - 3.4 Abstract Base Classes – ABC; particularities & usage in Python of abstract classes
4. Using Python
 - 4.1 Regular expressions – use of module re for mining or validate the text data
 - 4.2 XML processing – use of xmltree module
 - 4.3 Working with relational databases – use of standard Python interface to working with this kind of databases
 - 4.4 Processes and threads – basics of concurrent programming: how they work, how are used to benefit of hardware, standard modules multiprocessing & threading