

training code: PYTH01 / ENG DL 5d / EN

Programming basics in Python language



Purpose of the training

The training is intended for people who would like to learn how to design and develop applications using Python language.



Benefits of completing the training

Students are acquainted with the advantages of programming in high-level Python language, particular emphasis is put on working out instinctive ways to solve issues encountered during work with that language. Theoretical and practical knowledge gained during training constitutes a solid basis for further development on the programmer's path.



Expected Listener Preparation

Recommended knowledge of programming language (structural and object) and knowledge of Linux/Unix/Windows environment.



Training Language

- Training: English



Duration

5 days / 35 hours

Training agenda

1. AN INTRODUCTION TO THE PYTHON LANGUAGE

- what is Python?
- a brief history of the language
- philosophy of language (the Zen of Python)
- first application
- installation of the environment
- working in interactive mode (interactive shell)
- choice of integrated environment (IDE)

2. BASIC CONCEPTS

- identifiers
- data blocks
- comments
- variables
- assignment instructions
- built-in primitive types and operators
- control statements – conditional statements
- control statements – loops

3. COMPLEX DATA TYPES

- character strings
- formatting strings
- operations on texts
- tuples
- ranges
- lists
- access to sequence elements
- operations on sequences
- sets
- operations on sets
- dictionaries
- operations on dictionaries

4. FUNCTIONAL PROGRAMMING

- functions – introduction
- defining functions
- function parameters

- functions with a variable number of parameters
- scopes of variables and the LEGB rule
- functions as arguments
- lambda functions
- dynamic typing vs. static typing
- documenting the function code

5. CLASSES AND OBJECTS

- the OOP paradigm (Object-Oriented Programming)
- classes and objects – basics
- class attributes
- methods
- class instances
- instance attributes
- attribute access control
- defining and using properties
- data models
- inheritance
- attribute resolution order
- magic methods

6. MODULES AND PACKAGES

- module objects
- import statement
- module attributes
- from statement
- main program
- packages
- package attributes

7. FILE OPERATIONS

- context manager
- io package
- opening files
- closing files
- attributes and methods of file objects

8. EXCEPTIONS

- exceptions – theory
- exception handling
- standard exception classes
- custom exception classes
- assertions

9. IMPORTANT BUILT-IN MODULES AND LIBRARIES

- built-in types
- built-in functions
- standard library
- built-in modules
- popular libraries