Python II - advanced techniques

Course code: PYTHON_ADV

The course is designed for all programmers who have programming experience in Python at the PYTNON_INTRO course level. In the course, you will learn more advanced elements of the language such as OOP, using generators and iterators, Lambda expressions, anonymous functions, decorators, JSON and many other practical and necessary topics for Python developers.

For whom the course is intended:

- Programmers who have programming experience in Python at the PYTNON_INTRO course level
- Experienced developers who have experience with other programming languages and want to switch to Python. In this case, it is advisable to familiarize yourself with at least the complete basics of the language in advance.

Required entry skills

- Basic knowledge of Python at the level of the PYTHON_INTRO course

Teaching methods

- Expert interpretation with practical examples, exercises on computers.

Studying materials

- Presentation of the material discussed in printed or online form.

Syllabus

A quick recap of Python basics

- History and basic features of Python
- Installation and development environment
- Using multiple versions of CPython
- Pure function and variable scope
- Mutability and ummutability of objects
- Using collections
- Use of *args and **kwargs

Collection Comprehensions

- Sheet Comprehensions
- Set Comprehensions
- Dictionary Comprehensions

Modules, packages and distribution of applications (modules and packages)

- Objects, Namespaces and Scope
- Modules
- Packages
- Virtual Environment (external)
- Using Pip
- Freezing
- Using PyPi
- Packaging and Distribution

PPE techniques

- Class o object
- Using self
- Instance methods
- Class methods
- Static methods
- Inheritance, polymorphism

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- Properties
- An object like a dictionary

Error Handling
- Exception handling
- Raising Custom Exception

Generators and Iterators
- Iterators, iterables and sequences
- Magic function
- iter
- ()
- Magic function
- next
- ()
- Custom iterable class
- Generator function
- yield return

Fundamentals of functional programming in Python
- Nested functions
- Functions as an object
- Keyword non-local
- Closures
- Anonymous / Lambda functions

Magic methods
- String Conversion
- Arithmetic Operations
- Comparison Operations
- Conversion

Decorators
- Built-in Decorators
- Standard library Decorators
- Custom Decorators

Resources and Persistent Storage
- Work with resources (try / finally)
- Context manager and magic methods
- enter
- and
- exit
- Working with files files (read, write)
- Working with Python pickle formats,
- Key-value database shelf
- JSON, CSV, XLSX

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