Python I - introduction to programming

Course code: PYTHON_INTRO

The course is designed for beginners who want to learn the basics of the modern, elegant and highly efficient Python language. In this course, you will learn the basic features of the language, the use of functions and data structures, and the basics of object-oriented programming in Python. If you have no programming experience, we recommend first taking the course Introduction to Algorithmization and Programming [PRG]

Annotation:

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For whom the course is intended:

- For beginner developers who want to learn Python programming.

Required entry skills

- Basic knowledge of algorithms and programming at the level of the PRG course, or experience with programming in another language

Teaching methods

- Expert interpretation with practical examples, exercises on computers.

Studying materials

- Printed presentations of the discussed material.

Syllabus

Introduction

- History and basic features of Python
- Installation
- Code writing conventions, syntax basics
- Development environment

Basic data types and variables

- Strings
- Numbers
- Boolean
- Operators for working with strings
- Arithmetic operators
- Comparison operators and logical operators
- Conversion
- Variables
- Annotation of types and hints
- String formatting

Program run control

- The if command
- while and for commands
- Range, break and continue

Function

- Definition of functions and procedures
- Passing parameters

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- Standard parameter values
- Scope of variables
- Recursion

Program debugging (debugging) and catching exceptions
- Debugging the program
- Principle of error handling in Python
- Exception mechanism
- Commands try, except, raise, finally

Basics of working with collections
- Sheet (list)
- Indexing and slices
- Variable vs. immutable types
- Tuples
- Set
- Dictionary
- String operations like a collection
- Introduction to List Comprehension

Built-in Functions
- Overview of basic built-in functions
- Functions for working with strings
- Mathematical functions
- Conversion function

Modules and Packages
- The principle of modules for creating libraries of functions
- Standard modules
- Beep
- Virtual environment (external)

Basics of PPE
- Basics of PPE
- Creating classes
- Using constructors
- Create an instance

Working with files
- Basics of working with resources (try / finally)
- Basics of working with files files (reading, writing)

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