Kotlin - Introduction into programming

Course code: KOTLIN1

The course offers participants an introduction to the new modern language Kotlin. The Kotlin language is a modern statically typed object-functional language that uses the extensive Java ecosystem while bringing a number of advanced language constructs. The language is fully compatible with the Java language. Kotlin makes it possible to create mixed projects in which the existing parts written in Java are preserved and further development is continued in a modern object-functional way. The course explains the construction of the language, basic libraries and how to use the language for creating server applications and mobile applications.

For whom the course is intended:

- For Java developers who are considering moving to a more modern development tool, but want to maintain full compatibility with components developed so far.
- Programmers working in one of the scripting languages who want to take advantage of the robustness, safety and efficiency of a statically typed object-functional language.
- For developers who want to develop mobile applications on the Android platform

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

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

Syllabus

Fundamentals of functional programming

An overview of the Kotlin language

- Language conventions
- Basic types
- Application structure
- Control structure

Classes and objects

- Heredity,
- Properties of classes,
- Interface
- Visibility modifiers
- Expansion
- Data classes
- Closed classes
- Generics
- Nested classes
- Enumerations
- Object expressions and declarations
- Delegation

Function

- Function declarations
- Implicit parameters
- Nominal parameters

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- Procedures
- Simple functions
- Variable number of parameters
- Calling functions with infix notation
- Local function
- Generic functions
- Inline function
- Extension functions
- Higher order functions
- Functions with tail recursion

Lambda expressions and anonymous functions

- Function type
- Syntax of lambda expressions
- Anonymous function
- Closures
- Functional literals

Other

- Destructive declaration
- Ranges
- Casting
- Equivalence of values
- Operator overloading
- Null security
- Exceptions
- Annotation
- Reflection
- Server applications in Kotlin

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