

Advanced Kotlin training

2 days (14 hours)

Presentation

Did you enjoy our initial training course? You're going to love Kotlin in advanced mode, with our trainer bringing you all his experience on the subject. 2-day bootcamp in commando mode.

This enriched Kotlin training course introduces you to all the features and subtleties of the language, and enables you to write Kotlin code right through to production.

We cover object- and protocol-oriented code: functions, lambdas and properties, making the most of Kotlin's new features.

Then we move on to the security aspects. We show you how to deconstruct expressions and write your own. We also take you through important topics such as testing, concurrent programming, microservices and much . By the end of this course, you'll be able to create your own professional-quality Kotlin applications & services.

As in all our training courses, this one will introduce you to the very latest version of Kotlin (at the time of writing in February 2019: [Kotlin 2.1](#) & mobile [Android13 API 33](#)).

Objectives

- Writing your own unit tests in Kotlin
- Using microservices with Kotlin
- Understanding concurrent programming with threads and asynchronism

Target audience

- Developers, Architects, Lead Developers.

Prerequisites

- Have completed our [initial Kotlin training](#)
- Basic knowledge of Java / JVM or object-oriented languages
- [Test My Knowledge](#)

Technical requirements

- Install IDEA
- Install Android Studio
- The latest version of Java

Further information

- Get started in mobile programming with our [comprehensive Android Studio training course](#)
- Become embedded expert with our [advanced Android Auto training course](#)

Program of our Advanced Kotlin training course

Language development

- THE BASICS
 - PACKAGES
 - CONTROL FLOW
 - RETURN AND JUMPS
- CLASS AND OBJECTS
 - INHERITANCE VERSUS COMPOSITION
 - VISIBILITY MODIFIERS
 - NESTED CLASS
 - DELEGATION
 - DELEGATED PROPERTIES
- FUNCTION & LAMBDAS
 - INLINE FUNCTIONS
- LANGUAGE ADVANCES
 - ANNOUNCEMENTS
 - REFLECTION
 - TYPE SAFE BUILDERS
 - DYNAMIC TYPE
- TEST
 - PROJECT CONFIG
 - PROPERTY TESTING
 - CUSTOM TESTING
 - TABLE DRIVEN TESTING
 - NON DETERMINISTIC TESTING

Kotlin and Microservices

- Definition
- Disadvantages
- When should you use microservices?
- Lagom
- Service definition
- Setting up a Lagom service

Concurrent programming : Concurrency

- Threads
 - Blocking
 - Creating a thread
 - Stopping a thread
 - Thread interrupts
 - CPU-bound versus I/O-bound
- Deadlocks & livelocks
- Executors
- Race conditions
 - Monitors
 - Locks
 - Read-write locks
 - Semaphores
 - The bounded buffer problem
 - Competitor collections
 - ConcurrentHashMap
 - A blocking queue
 - Atomic variables
 - CountdownLatch
 - Cyclic Barrier
 - Non-blocking I/O & asynchronous programming
 - Future

Kotlin Android (Complementary Module+ 1 day for team training only)

- Introduction to Android Studio
- Setup Kotlin & start your first App
- Code / Resource Files
- Android studio File Structure
- String.xml, Manifest and Android Studio File Structure
- Create your user interfaces
 - TextViews, EditText, Buttons, CheckBoxes, UI Widgets...
- Installing the Kotlin Plugin
- findViewById
- Kotlin Extensions
- OpenWeatherMap API
- Class Extending
- String Formatting
- Data Classes

- Retrieving JSON from OpenWeatherMap
- Presentation: Presenting Data
- with()
- Null Safety
- Lists
- Filtering Lists
- Finding List Count and Average
- No More Nulls
- Kotlin Extension Functions

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.