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Kotlin training with Android
5 days (35 hours)

Presentation

Our Kotlin training course will enable you to update your Java applications without having to change the entire code. Kotlin is a tool used for mobile application development. It features security functions for nullity and immutability, making Android applications sound and efficient.

During our Kotlin with Android training course you'll learn about the architecture of an Android project, Kotlin syntax, object-oriented programming, data types, lambda expressions and handling graphical interfaces.

Thanks to the tips and tricks presented in our training course, you'll be able to create applications quickly and with as few mistakes as possible.

As always, we'll be presenting the latest version of Kotlin (Kotlin 1.7 & mobile Android12 API 33).

Objectives

- Using Android Studio and IntelliJ to develop applications
- Mastering Kotlin syntax
- Exploiting APIs and lambda expressions with Kotlin

Target audience

- Developers
- Mobile developers
- Architects
- Lead Developer

Prerequisites

Technical requirements

- Android studio installed

Kotlin with Android training program

IntelliJ/Android Studio

- Discovering the working environment (Android Studio, Gradle)
- Optimization and tuning for greater programming comfort
- Android project architecture
- Read a StackTrace, use the debugger, the profiler...
- Launch your application on an emulator and on a physical phone or tablet.
- Using Gradle and adding libraries

Kotlin syntax

- Hello World
- Writing syntax, variables and methods
- Expression function, named and default parameters.
- Nullable type and NullpointerException handling
- when, Elvis Operator, if expression
- Interoperability with Java
- Top level function
- Table and list
- New for loop
- Even and Triple

Object programming in Kotlin

- Syntax, attributes, constructors,
- Encapsulation, polymorphism
- Inheritance and extension
- Safe cast and Smart Cast

Lambda expression

- How it works
- High order function and inline
- Lambda and collections
- Map, filter, Let, Apply, Also, Run

HMI

- How Android GUIs work
- Dynamically manipulate the graphical interface
- Functioning and lifecycle of activities
- Communication between 2 activities
- Menu, Dialog and Toast
- Display immediate and delayed notifications.
- Style, theme and internationalization
- Enhance your application's user experience with Material Design and animations

Using an API

- Exception handling
- Using a phone sensor: Location
- Adding external libraries
- Making a web request
- Parsing JSON (serialization / deserialization)
- Using an API
- Performing an asynchronous task with a Thread
- Managing failures and waiting graphically

Google Maps

- Show a map
- Set a marker, move the camera, display its position
- Modify Windows info

Projet fil rouge

- Display the weather at your location
- See the ISS move on a map

Depending on your wishes and the time available, other modules are also possible

- RecyclerView for list display

- FireBase integration
- Data persistence
- Published on Play Store
- Create a service that starts when the phone is booted (Service + Broadcast)
- Fragment
- Video capture and bar code reader
- Bluetooth

Add-on module: Advanced Kotlin

- Control flow
- Android Studio
- Smart Casts
- JVM
- Inline Classes

Companies concerned

This training 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 with regard to 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, with 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.