

### Kotlin for Android Development

#### Course Summary

##### Description

The Kotlin for Android Development Course is a hands-on introduction to Kotlin using the Android Jetpack libraries. The course covers through the Kotlin essentials. It also connects the language to an actual application which uses the Android Jetpack architecture components. This completely hands-on course encourages students to learn by building increasingly more sophisticated and meaningful mobile applications for Android. By the end of the course, each participant will build their own complete Android application incorporating most of the key aspects of the platform. We will build a Twitter-like microblogging app for Android.

##### Topics

- Kotlin
- Coroutines
- Jetpack
- AndroidX
- Architecture components
- Room
- WorkManager

##### Audience

This course is designed for Android developers interested in learning Kotlin. It is valuable to both novices as well as gurus (who already have experience in developing mobile applications for other platforms).

##### Prerequisites

To take this course, you should already be familiar with developing apps for Android and you should be able to answer the following questions:

- What is an activity/service?
- What is an activity lifecycle?
- What is the difference between a class and an object?
- What is the difference between static and non-static field?
- What is the difference between extends and implements keywords?
- What is an anonymous inner class?
- What is the purpose of @Override?

##### Duration

Three Days

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### Course Outline

#### I. *Kotlin*

- A. Basics
- B. Syntax
- C. Basic Types
- D. Packages and Imports
- E. Control Flow
- F. Returns and Jumps
- G. Classes and Inheritance
- H. Properties and Fields
- I. Interfaces
- J. Visibility Modifiers
- K. Extensions
- L. Data Classes
- M. Sealed Classes
- N. Generics
- O. Nested Classes
- P. Enum Classes
- Q. Objects
- R. Functions and Lambdas

#### II. *Coroutines*

- A. Basics
- B. Cancellation and Timeouts
- C. Channels
- D. Composing Suspending Functions
- E. Coroutine Context and Dispatchers
- F. Exception Handling
- G. Select Expression

#### III. *Jetpack*

- A. Android KTX:
- B. Extension functions
- C. Extension properties
- D. Lambdas
- E. Named parameters
- F. Parameter default values
- G. SharedPreference lab

#### IV. *AndroidX*

- A. Layouts
  - 1. ConstraintLayout
  - 2. Guidelines
  - 3. Activity addons (interfaces)
  - 4. Dark mode, themes and attributes
  - 5. Activity Add on

#### V. *Architecture components*

- A. ViewModel and ViewModelFactory
- B. LiveData and LiveData observers
- C. Data binding with ViewModel and LiveData
- D. LiveData transformations

#### VI. *Room*

- A. Entities
- B. DAO

#### VII. *WorkManager*

- A. WorkManager, Worker & WorkRequest