

 V Tech Labs

 Kotlin *with*

Android Development



## 1 Programming Fundamentals

- Basic Programming Knowledge
- Understanding of Object-Oriented Programming (OOP)

## 2 Kotlin Language Overview

- History and evolution of Kotlin
- Kotlin vs Java
- Introduction to Kotlin
- Basic Kotlin Syntax
- Functions and Lambdas
- Object-Oriented Programming in Kotlin
- Functional Programming Concepts
- Concurrency and Asynchronous Programming
- Coroutines
- Variables (val vs var)
- Data types and type inference
- Operators and expressions
- Null Safety (?, !, ?:, let, safe calls)
- If, else, when expressions
- Ranges and steps
- Break and continue
- Lambdas and higher-order functions
- Inline functions
- Sealed Classes
- Data classes
- Object keyword (singletons, companion objects)

## 3 Android Development with Kotlin

- Kotlin for Android Development
- Tooling and IDE Support
- Android Architecture Overview
- Setting Up Android Studio
- Project Structure and Gradle Basics

## 4 Android UI Development

- Activity & Lifecycle
- XML Layouts and Views
- Handling Clicks & Events
- ConstraintLayout, LinearLayout, FrameLayout
- RecyclerView & Adapters
- Toast, Snackbar, Dialogs
- Themes, Styles, and Custom Views
- Material Design Components

## 5 Android Components & Navigation

- Intents (Explicit and Implicit)
- Fragments and Fragment Lifecycle
- ViewPager and TabLayout
- Navigation Component & Safe Args

## 6 Data Storage and Persistence

- SharedPreferences
- SQLite & Room Database

## 7 Networking and Background Tasks

- REST API basics
- Parsing JSON Responses
- Notifications
- BroadcastReceivers
- AsyncTask





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