**Title:** Android App Development with Kotlin and Android Studio

**Duration:** 5 Days

**Format:** In-Person Instructor-Led or Remote Instructor-Led.

**Pre-Requisites**

Proficiency in any object oriented programming language such as Java, C#, Swift or C++.

**Overview**

In this course, you'll learn the basics of building Android apps with the Kotlin programming language and the Android Studio IDE. You will develop a collection of apps to start your journey as an Android developer.

Students will spend the first day covering the basics of the Kotlin Language followed by four days of Android Development using Android Studio.

This course consists of a combination of instructor-led discussion and hands-on lab exercises for students.

**Objectives**

* Learn the basics of the Kotlin programming language
* See how to set up an Android development environment
* Use the Android Studio IDE to develop Android applications.
* Learn how to use the Android SDK including AndroidX JetPack
* Use Gradle to build Android applications
* Understand the Android Architecture Components including ViewModel and LiveData
* Learn how to run and debug Android applications on an emulator or physical device
* Build various Android apps using the latest libraries, techniques and architectures

| **Agenda:**  **Android App Development with Kotlin and Android Studio** | | |
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| **Day** | **Lesson** | **Topics** |
| Day 1 | Kotlin Basics | * + Operators   + Data Types   + Variables   + Conditionals   + Lists and Arrays   + Null Safety |
|  | Functions | * + Programs in Kotlin   + Compact Functions   + Lambdas and Higher-Order Functions   + List Filters |
|  | Classes and Objects | * + Classes   + Inheritance   + Extension Functions   + Special Classes   + Organizing Your Code |
| Day 2 | Build Your First Android App | * + Anatomy of an Android App   + Layouts and Resources   + Activities   + Making an App Interactive   + Accessibility |
|  | Layouts | * + Common Layouts (Linear Layout, Relative Layout)   + Constraint Layouts   + View Binding and Data Binding   + Displaying Lists with RecyclerView |
|  | User Interface Design | * + Styles and Themes   + Typography   + Material Design   + Material Components   + Localization |
| Day 3 | App Navigation | * + Multiple Activities and Intents   + AppBar   + Navigation Drawer   + Menus   + Fragment Navigation   + Navigation Controller |
|  | Activity and Fragment Lifecycle | * + Activity Lifecycle   + Fragment Lifecycle   + Lifecycle Aware Components   + Tasks and Back Stack   + Logging   + Android Studio Debugger |
| Day 4 | App Architecture (UI Layer) | * + Suggested Android App Architecture   + JetPack and AndroidX   + ViewModel   + Data Binding   + LiveData   + Transforming LiveData |
|  | App Architecture (Data Persistence Layout) | * + Storing Data   + Room Database   + Asynchronous Programming   + Kotlin Coroutines   + Testing Databases   + Unit Testing   + Repository Pattern |
| Day 5 | Networking | * + Android Permissions   + Using the Network   + Connecting to Web Services with Retrofit   + Displaying Images with Glide |
|  | Libraries | * + Discovering New Libraries   + Creating Your Own Library   + Using the Flipper Library for Network Monitoring |
| - | Work Manager  (Background Tasks) | * + Using WorkManager to Create Background Tasks   + Passing Data to Background Tasks   + Receiving Data from Background Tasks   + Work Request Constraints and Chaining   + Monitoring Background Tasks |