Android Application Development

Module 1: Introduction to Kotlin

- Kotlin History
- Kotlin Advantages
- Creating a Kotlin Program
- Running a Kotlin Program
- The main () function
- Kotlin variables
- Kotlin Data Types
- Control Flow Statements: IF, IF-Else, When Statement
- Loops: For, While, Do-While
- Jump Expression
- Functions
- Objecting Oriented Programming
- Class
- Kotlin collections
- Kotlin coroutine: Async Programming

Module 2: Android Framework and Android Studio

- Android Platform Architecture
- Android Libraries
- Components of Android Application
- Overview of Android installation
- Installing Android Studio with Compose support
- Creation Kotlin Project using Android Studio
- Run Android App
- Setup and Android Device
- Run application on Hardware Device

Module 3: Creating User Interfaces

- MVVM Pattern
- Comparing Compose with the traditional XML-based UI development
- Creating a simple Composable function
- Composable hierarchy and structure
- Understanding layout components
- Adding interactivity with Composable functions
- Responding to user actions (clicks, text input)
- Creating custom Composable functions
- Passing data to Composable

- Lists and Recycler View in Compose
- Creating dynamic lists with Lazy Column, Row
- Column and Row Layout
- Navigation in Compose
- State Management in Compose
- Adapters and data binding
- Implementing Material Design components

Module 4: Android Layout, Styles , Themes and Menus

- Views
- Constraint Layout
- Understanding Fragments
- Passing data between fragments
- Using interfaces for fragment communication
- Implementing a master-detail interface with fragments
- Handling tablet and phone layouts
- Android Styles and themes
- App Manifest
- App Icons

Module 5: Snack Bar, Activities, Android Intent, Alert Dialog and Android notification

- Snack Bar Class
- Activities
- Activity Lifecycle
- Android Intent: Explicit Intent vs Implicit Intent
- Fragments: Creating and Adding Fragments
- Communication with Fragments
- Fragment UI Component and Events
- Fragment Navigation
- Android Alert dialog
- Android Notification
- Android notification channel

Module 6.

Module 6: Reactive programming

- Implementing reactive programming in Kotlin
- Creating and Subscribing to Observables
- Handling emitted data using Observables
- Using operators like map, filter, and distinct
- Transforming and filtering data streams

- Combining Retrofit with RxJava for network requests
- Handling exceptions in RxJava
- Strategies for dealing with errors

Module 7: Android Navigation Components

- Menus
- Bottom App Bar
- Recycler View
- Search View
- Tab Layout and View Pager
- Spinner
- Drawer

Module 8: Firebase Authentication and Data Bases

- JSON
- Firebase Setup
- Firebase Authentication
- Firebase Data Base
- Local Storage: Shared Preference , sQLite Database
- Connecting with Existing JSON data
- Use of Retrofit Library with remote Data

Module 9: Dependency injection

- Introduction to DI principles and concepts
- Constructor injection, setter injection, and method injection
- Comparing and contrasting the three approaches
- Overview of DI containers and frameworks
- Introduction to popular DI frameworks in Kotlin
- Introduction to Dagger 2
- Setting up a Dagger 2 project
- Implementing constructor injection with Dagger 2
- Building a simple dependency graph