

Android Development

Module 1: Introduction to Android Development

- Android platform architecture overview
- Android Studio installation and setup
- Understanding Android SDK and its components
- Creating a simple “Hello World” app

Module 2 : Java/Kotlin Programming Fundamentals

- Data types, variables, control flow
- Object-Oriented Programming principles
- Collections, arrays, and functions
- Handling exceptions and debugging

Module 3 : Android User Interface (UI) Development

- Understanding Android Views and Layouts
- Working with TextView, Button, EditText, ImageView
- Building flexible UI with LinearLayout, RelativeLayout, and ConstraintLayout
- Using RecyclerView and ListView
- Handling user inputs, gestures, and touch events

Module 4 : Android Intents and Navigation

- Explicit and implicit intents
- Passing data between activities
- Navigation components: App Bar, Bottom Navigation, and Fragments
- Managing multiple activities and back stack

Module 5 : State Management and Data Storage

- Saving and restoring state with onSaveInstanceState
- Working with SharedPreferences
- Storing data in SQLite database
- Introduction to Room persistence library for database management

Module 6 : Android Networking & API Integration

- Making network requests with Retrofit, Volley, and OkHttp
- Parsing JSON responses
- Handling background tasks and async operations using AsyncTask, Handler, and Kotlin Coroutines
- Building real-time applications using WebSockets

Module 7 : Advanced UI Components and Animations

- Custom Views and ViewGroups
- Material Design principles
- Animations (Property, ObjectAnimator, and Transition Animations)
- Gesture detection and custom interactions

Module 8 : Firebase Integration

- Authentication with Firebase Auth (email/password, Google login)
- Firebase Firestore database
- Firebase Cloud Messaging for push notifications
- Firebase Storage for handling media files

Module 9 : App Debugging & Optimization

- Debugging techniques using Android Studio Debugger
- Using Android Profiler to analyze performance
- Memory and resource optimization
- Error handling and crash reporting

Module 10 : App Deployment & Publishing

- Preparing your app for release
- Signing your app with a secure key
- Publishing apps on the Google Play Store
- Handling versioning and updates