

Android Application Development Training with Java

Duration: 5 Days

Description

Android Application Development with Java Training is a comprehensive five-day program designed to teach participants how to build, test and publish Android applications using Java and Android Studio.

The course begins with the fundamentals of Java programming and object-oriented programming. Participants then learn how to create Android user interfaces, manage activities and fragments, store data, connect applications to web services, use Firebase, access location services and prepare applications for publication on Google Play.

Throughout the training, participants develop practical applications using Android components and widely used third-party libraries. They gain experience in application architecture, responsive interface design, local and remote data management, RESTful APIs, notifications, Google Maps and the Android application lifecycle.

By completing practical exercises and sample projects, participants learn how to transform an application idea into a functional Android product and prepare it for distribution using an Android App Bundle.

What Will You Learn?

By the end of this Android development course, participants will be able to:

- Understand the fundamental syntax, data types and programming structures of Java.
- Apply object-oriented programming principles when developing Android applications.
- Use Android Studio to create, run, test and manage Android projects.
- Build responsive Android interfaces for different screen sizes and languages.
- Use activities, fragments and navigation components to create multi-screen applications.
- Work with common Android widgets and Material Design components.
- Display structured data using RecyclerView and CardView.
- Store application data with SharedPreferences, internal storage and SQLite.
- Connect Android applications to RESTful web services and remote databases.
- Use Volley, Retrofit, Picasso and Firebase Realtime Database.

- Create notifications and work with broadcast receivers.
- Request Android permissions and use GPS and Google Maps.
- Generate APK and Android App Bundle files.
- Prepare an Android application for publication on Google Play.

Who Should Attend?

This training is suitable for:

- Beginners who want to learn Android application development with Java
- Software developers who want to add Android development to their skill set
- Students and recent graduates interested in mobile application development
- Developers who want to convert their application ideas into working Android projects
- Technical teams that need practical knowledge of Android development
- Professionals who want to learn how to publish applications on Google Play

Training Method

The program combines theoretical explanations with demonstrations, coding exercises and practical application projects. Participants use Android Studio to develop applications, test them on Android emulators or physical devices and apply the concepts covered in each section.

The technical depth and sample applications can be customized according to the participants' experience and the organization's project requirements.

Outline

Android Application Development with Java Course Outline

Java Programming Section

Section 1: Introduction to Java

- Introduction to Java programming
- Installing and configuring Android Studio
- Creating the first Java and Android project
- Introduction to the development environment
- Running the first program
- Opening and managing a project in Android Studio

Section 2: Variables and Data Types

- Declaring and initializing variables
- Variable declaration types
- Primitive and reference data types
- Arithmetic operators
- Type conversion and casting

Section 3: Standard Programming Structures

- Conditional statements with if and else
- Using switch statements
- Creating loops with for and while
- Using break and continue statements
- Creating and working with arrays

Section 4: Object-Oriented Programming

- Introduction to object-oriented programming
- Methods and functions
- Methods with variable-length parameters
- Utility and helper methods
- Object initialization and constructors
- Packages and import statements
- Data model classes
- Static variables and methods
- Enumerations
- Composition
- Introduction to inheritance
- The relationship between inheritance and constructors
- Method overriding
- Polymorphism
- Object type conversion and casting
- Creating and implementing interfaces

Section 5: Java Collections

- ArrayList operations
- Working with Set collections
- Working with Map collections

Section 6: Advanced Java

- Exception handling with try, catch and finally
- Introduction to threads and background operations

Android Application Development Section

Section 1: Introduction to Android Development

- Introduction to the Android platform
- Installing and configuring Android Studio
- Creating an Android project
- Understanding the Android project structure
- Creating and configuring an Android emulator
- Configuring hardware acceleration for the emulator
- Introduction to Android Virtual Devices
- Running an Android Studio project on an emulator
- Running and testing an application on a physical Android device

Section 2: Android User Interface Design

- Introduction to Android interface design
- Using LinearLayout
- Using RelativeLayout and understanding legacy layouts
- ConstraintLayout constraints and positioning
- ConstraintLayout sizing
- ConstraintLayout alignment
- Distributing interface elements evenly
- Using guidelines in ConstraintLayout
- Creating chains in ConstraintLayout
- Supporting different screen sizes and resolutions
- Creating multilingual Android applications
- Practical application: Designing a login screen
- Creating and adding an application logo or launcher icon

Section 3: Android Application Structure and Lifecycle

- Creating a new Android screen
- Understanding the activity lifecycle
- Navigating between activities
- Passing data between activities
- Passing data using visual interface components

- Understanding the back stack and system back action
- Using the finish() method
- Understanding the fragment lifecycle and structure
- Generating an application APK
- Creating and using an Android App Bundle
- Preparing and uploading an application to Google Play

Section 4: Android Widgets

- Using Button, TextView and EditText
- Using ToggleButton and Switch
- Using CheckBox and RadioButton
- Using ProgressBar, SeekBar and RatingBar
- Displaying images with ImageView
- Playing video with VideoView
- Creating scrollable interfaces with ScrollView
- Using TimePicker and DatePicker
- Creating selection lists with Spinner

Section 5: User Interaction and Feedback

- Displaying Toast messages
- Creating an AlertDialog
- Customizing an AlertDialog
- Creating a Snackbar
- Handling Snackbar actions and user responses
- Customizing a Snackbar

Section 6: Material Design and Navigation

- Introduction to Material Design principles
- Using a Floating Action Button
- Creating floating labels and text input layouts
- Using and customizing a Toolbar
- Adding an options menu to the Toolbar
- Adding search functionality to the Toolbar
- Introduction to RecyclerView and CardView
- Designing CardView items
- Adding RecyclerView to an Android screen
- Creating an adapter for RecyclerView
- Displaying data in RecyclerView

- Changing the RecyclerView layout and listing style
- Adding a popup menu to RecyclerView items
- Practical application: Detailed RecyclerView design
- Using Bottom Navigation View
- Using TabLayout
- Creating a Navigation Drawer and menu
- Designing the Navigation Drawer
- Opening and closing the Navigation Drawer
- Managing the system back action with the Navigation Drawer
- Handling Navigation Drawer menu item selections
- Displaying fragments through the Navigation Drawer
- Adding titles to navigation destinations

Section 7: Android Data Storage

- Using SharedPreferences
- SharedPreferences practical exercise: Application entry counter
- Working with external storage
- Working with internal storage
- Introduction to relational databases
- Writing SQL statements with DB Browser for SQLite
- Creating foreign key queries with DB Browser for SQLite
- Writing and reading data with SQLite
- Deleting and updating data with SQLite
- Creating SELECT queries with SQLite
- Copying a prepopulated SQLite database
- Working with tables and foreign keys
- Contacts application: Interface design
- Contacts application: SQLite integration

Section 8: Advanced Android Features

- Introduction to BroadcastReceiver
- Monitoring battery and charging status with BroadcastReceiver
- Understanding SMS-related broadcast events and permission requirements
- Creating local notifications
- Creating internet-based push notifications

Section 9: Internet-Based Operations and APIs

- Introduction to RESTful architecture

- Connecting an Android application to a remote MySQL database through an API
- Writing web services with PHP
- Hosting and testing a PHP web service
- Parsing JSON data
- Introduction to the Volley library
- Sending insert requests with Volley
- Performing update and delete operations with Volley
- Retrieving data with Volley
- Installing and configuring Retrofit 2
- Retrieving data with Retrofit 2
- Performing insert, update and delete operations with Retrofit 2
- Loading and displaying images with Picasso
- Introduction to Firebase Realtime Database
- Installing and configuring Firebase Realtime Database
- Performing insert, delete and update operations with Firebase
- Retrieving data from Firebase Realtime Database
- Using Firebase ValueEventListener
- Contacts application with Volley
- Contacts application with Retrofit 2
- Contacts application with Firebase Realtime Database

Section 10: Location Services

- Requesting and managing Android permissions
- Accessing location data with GPS
- Using Google Maps in an Android application
- Displaying locations and markers on Google Maps

Practical Course Outcomes

By the end of the program, participants will have practiced the principal stages of Android application development: creating a project, designing its interface, managing navigation, storing data, connecting to APIs, using device features and preparing the application for Google Play.

Prerequisites

No previous professional Android development experience is required. Participants should have:

- Basic computer skills
- A general understanding of software and file management

- A computer capable of running a current version of Android Studio and an Android emulator
- Administrator access to install the required development tools

Previous programming experience is helpful but not mandatory because the course includes a Java fundamentals section.