

Java Fundamentals for Android Development

Course Duration: 16 Hours

Course code: JFAD

1. Course Overview

This course introduces participants to Java programming concepts required for Android app development. It covers core Java syntax, object-oriented programming (OOP), data handling, exception management, and key APIs. By the end of the course, participants will have a strong foundation to start building Android applications using Java.

2. What you'll learn?

- Understand the fundamentals of Java programming.
- Apply object-oriented programming concepts in Android development.
- Work with data types, arrays, and collections.
- Handle exceptions and perform file I/O operations.
- Use Java APIs and libraries relevant to Android development.
- Prepare for Android app development using Java.

3. Target Audience

- Beginners planning to learn Android development.
- Students and IT professionals seeking a Java foundation for mobile development.
- Developers transitioning from other languages to Java for Android.
- Anyone interested in building Android apps using Java.

4. Pre-Requisites

- Basic computer literacy.
- Familiarity with programming concepts is helpful but not mandatory.

5. Course content

Module 1: Introduction to Java

- Overview of Java and its role in Android development
- Setting up Java Development Kit (JDK) and IDE (Eclipse, IntelliJ IDEA)
- Java program structure and execution
- Writing your first Java program

Module 2: Data Types, Variables, and Operators

- Primitive and non-primitive data types
- Variables, constants, and scope
- Arithmetic, relational, logical, and bitwise operators
- Type casting and conversion

Module 3: Control Flow Statements

- Conditional statements: if, if-else, switch
- Looping constructs: for, while, do-while
- Using break, continue, and nested loops
- Hands-on exercises with control flow

Module 4: Object-Oriented Programming (OOP) Concepts

- Classes and objects
- Methods and constructors
- Inheritance, polymorphism, encapsulation, and abstraction
- Hands-on: Create simple classes and objects

Module 5: Arrays and Collections

- Single-dimensional and multi-dimensional arrays
- ArrayList, HashMap, and other collection classes
- Iterating and manipulating collections
- Hands-on exercises with arrays and collections

Module 6: Exception Handling

- Types of exceptions: checked and unchecked
- Try-catch-finally blocks
- Throwing and creating custom exceptions
- Hands-on: Exception handling in sample programs

Module 7: File Handling and I/O Streams

- Reading and writing files
- Byte streams and character streams
- Serialization basics
- Hands-on: Simple file operations

Module 8: Java APIs for Android Development

- String, Math, Date/Time, and utility classes
- Java threading basics
- Networking fundamentals in Java
- Hands-on: Using APIs in small programs

Module 9: Preparing for Android Development

- Overview of Android app structure
- How Java integrates with Android
- Best practices for writing Java code for Android apps
- Hands-on: Small Java project to reinforce learning