A Journey from Java Foundations to Android App Development

Curriculum

Duration: 50–52 Lessons

Section 1: Core Java Foundations

Lesson 1: Introduction to Java Programming

- Why Java is used in software engineering and Android
- Java vs Python: syntax, performance, portability
- Installing JDK and IDE setup
- Understanding compilation and JVM
- Writing first Java program
- **Practice:** Hello User App

Lesson 2: Variables and Data Types

- Primitive data types
- Variable declaration and initialization
- Naming conventions
- Introduction to memory concepts
- **Practice:** Personal Info Generator

Lesson 3: User Input and Type Conversion

- Scanner class
- Reading strings, integers, decimals
- Type casting
- Input handling errors
- **Practice:** Interactive User Profile Console App

Lesson 4: Operators and Expressions

- Arithmetic operators
- Relational operators

- Logical operators
- Expression evaluation order
- **Practice:** Console Calculator

Lesson 5: Conditional Statements I

- if / else / else-if
- Nested decisions
- Real-world branching examples
- **Practice:** Grade Evaluator

Lesson 6: Conditional Statements II

- Switch statements
- Menu systems
- Cleaner branching logic
- **Practice:** Menu Driven Calculator

Lesson 7: Loops I

- for loop
- Iteration patterns
- Counters and accumulators
- **Practice:** Multiplication Table Generator

Lesson 8: Loops II

- while loop
- do-while loop
- Loop control logic
- **Practice:** Number Guessing Game

Lesson 9: Nested Loops

- Nested iteration
- Pattern generation
- Debugging loop structures
- **Practice:** Pattern Designer

Lesson 10: Methods I

- Why methods matter
- Method creation
- Parameters
- Return values
- **Practice:** Modular Calculator

Lesson 11: Methods II

- Method overloading
- Code reusability
- Logic decomposition
- **Practice:** Utility Toolkit Program

Lesson 12: Arrays I

- Array declaration
- Accessing elements
- Traversal using loops
- **Practice:** Marks Analyzer

Lesson 13: Arrays II

- Searching arrays
- Summation and averages
- Data comparison
- **Practice:** Mini Data Analyzer

Lesson 14:

Project

Quiz Application

Section 2: Object Oriented Programming

Lesson 15: Classes and Objects

- OOP thinking

- Creating classes
- Creating objects
- **Practice:** Student Record System

Lesson 16: Constructors

- Default constructors
- Parameterized constructors
- this keyword
- **Practice:** Book Manager

Lesson 17: Encapsulation

- Access modifiers
- Getters and setters
- Controlled data access
- **Practice:** Bank Account Simulator

Lesson 18: Inheritance

- Parent-child classes
- Reuse design
- **Practice:** Vehicle System

Lesson 19: Method Overriding

- Runtime behavior
- Basic polymorphism
- **Practice:** Employee Role System

Lesson 20: Object Arrays and Multi-Class Programs

- Arrays of objects
- Object interaction
- **Practice:** Classroom Management System

Lesson 21: Mini Project

- Multi-class design
- **Project:** Library Management System

Lesson 22-24

Assessment

Section 3: Android Development Basics

Lesson 25: Android Introduction

- Android ecosystem
- Android Studio setup
- Emulator
- Project structure

Lesson 26: XML UI Basics

- TextView
- Button
- Layout files
- **Practice:** Welcome App

Lesson 27: Input Handling

- EditText
- Reading user input
- **Practice:** Greeting App

Lesson 28: UI Components Expansion

- ImageView
- CheckBox
- RadioButton
- **Practice:** User Profile App

Lesson 29: Event Handling

- OnClickListener
- State changes
- **Practice:** Counter App

Lesson 30: Layouts

- LinearLayout

- ConstraintLayout basics
- **Practice:** Simple UI Design App

Lesson 31: Multi-input Android Logic

- Validation
- Multiple inputs
- **Practice:** Calculator App

Lesson 32: Toast and User Feedback

- Toast messages
- Snackbar intro
- **Practice:** Feedback App

Lesson 33: Android Mini Project

- UI + logic integration
- **Project:** Advanced Calculator App

Section 4: Intermediate Android

Lesson 34: Intents

- Explicit intents
- Activity navigation
- **Practice:** Navigation App

Lesson 35: Passing Data Between Activities

- Intent extras
- Receiving data
- **Practice:** User Detail App

Lesson 36: Lists and ArrayList

- Dynamic lists
- Collection logic
- **Practice:** Task List App

Lesson 37: Dynamic UI Updates

- Runtime rendering
- **Practice:** Notes App Basic Version

Lesson 38: Random and Logic Building

- Random class
- **Practice:** Password Generator App

Lesson 39: Conditional Logic in Android Apps

- Quiz scoring
- Multi-question logic
- **Practice:** Quiz App

Lesson 40

- **Project:** To-Do List App

Lesson 41: RecyclerView Introduction

- RecyclerView basics
- Adapter concept
- Simple lists

Lesson 42: RecyclerView Applied

- Dynamic task display
- Notes rendering

Section 5: Backend Integration

Lesson 43: Introduction to APIs

- API concepts
- JSON
- HTTP basics

Lesson 44: API Calls in Android

- Parsing responses
- **Practice:** Joke Generator App

Lesson 45: Displaying API Data

- UI rendering
- **Practice:** Weather App

Lesson 46: Firebase Introduction

- Firebase products
- Project setup

Lesson 47: Firebase Authentication

- Login/signup
- **Practice:** Login System App

Lesson 48: Firebase Database

- Firestore basics
- CRUD operations
- **Practice:** Notes App with Firebase

Lesson 49: Cloud-connected App Logic

- Syncing data
- **Practice:** Task Manager App

Section 6:

Lessons 50-52
Assessment
