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Modern Android Development (MAD) Skills

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Modern Android Development (MAD) Skills

Introduction

Modern Android Development (MAD) represents Google's recommended, up-to-date approach to building high-quality Android applications. This course is designed to take you from the basics of Kotlin programming all the way to creating fully functional, beautiful, and scalable Android apps using modern tools and best practices.

Throughout the course, you will learn how to build user interfaces with Jetpack Compose, manage app navigation and architecture, work with online data sources, store information locally, and build responsive designs that adapt to different screen sizes. You will also gain hands-on experience with essential Jetpack libraries such as Room, WorkManager, DataStore, and more.

This course focuses on practical, real-world development skills. Each unit includes step-by-step learning, interactive examples, and opportunities to apply your knowledge through small projects. By the end of the course, you will be able to confidently build modern Android applications that follow industry standards and deliver great user experiences.

Whether you are a beginner or looking to update your Android skills, this course provides everything you need to become a modern Android developer.



Unit 1: Your First Android App

1.1 Introduction to Kotlin

- Basics of Kotlin syntax
- Variables, data types, functions
- Writing your first Kotlin program

1.2 Setting Up the Development Environment

- Install and configure Android Studio
- Overview of project structure
- Using the emulator and real devices

1.3 Building Your First Layout

- Understanding XML and Compose basics
- Creating a simple UI
- Previewing and running the app

Unit 2: Building App UI

2.1 Kotlin Fundamentals

- Conditionals, loops, collections
- Classes, objects, and methods

2.2 Adding a Button to an App

- Creating interactive components
- Button clicks and actions



2.3 Working With UI State

- Mutable and immutable state
- Recomposition and UI updates

Unit 3: Display Lists & Material Design

3.1 More Kotlin Fundamentals

- Lambdas, higher-order functions
- Data classes and Kotlin idioms

3.2 Building Scrollable Lists

- LazyColumn in Jetpack Compose
- Efficient list rendering

3.3 Beautiful UI With Material Design

- Material Components
- Colors, typography, shapes
- Theming and styling best practices

Unit 4: Navigation & App Architecture

4.1 Architecture Components

- MVVM pattern
- ViewModel, LiveData, and StateFlow

4.2 Navigation in Jetpack Compose

- Navigation graph
- Passing data between screens



4.3 Adaptive Layouts

- Responsive design
- Supporting phones, tablets, and foldables

Unit 5: Connecting to the Internet

5.1 Fetching Data From APIs

- REST basics
- Using Retrofit or Ktor client

5.2 Loading and Displaying Images

- Coil or Glide in Compose
- Image caching and optimization

Unit 6: Data Persistence

6.1 Introduction to SQL

- Tables, queries, relations
- CRUD operations

6.2 Room Database

- Entities, DAO, and Database
- Querying and observing data



6.3 DataStore

- Key-value storage
- Replacing SharedPreferences

Unit 7: WorkManager

7.1 Scheduling Background Tasks

- One-time and periodic work
- Constraints and chaining tasks
- Working with WorkManager + Compose

Unit 8: Views & Compose Interoperability

8.1 Using Android Views Inside Compose

- AndroidView composable
- Integrating legacy UI components

8.2 Using Compose Inside Android Views

- ComposeView
- Mixed UI strategies for gradual migration



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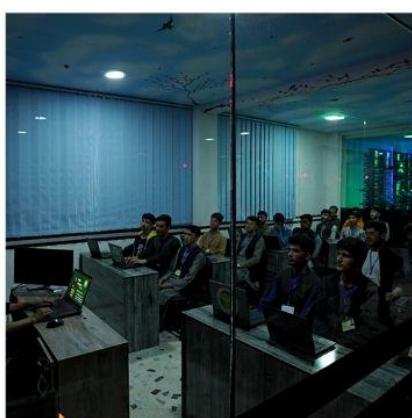




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STUDENT FEEDBACK

Our students' opinions about
Tawana Technology



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"Tawana Technology is a trusted institute with a strong background in technology, offering advanced curricula and modern methods—especially in cyber—to help learners enhance their skills."

Datacenter Specialist at UST Global



TAWAB FAYAZI FORMER

"Tawana Technology is a leading institute for learning technology. Its students excel in job markets and competitions locally and internationally. I highly recommend it to anyone eager to grow their skills."

I.T DIRECTOR OF AFGHANISTAN
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