

1. Introduction to Mobile Application Development

- A. Overview of mobile computing
- B. Evolution of mobile applications
- C. Types of mobile apps (Native, Hybrid, Cross-platform)
- D. Android vs iOS ecosystem comparison
- E. Mobile app development life cycle
- F. Career opportunities in mobile development

2. Mobile Platforms & Architecture

- A. Overview of Android architecture
- B. Android OS components (Kernel, Libraries, Runtime, Framework)
- C. Overview of iOS architecture
- D. iOS layers (Cocoa Touch, Media, Core Services, Core OS)
- E. Mobile hardware and software interaction

3. Programming Fundamentals for Mobile Apps

- A. Introduction to Java & Kotlin for Android
- B. Introduction to Swift for iOS
- C. Variables, data types, and operators
- D. Control structures and loops
- E. Object-Oriented Programming concepts
- F. Event-driven programming

4. Android App Development Basics

- A. Setting up Android Studio
- B. Android project structure
- C. Activities and activity lifecycle
- D. Layouts and UI components
- E. Views, widgets, and resources
- F. Handling user input and events

5. Advanced Android Development

- A. Intents and intent filters
- B. Fragments and navigation components
- C. RecyclerView and CardView
- D. Menus and dialogs
- E. Background services and notifications

6. Android Data Storage & Connectivity

- A. Shared Preferences
- B. Internal and external storage
- C. SQLite database and Room persistence
- D. Content providers
- E. Networking and REST API integration

7. iOS App Development Basics

- A. Setting up Xcode and iOS simulator
- B. Swift programming fundamentals
- C. Storyboard and SwiftUI overview
- D. ViewControllers and lifecycle
- E. Auto Layout and UI components

8. Advanced iOS Development

- A. Navigation controllers and tab bars
- B. TableView and CollectionView
- C. Data persistence (UserDefaults, Core Data)
- D. Background tasks and notifications
- E. API integration using URLSession

9. Cross-Platform Mobile Development Overview

- A. Introduction to Flutter and React Native
- B. Comparison of cross-platform frameworks
- C. Dart basics (Flutter)
- D. Widgets and UI components
- E. State management overview

10. Mobile App UI/UX Design

- A. Mobile UI/UX principles
- B. Material Design guidelines (Android)
- C. Human Interface Guidelines (iOS)
- D. Responsive layouts and accessibility
- E. Usability testing

11. Security & Performance Optimization

- A. Mobile app security fundamentals
- B. Authentication and authorization
- C. Secure data storage
- D. Performance optimization techniques
- E. Battery and memory management

12. Testing & Debugging

- A. Unit testing for mobile apps
- B. UI testing and automation basics
- C. Debugging tools in Android Studio & Xcode
- D. Handling crashes and logs

13. App Deployment & Publishing

- A. Preparing app for release
- B. Signing and versioning apps
- C. Publishing Android apps on Google Play Store
- D. Publishing iOS apps on Apple App Store
- E. App maintenance and updates

Mini Projects:

- Android-based mobile application
- iOS-based mobile application
- API-driven mobile app
- Cross-platform mini project
- Live app deployment



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