

Flutter Development

1. Introduction to Cross-Platform Mobile Development

- A. Overview of mobile application development
- B. Native vs cross-platform apps
- C. Introduction to Flutter framework
- D. Advantages of Flutter for app development
- E. Flutter architecture overview
- F. Use cases and industry adoption

2. Dart Programming Fundamentals

- A. Introduction to Dart language
- B. Variables, data types, and operators
- C. Control flow statements
- D. Functions and parameters
- E. Object-oriented concepts in Dart

3. Flutter Setup & Project Structure

- A. Installing Flutter SDK
- B. Setting up Android Studio / VS Code
- C. Creating Flutter projects
- D. Understanding Flutter project structure
- E. Running Flutter apps on emulator and device

4. Flutter Widgets & UI Design

- A. Introduction to widgets
- B. Stateless and Stateful widgets
- C. Material and Cupertino widgets
- D. Layouts (Row, Column, Stack, Expanded)
- E. Building responsive user interfaces

5. Navigation & Routing

- A. Navigation using Navigator
- B. Named routes
- C. Passing data between screens
- D. Drawer and bottom navigation
- E. Tab-based navigation

6. State Management

- A. Understanding state in Flutter
- B. setState() method
- C. State management approaches overview
- D. Provider and Riverpod basics
- E. Handling application-wide state

7. User Input & Forms

- A. TextField and input widgets
- B. Form validation techniques
- C. Handling gestures and events
- D. Keyboard and focus management

8. Data Storage & API Integration

- A. Local storage (SharedPreferences)
- B. SQLite database integration
- C. Consuming REST APIs
- D. HTTP package and async/await
- E. JSON parsing and data models

9. Platform Integration

- A. Accessing device features (camera, GPS)
- B. Using Flutter plugins
- C. Platform channels (basic concept)
- D. Permissions handling

10. App Performance & Optimization

- A. Performance optimization techniques
- B. Widget tree optimization
- C. Memory management
- D. Handling large data and lists

11. Testing & Debugging

- A. Debugging Flutter applications
- B. Unit and widget testing basics
- C. Handling errors and exceptions
- D. Using Flutter DevTools

12. App Deployment

- A. Building APK and App Bundle
- B. Publishing Flutter apps on Play Store
- C. Building iOS apps with Flutter
- D. Versioning and release management

Mini Projects:

- Cross-platform mobile app using Flutter
- API-based application
- Firebase-integrated Flutter app
- Complete Flutter mini project



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