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## ▶ Flutter (6 months Industrial Training) Course Structure

### First Month (Month 1) : Introduction to Flutter and Dart

- **Introduction to Flutter and Dart**
  - Overview of Flutter
  - Setting up Flutter and Dart environment
  - Introduction to Dart programming language
- **Flutter Basics**
  - Understanding Widgets
  - Stateless and Stateful Widgets
  - Building a basic Flutter app
- **Layouts and Navigation**
  - Introduction to Flutter layouts
  - Row and Column widgets
  - Container and Padding widgets
- **Basic User Interaction**
  - Handling user input with TextFields
  - Buttons and GestureDetector
  - Basic navigation and routes

### Second Month (Month 2) & Third Month (Month 3) : Building User Interfaces with Flutter

#### Month 2: Advanced Widget Concepts And State Management Techniques

- **Advanced Widgets**
  - Review basic Flutter widgets to ensure a solid foundation.
  - Learn about advanced widgets like CustomPaint, ClipPath, and Stack.
  - Practice by building small UI components using these advanced widgets.

- **State Management Basics**

- Introduction to state management concepts (setState, InheritedWidget).
- Learn about Provider for state management.
- Implement a simple app using Provider to manage state.

- **Advanced State Management Techniques**

- Learn about Riverpod and its benefits over Provider.
- Explore BLoC (Business Logic Component) pattern for state management.
- Build a small project implementing state management with either Riverpod or BLoC.

- **Responsive Layouts**

- Understand the basics of responsive design principles.
- Learn about MediaQuery and LayoutBuilder.
- Create responsive UI components that adapt to different screen sizes.

## Month 3: Working with Data

- **Local Storage**

- Using SharedPreferences
- Reading and writing data to local storage

- **SQLite and Hive**

- Introduction to SQLite
- Using the sql flite package
- Introduction to Hive for NoSQL storage

- **Firestore Integration**

- Introduction to Firebase
- Setting up Firebase in a Flutter project
- Authentication with Firebase

- **Firestore**

- Cloud Firestore basics
- Reading and writing data to Firestore
- Real-time data with Firestore

# Forth Month (Month 4) & Five Month (Month 5) : Integrating APIs and State Management

## Month 4: API Integration and Asynchronous Operations

- **Introduction to APIs and HTTP Requests**

- Review basic concepts of RESTful APIs and HTTP.
- Learn about the http package in Flutter for making HTTP requests.
- Practice by fetching data from a public API and displaying it in a simple app.

- **Advanced API Handling**

- Learn how to handle different HTTP methods (GET, POST, PUT, DELETE).
- Understand error handling and how to manage different HTTP responses.
- Build an app that performs CRUD operations with a RESTful API.

- **Asynchronous Programming**

- Introduction to Dart's async and await for handling asynchronous operations.
- Learn about Future and Stream in Dart.
- Implement async and await in your API integration to handle data fetching and updates.

- **Real-world Project - API Integration**

- Plan a project that involves complex API integration (e.g., a weather app or a news app).
- Develop the project, focusing on effective API integration, error handling, and displaying data.

## Month 5: Advanced State Management and Scalable Apps

- **Deep Dive into Provider**

- Review basic state management with Provider.
- Learn about ChangeNotifier, ChangeNotifierProvider, and Consumer in detail.
- Implement a complex state management scenario using Provider in a sample app.

- **Exploring Riverpod**

- Introduction to Riverpod and its advantages over Provider.
- Learn about different types of providers in Riverpod (Provider, StateProvider, FutureProvider, StreamProvider).
- Practice by implementing state management using Riverpod in a sample project.

- **Advanced State Management Techniques**

- Learn about combining state management solutions (e.g., using both Provider and Riverpod).
- Understand best practices for managing complex app states.
- Refactor an existing project to use advanced state management techniques.

- **Real-world Project - Building Scalable Apps**

- Plan a scalable project that requires both API integration and advanced state management (e.g., an e-commerce app).
- Develop the project, focusing on robust state management, effective API handling, and scalability.

## **Sixth Month (Month 6) : Final Project and Capstone**

- **Project Planning and Initial Setup**

- Define Project Scope and Requirements
- Design Phase
- Initial Setup and Core Development

- **Core Features Development**

- Continue Core Features Development
- Data Handling and Integration
- User Interface and Interaction (if applicable)

- **Advanced Features and Testing**

- Implement Advanced Features.
- Testing and Debugging
- Exploring Advanced Topics

- **Finalization and Presentation**

- Final Touches and Optimization
- Documentation and Deployment
- Presentation and Review