Prerequisites

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Lab : MAD & PWA Lab

Topic : Fitness App (FitTrack)

Problem statement : Create a comprehensive fitness app using Flutter to empower users to track workouts, set goals, monitor progress, access resources, and engage with a supportive community.

Flutter and Dart Proficiency:

➢ Understand the Flutter framework architecture, including widgets, layouts, and navigation.
➢ Proficiency in Dart programming language, including asynchronous programming concepts.
➢ Ability to use Flutter's hot reload feature for efficient development iterations.

UI/UX Design Skills:

➢ Knowledge of design principles such as material design guidelines for creating visually appealing interfaces.
➢ Understanding of UI components like buttons, text fields, lists, and cards.
➢ Ability to design intuitive user experiences for easy navigation and interaction.

Fitness Domain Knowledge:

➢ Familiarity with fitness terminology such as sets, reps, calories, and heart rate.
➢ Understanding of different workout types like strength training, cardio, and flexibility exercises.
➢ Awareness of common fitness goals and tracking metrics such as weight loss, muscle gain, and endurance improvement.

Firebase or Similar Backend Services:

➢ Ability to set up Firebase for user authentication, including email/password authentication and social login options.

- ➢ Understanding of Firestore or Realtime Database for storing user data such as workouts, progress, and preferences.
- ➢ Integration of Firebase Cloud Functions for server-side logic and notifications.

API Integration:

- ➢ Knowledge of integrating RESTful APIs for accessing external fitness-related data such as exercise databases, nutrition information, and activity tracking.
- ➢ Handling authentication and authorization mechanisms for accessing third-party APIs securely.
- ➢ Implementing error handling and data parsing techniques for API responses.

State Management:

- ➢ Understanding of different state management approaches in Flutter, including Provider, Bloc, and Redux.
- ➢ Ability to manage application state efficiently for features like user authentication, data caching, and UI updates.

Responsive Design:

- ➢ Implementation of responsive layouts using Flutter's MediaQuery and LayoutBuilder widgets.
- ➢ Testing UI designs across multiple devices and screen sizes to ensure consistent user experience.
- ➢ Handling orientation changes and adapting UI elements dynamically.

Testing and Debugging:

- ➢ Writing unit tests using Flutter's built-in testing framework or packages like Mockito and Flutter Test.
- ➢ Debugging techniques using Flutter DevTools, including inspecting widget trees, analyzing performance, and monitoring network requests.
- ➢ Conducting manual testing on physical devices and simulators to identify and fix issues.

Version Control:

➢ Proficiency in Git commands for branching, merging, and resolving conflicts.
➢ Collaborative development using platforms like GitHub or GitLab for code review, issue tracking, and project management.

Documentation Skills:

➢ Writing clear and concise code comments to explain functionality and logic.
➢ Creating user guides or API documentation for developers integrating with your app.
➢ Maintaining README files with project setup instructions, dependencies, and contribution guidelines.