⇒ **Course: Mobile Application Development (SW-327)**

⇒ **Instructor: Ms. Mariam Memon**

⇒ **Semester: 6th | Year: 3rd**

MEDICINE REMINDER APP

➡ **Created by: M.Umar Channa (22SW140) – Sumeet Kumar (22SW073)**

1. INTRODUCTION

In modern healthcare, adherence to prescribed medication schedules remains a significant challenge, particularly among elderly or chronically ill patients. Forgetting to take medicines on time can lead to reduced treatment effectiveness, complications, and even hospital readmissions. The MAD-CEP (Medicine Adherence and Dose Care Enhanced Planner) project addresses this issue by developing a smart and user-friendly mobile application that provides personalized medication reminders, adherence tracking, and reporting features.

2. PROBLEM IDENTIFICATION

Many individuals rely on traditional reminder methods such as manual alarms, notes, or calendars that are not personalized and lack data tracking. This results in poor medication compliance, particularly when managing multiple medicines or patients in a household. The absence of an intelligent, cross-platform reminder system creates a real-world problem in effective medicine management and monitoring.

3. PROPOSED SOLUTION

The proposed MAD-CEP application provides an intelligent, automated solution for medication adherence. It allows users to create multiple medicine reminders, mark doses as taken or missed, maintain separate profiles for family members, and generate reports for doctor reviews. The system is developed using Flutter for cross-platform support, with Hive database integration for local, offline data storage.

4. METHODOLOGY

The methodology followed in developing the MAD-CEP application includes the following key phases:

- Requirement Analysis – Identified user needs, functional requirements, and platform constraints.
- Design – Created wireframes and UI prototypes using Material 3 Design principles.
- Implementation – Developed using Flutter framework with Provider for state management.
- Testing – Performed functional, usability, and performance testing on multiple devices.
- Deployment – Packaged and built APK for Android, tested with real users for feedback.

5. FEATURES

Feature	Description
Add Medicine	Add medicines with name, dose, frequency, and time schedule.
Smart Notifications	Sends local reminders at prescribed times.
Mark as Taken/Missed	Allows users to mark each dose as taken or missed.
Profiles	Manage separate medicine reminders for multiple family members.
Reports	Displays charts showing percentage of doses taken.
Export	Exports adherence data in CSV format for doctor review.

6. TECHNOLOGIES AND PACKAGES USED

The application utilizes various Flutter packages and tools for functionality and performance optimization.

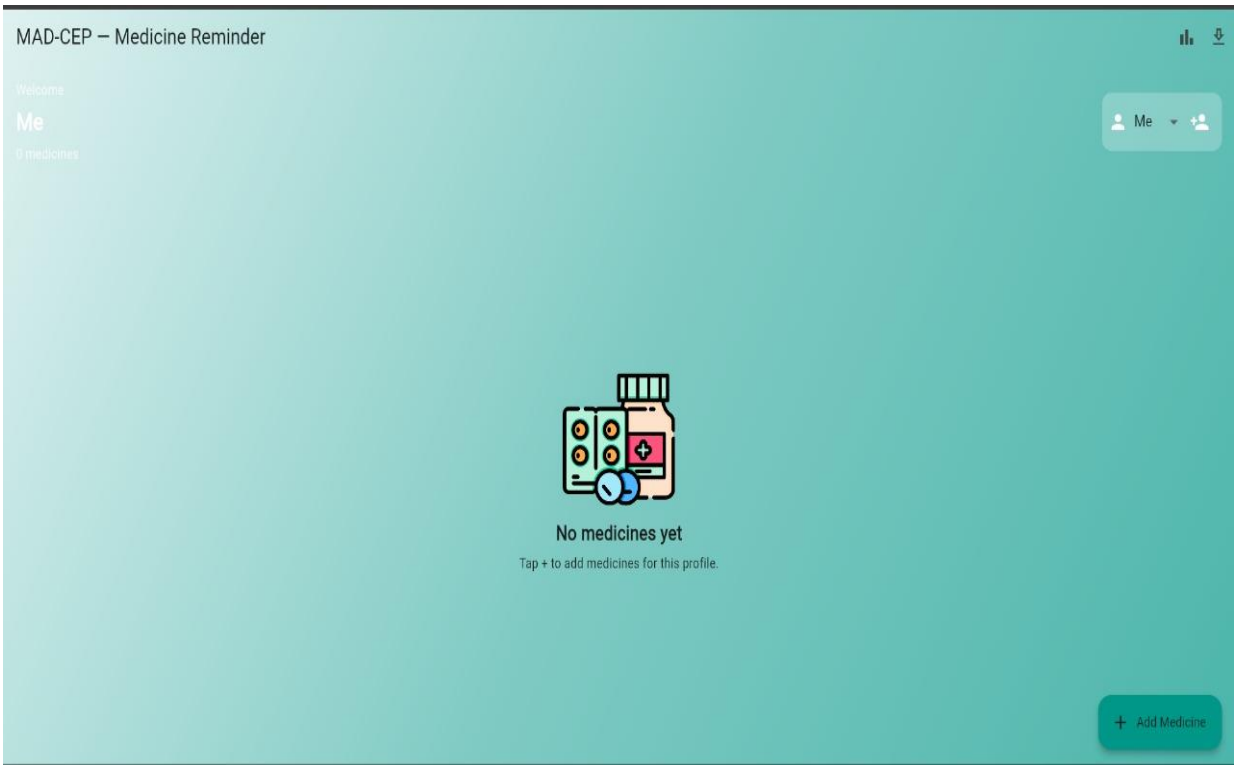
Package	Purpose
hive / hive_flutter	Local key-value storage for medicine data.
provider	State management across screens.
flutter_local_notifications	Scheduling and displaying reminders.
fl_chart	Visualization of adherence reports.
csv	Exporting user data to CSV.
path_provider	Directory management for file export.

7. RESPONSIVE USER INTERFACE

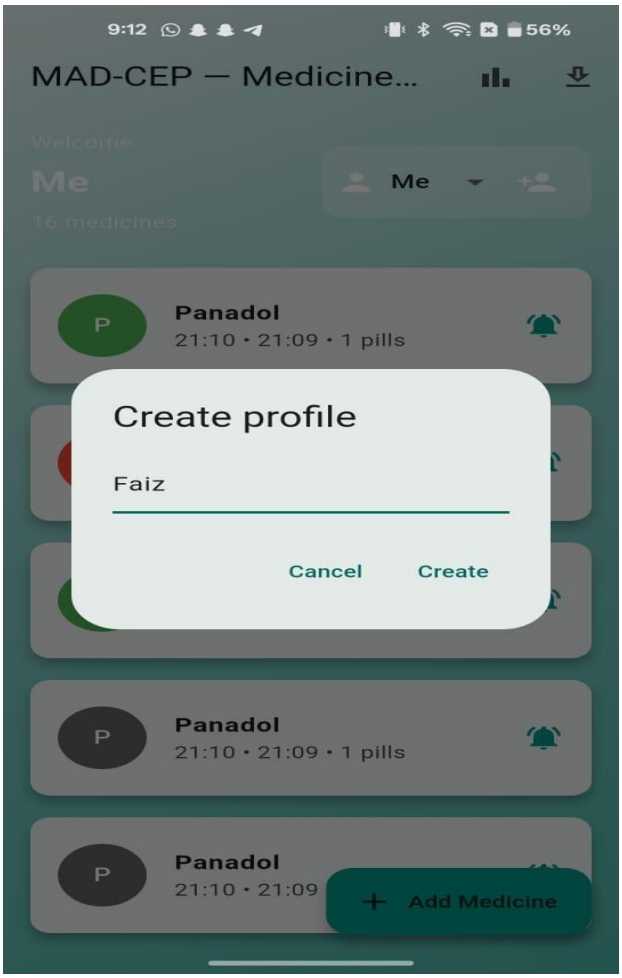
The interface follows Material 3 Design principles, ensuring responsive layouts across devices. It uses gradient backgrounds, adaptive widgets, and modern UI components.

⇨ **Screenshots to include**:

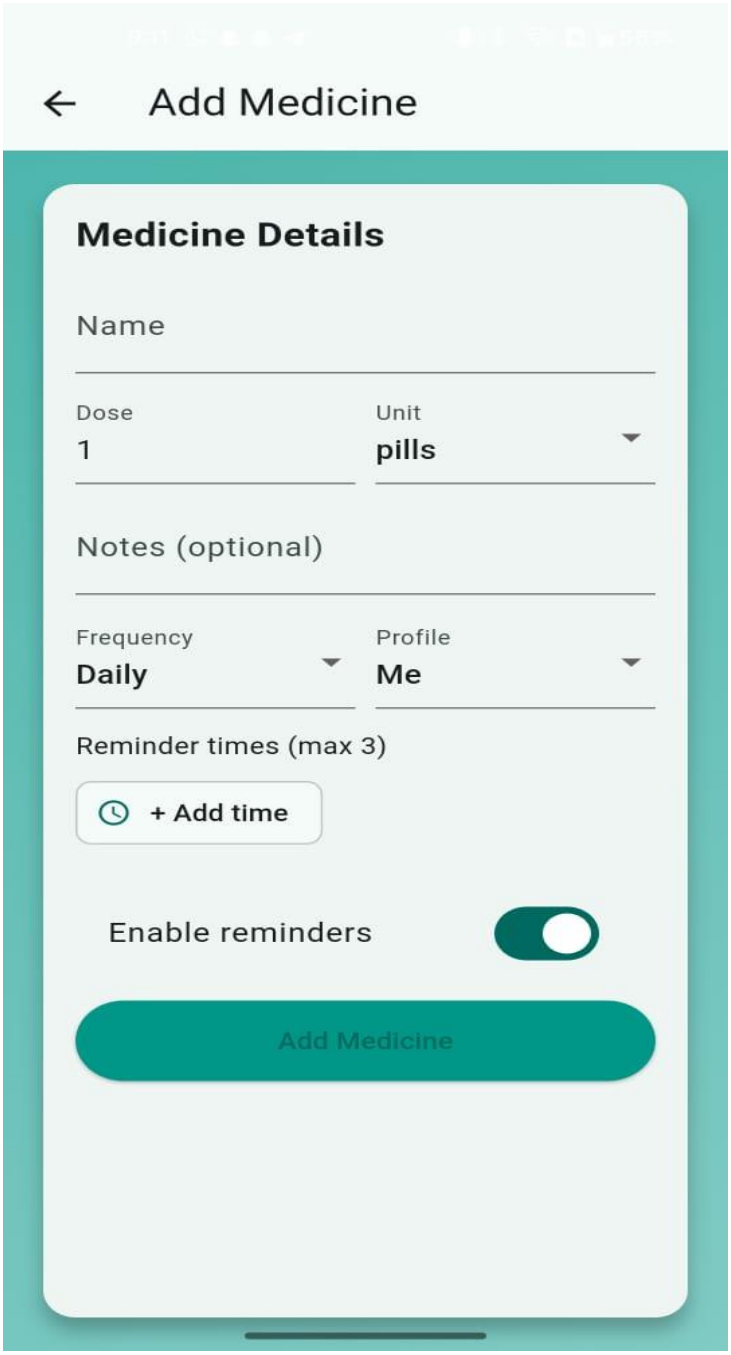
• **Home Screen**



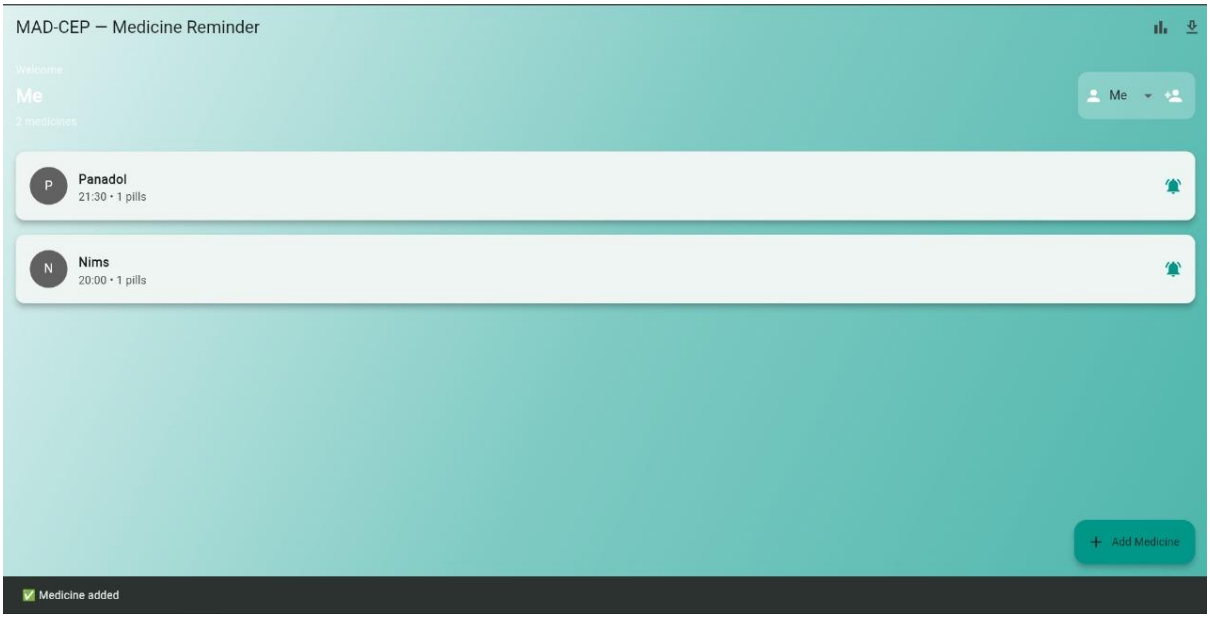
- **Profile Screen**



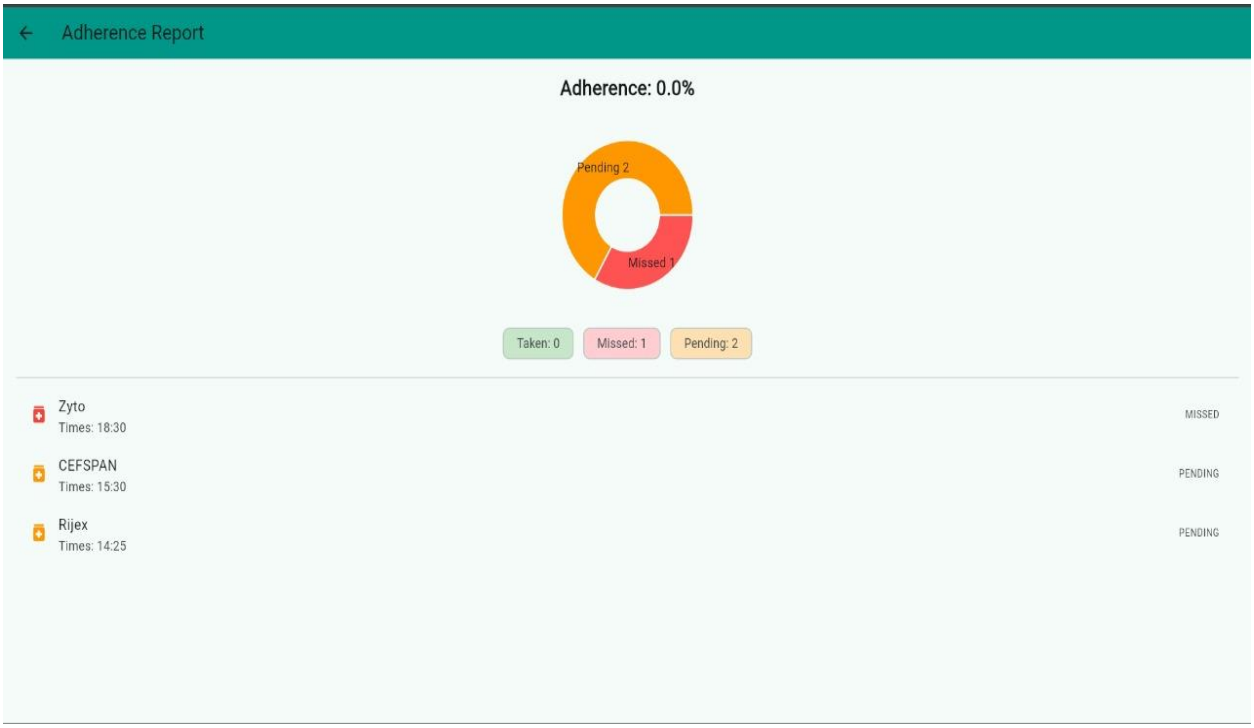
- **Add Medicine Screen**



- **Notification Popup**



- **Report Screen**



8. ISSUES AND BUG RESOLUTIONS

Issue	Description	Resolution
flutter_local_notifications error	Platform-safe import issues.	Adjusted imports for web compatibility.
DatabaseFactory not initialized	Hive setup issue.	Replaced sqflite with Hive for consistency.
Navigation not refreshing	State not updating on navigation.	Used Provider reload and snackbar feedback.
CSV export not downloading	Export issues on web.	Added conditional blob handling using kIsWeb.
Gradle build failed	Build desugaring error.	Enabled core library desugaring in build.gradle.

9. MAPPING TO CEP RUBRICS

Rubric	Description	Evidence
R1	Identification of Constraints	Cross-platform design, responsive layout, efficient database.
R2	Maintainability of Code	Clean code structure using Provider-based architecture.
R3	Understanding of Issues	Addressed multi-platform compatibility and build errors.
R4	Efficiency	Optimized Hive access and lightweight UI.
R5	Adaptability	Responsive layouts for multiple screen sizes and devices.

10. CONCLUSION

The MAD-CEP Medicine Reminder App offers an innovative solution to improve medication adherence. It combines modern UI design, efficient local data management, and automated notifications to support user health management. Through robust design and testing, the app fulfills all Complex Engineering Problem (CEP) criteria, proving to be a valuable contribution in the health-tech domain.

11. FUTURE SCOPE

Future enhancements to the MAD-CEP application can include integration with cloud databases for multi-device synchronization, AI-driven analytics for adherence prediction, and integration with wearable health devices. Such advancements would make the application more comprehensive and beneficial for long-term healthcare monitoring.

12. Acknowledgment:

The development of the MAD-CEP Medicine Reminder App provided hands-on experience in solving practical problems through technology. It strengthened my technical, analytical, and problem-solving skills while encouraging innovation in health-oriented mobile solutions

Thank you for reviewing my report!