CP5307 Assignment 1 Part A: App Planning

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1. Chosen Scenario

1.1 Selected Scenario

Scenario 2: Elderly Care Coordination Platform

1.2 Problem/Opportunity

The scenario describes Mark, who is the primary caregiver for his elderly mother suffering from dementia. He struggles to coordinate her medication schedules, appointments, and daily routines across multiple family members. This leads to confusion, missed appointments, increased stress for the caregivers, and potential risks to his mother's well-being. The opportunity is to develop a dedicated mobile application that streamlines these caregiving duties. The app aims to provide a centralised platform for tracking medications, appointments, and daily routines, while also facilitating real-time communication and information sharing among all involved family members. This will improve organisation, reduce caregiver stress, and minimise errors in care.

1.3. Why this scenario is interesting or meaningful to you

Having both an elderly father in the early stages of dementia as well as having witnessed friends and relatives face the complexity of shared caregiving, I appreciate the emotional and logistical burden outlined in the scenario. Developing a tool that can genuinely alleviate the immense burden on caregivers, improve the quality of life for the elderly, and foster better family collaboration is a highly impactful and socially relevant challenge.

1.4. Key Target Audiences

The key target audiences for the app will include:

- **Primary Caregivers:** Family members responsible for day-to-day care planning.
- **Secondary Caregivers:** Other relatives, family friends, or professional carers who are involved in the care circle and need to be kept informed, contribute to tasks, or provide support; and,
- **Elderly Users (as appropriate):** Seniors with mild cognitive impairment who can engage with simple reminders.

2. Related Apps

Table 1 summarises 3 apps that are similar or solve a related problem:

App	Platform	Link	Strengths	Weaknesses	Differentiation/Added Value
Medisafe	Android/IOS	https://www.medisafe.com/	• Intuitive medication reminders • Progress reports • Family member invite	• Limited appointment scheduling • No shared calendar view for multiple users	• Combines medication, appointments, and daily-routine tracking in a single shared calendar • Role-based alerts
CareZone	Android/IOS	https://carezone.com/	• Medication list with dosing instructions • Document storage (photos, notes) • Secure	• Lacks real-time multi-user chat • No integration with major calendar apps (Google/Outlook)	• In-app group chat for caregivers • Two-way sync with external calendars
FamilyWall	Android/IOS	https://www.familywall.com/	• Shared family calendar • To-do lists and grocery lists • Photo sharing	• General family focus (not healthcare-specific) • No medication-specific alerts	• Healthcare-centric UI • Automatic dosage conflict detection • Emergency "care check-in" workflows

Table 1: Related Apps – Strengths, Weaknesses, and Differentiation

3. Initial Feature List

3.1 User Account Features

- **User Registration & Login:** Email/password. Potentially social login. Profiles with contact information.
- **Role-Based Access:** Primary caregiver, secondary caregiver (e.g. view-only, contributor), and Senior user.
- **Family Group Management:** Ability for primary caregiver to invite/remove members and assign roles.

3.2 Core Functionality

- **Medication Scheduler:** Create/edit medication entries (name, dosage, frequency), and specific instructions. Automated reminders with snooze and confirm. Log for tracking administration (who gave it, when, any notes/side effects).
- **Appointment Manager:** Shared calendar for doctor's appointments, therapy sessions etc. Push notifications and calendar integration (Google/Outlook). Ability to add appointment details (specialist, location, purpose, notes, questions to ask). Reminders for upcoming appointments for relevant caregiver.
- **Daily Routine Tracker (optional):** Log meals, fluid intake, hygiene, sleep patterns, exercises, mood checks. Quick entry for common routines. Notes section for observations or incidents.
- **Shared Calendar & Timeline View:** Consolidated timeline of all care activities. Color-coded by activity type or caregiver.
- **Real-Time Communication:** In-app messaging or shared family noticeboard for updates. Centralised "Care Journal" for important updates, observations, and progress notes accessible to all approved roles. File/photo sharing for documents (prescriptions, reports.). Push notifications for critical updates.
- **Emergency Information:** Quick access to vital information such as emergency contacts, list of allergies, primary doctor's details, and key medications.
- **Emergency Alerts:** One-touch "I need help" button notifies all caregivers.

3.3 UI / UX Elements

- **Dashboard Home Screen:** Quick, intuitive overview such as next medication, upcoming appointments, and recent updates.
- **Tabbed Navigation Bar:** Easy access to different sections (e.g., Meds, Appointments, Journal, Family).
- **Notification Centre:** Customisable notification settings. Aggregated alerts, snooze/mark as done.
- **Accessibility Design:** Legible fonts, high contrast options, and simple navigation (considering users might be older, stressed, or less tech-savvy).

4. Learning Goals & Resources

Concept/Tool	What I need to Learn	Link To Resource
Android Room Database	Offline-first local storage. Entity relationships. Migrations.	https://developer.android.com/training/data-storage/room
Firebase Realtime Database / Firestore	Setting up and structuring NoSQL databases, real-time data synchronisation, security rules, offline persistence.	firebase.google.com/docs/database or .../firestore
Firebase Authentication	Implementing secure user sign-up/login (email, potentially Google Sign-In), managing user sessions, security rules.	firebase.google.com/docs/auth
Firebase Cloud Messaging (FCM)	Integrating FCM SDK, sending/receiving push notifications (upstream/downstream messages), topic subscriptions.	firebase.google.com/docs/cloud-messaging
Android Notifications API	Creating and managing local notifications for reminders (medication, appointments), and different notification styles.	developer.android.com/guide/topics/ui/notifiers/notifications
WorkManager	Schedule deferrable background tasks such as reminders.	https://developer.android.com/topic/libraries/architecture/workmanager
Room Persistence Library	Storing structured data locally (e.g. for offline access to schedules, emergency info), creating DAOs, entities.	developer.android.com/training/data-storage/room
Android Calendar Provider API	Interacting with the device's calendar or building custom calendar views to display and manage appointments.	developer.android.com/guide/topics/providers/calendar-provider
RecyclerView / ListView	Efficiently displaying lists of data (medications, appointments, journal entries).	developer.android.com/guide/topics/ui/layout/recyclerview
Material Design Components	Build consistent UI (tabs, bottom navigation, dialogs).	https://material.io/develop/android
UI/UX Design for Accessibility	Principles of designing for users with varying abilities, including older adults (font sizes, contrast, navigation).	developer.android.com/guide/topics/ui/accessibility
Android Jetpack Navigation	Manage in-app navigation and passing data between fragments.	https://developer.android.com/guide/navigation
Permissions Handling	Requesting and managing runtime permissions (e.g., for notifications, calendar access if needed).	developer.android.com/training/permissions/requesting
Date & Time Pickers	Implementing user-friendly ways to select dates and times for scheduling medications and appointments.	developer.android.com/guide/topics/ui/controls/pickers
ConstraintLayout	Responsive layouts for varied screen sizes. Accessibility best practices.	https://developer.android.com/training/constraint-layout

Table 2: Learning Goals and Resources