TEAM ROLES AND BREAKDOWN

SOPHIA : Database Hardware Backend

IKER : Hardware Backend Database

FAVOUR :UI/UX Design Frontend Testing

IKRAM : Frontend Hardware Github

**IDEA BREAKDOWN (15 september )**

**The Idea:**

A smart medication reminder system combining a wearable device with an app to help users stay on track with their medication schedules.

**Smart Medication Reminder System** Target Users: Elderly, visually impaired, or people with memory challenges • motion sensor, buzzer, LED, light sensor • Large buttons, audio cues, feedback • Helps anyone manage medication schedules

USER INTERFACE AND TESTING : (18 – 24 SEPTEMBER )

<https://www.figma.com/design/KdbZUIp1p2ycNemRNkvxU7/Pill-Pal?node-id=0-1&t=DmFpZZKHQK7Lr31J-1>

**USER**

* **Workaholics:** People who are constantly on the go with demanding schedules that have to take time-sensitive medications (like ADHD stimulants). If their dose is missed they may suffer the consequence of symptom breakthrough or sleep issues. PillPal will help them pack their medication on the go or remind them to prevent missed doses.
* **Contraceptive Users:** People who take oral contraceptives that require a consistent daily timing within a 3 hour window(Planned Parenthood, n.d.) to maintain that is it effective. Missing birth control pills leads to hormone level drops, reducing effectiveness and increasing pregnancy risk, along with side effects like breakthrough bleeding or nausea (K Health, 2022).
* **Athletes/Gym-goers:** People who workout regularly/professional athletes take daily performance supplements (pre-workout, protein). These are timed around their workout for better results. Taking supplements too early can cause the effects wear off and too late have no benefit during workout.

**Demographic / Character**

* Aged 17-66, but age inclusive
* Active lifestyle, busy schedules, values independence in managing their own help
* Owns smartphone, technical skills are basic to moderate comfort with digital platforms
* Struggle with routine, just need medication backup

**Motivations**

* Stay ahead of medication schedules without stress and anxiety
* Prevent relapse of symptoms
* Manage their own health, not wanting to rely on others - independence
* Take medication privately without attracting attention

SYSTEM

1. **Concept Model**

The PillPal system is an IoT-based smart pillbox and mobile companion application designed to help users manage their medication schedules efficiently. The portable pillbox device (about the size of an AirPods case) provides reminders through vibration, LED light, and buzzer alerts, while the app sends notifications, records medication history, and allows easy schedule management.

The system aims to support users who need consistent medication adherence by combining physical and digital reminders. It can be paired to the app via Bluetooth and carried anywhere, offering accessibility, reliability, and convenience.

1. **Description**

* When the system is powered on, the pillbox connects to the user’s smartphone application via Bluetooth. The app displays a simple interface where users can sign in, create an account, and manage their medication schedules.
* Users can add new medications by entering the name, dosage times, and repetition frequency (daily, weekly, or custom). Each medication can be assigned to one of six compartment slots in the pillbox. Once saved, the schedule is transferred to the pillbox, which vibrates, beeps, and lights up at the set times to remind the user.
* The app also sends push notifications before each dose and logs whether the user took, snoozed, or missed the medication. If the phone is unavailable, the pillbox continues to alert the user independently.
* Users can view their medication history, check streaks for consistency, and clear or review past logs. The settings section allows customization of notification preferences such as sound, vibration, LED light, reminder timing, and accessibility options like a dyslexia-friendly font.
* The hardware uses a Raspberry Pi Zero connected to a PiSugar 2 battery for portability and power management. The system includes vibration motors, LED indicators, and a buzzer, all protected and managed through basic electronic components such as transistors, resistors, diodes, and capacitors on a perfboard.
* Each user action is confirmed by either the app or the device (for example, when saving a medication or acknowledging a reminder), ensuring consistent feedback and reliability in use.