LAKEHEAD UNIVERSITY

COMP-5450-AA - Mobile Programming

Project Name: Medication Scheduler

Submitted To:

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Problem Statement

Managing medication schedules is a critical task for many individuals, particularly those with chronic conditions, elderly patients, or those on complex medication regimens. Missing doses or taking medication at the wrong time can lead to ineffective treatment, health complications, or even severe health risks. Traditional methods of remembering to take medicine, such as alarms, pillboxes, or manual logs, can be unreliable and cumbersome.

Key challenges include:

- **Forgetfulness**: Patients may forget to take their medication on time, especially if they have multiple daily doses.
- **Complex Schedules**: Some medications require specific timing relative to meals, other medications, or specific times of day.
- **Lack of Immediate Reminders**: Standard alarms may not provide sufficient context or reminders about which medication to take.

Solution: Medicine Reminder App

The Medicine Reminder App is designed to address these challenges by providing a digital solution that ensures users take their medication on time, every day. The app leverages modern smartphone capabilities to deliver timely and contextual reminders, improving adherence to medication schedules and, consequently, health outcomes.

How the App Works

1. **User Input and Schedule Setup**:
   - Users enter the details of their medications, including the name and the specific time each medication needs to be taken.
   - The interface provides an intuitive time picker to select the exact time for each medication, ensuring ease of use for all age groups.
2. **Data Storage and Management**:
   - The app securely stores the entered medication schedules in a local database, ensuring that the information is retained even if the app is closed.
   - Users can update or delete medication schedules as needed, providing flexibility in managing their regimens.
3. **Notification Scheduling**:
   - The app utilizes Android's AlarmManager and NotificationManager to schedule and trigger notifications.
   - At the scheduled time, the app sends a push notification to the user's device, detailing which medication to take and any additional instructions.
4. **Alarm Functionality**:
   - To ensure the reminder is noticed, an alarm rings simultaneously with the push notification.
   - The alarm uses the device's notification sound or a custom ringtone, ensuring it grabs the user's attention.

5. **User Interaction**:
   o Upon receiving the notification and alarm, users can acknowledge the reminder by interacting with the notification.
   o The app can log the acknowledgment, providing users with a history of taken medications, which can be useful for personal records or consultations with healthcare providers.
6. **Additional Features**:
   o **Multi-Medication Management**: The app supports multiple medications with different schedules, catering to users with complex regimens.
   o **User-Friendly Interface**: Designed with simplicity and accessibility in mind, the app ensures that users of all technological proficiencies can use it effectively.

Impact and Benefits:

The Medicine Reminder App provides several key benefits:

- **Improved Adherence**: By ensuring timely reminders, the app helps users adhere to their medication schedules, improving the effectiveness of treatments.
- **Health Management**: The app aids in managing chronic conditions by providing consistent reminders, reducing the risk of missed doses and health complications.
- **Convenience and Reliability**: Users no longer need to rely on memory or manual logs, as the app automates the reminder process, offering peace of mind.
- **Enhanced Health Outcomes**: Consistent medication adherence can lead to better health outcomes, reducing hospital visits and improving quality of life for users.

Development Environment:

- **IDE**: Android Studio Koala
- **Language**: Kotlin
- **Testing Device**: Pixel 6 emulator

Core Components:

1. **Main Activity**:
   o The main screen where users input their medicine schedule.
   o Includes a time picker to select the medication time.
2. **Notification Service**:
   o Handles the scheduling and triggering of push notifications.
   o Utilizes Android's NotificationManager to display notifications at the set time.
3. **Alarm Manager**:
   o Manages the setting of alarms.
   o Uses Android's AlarmManager to ring the alarm at the specified time.
4. **Database**:
   o Stores user input data (medicine names and times).
   o Utilizes SQLite or Room for data persistence.
5. **User Interface Components**:

- o **EditText**: For entering medicine names.
- o **TimePicker**: For selecting the time.
- o **Button**: To save the schedule.
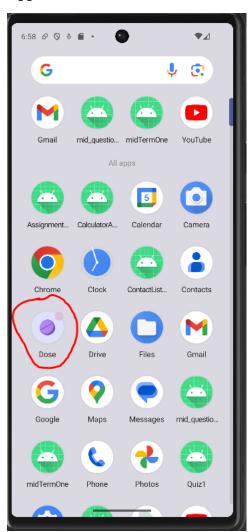- o **TextView**: To display saved schedules.

Setting a Reminder:

- **Input Handling**: Users enter the medicine name and select the time using the TimePicker.
- **Saving Data**: The input data is saved to a local database.
- **Notification Scheduling**: A BroadcastReceiver listens for the alarm trigger and then fires the notification.
- **Alarm Setting**: The AlarmManager sets the alarm based on the user-inputted time.

Notification and Alarm:

- **Push Notification**:
  - o Created using NotificationCompat.Builder.
  - o Triggered by a BroadcastReceiver when the alarm goes off.
- **Alarm**:
  - o Configured using AlarmManager with RTC_WAKEUP to wake the device if it is asleep.
  - o Plays a sound or ringtone when triggered.

Screenshots:

AppIcon:

Loading Page:
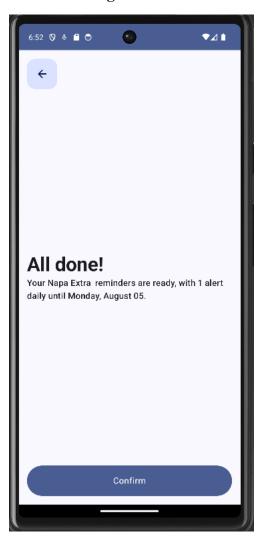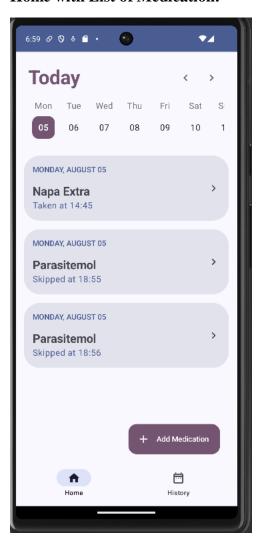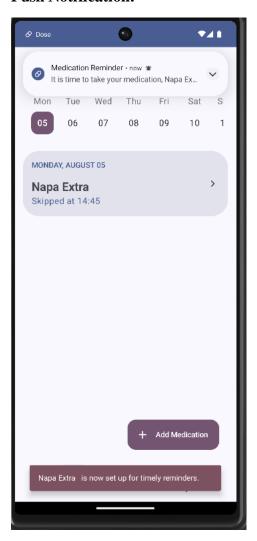
Empty Home Screen:

Add Medication:

Success Message:

All done!

Your Napa Extra reminders are ready, with 1 alert daily until **Monday, August 05.**
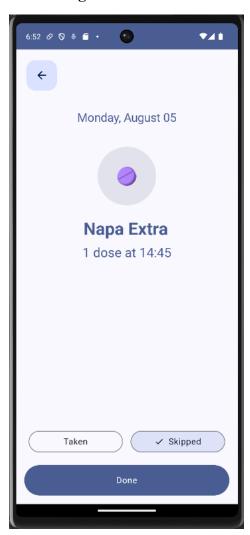
Confirm

Home with List of Medication:

Push Notification:

Details Page:

History: