RxReminder Project Proposal

Receive timely notifications to help you keep track of your medications and adhere to treatment plans.

# Statement of Purpose

* Title: RxReminder
* Purpose: To help users adhere to their prescribed treatment plans.

# Tech Stack

* Development framework: .NET MAUI
* Database: SQLite
* Notifications: Plugin.LocalNotification
* Target platform: Android

# Core Features

* User can view a list of medications.
* User can add, edit, and delete medications.
* User can add multiple reminders for a medication, specifying types and intervals.
* Notifications remind the user to take their medications or request refills.

# Classes and Relationships

* **Models**
  + **Medication**
    - Properties: Id, Name, Dosage, Notes, TotalDoses, RefillThreshold, RxNumber
  + **Reminder**
    - Properties: Id, MedicationId, StartDateTime, IntervalType, IntervalValue, IsActive, ReminderType
  + **IntervalType (Enum)**
    - Values: Hourly, Daily, Weekly, Monthly
* Views
  + Medication List View (Main Page)
    - Displays a list of all user’s current medications.
    - Medications are contained in a SwipeView which allows them to be deleted by swiping left.
    - Button to add a new medication which navigates to MedicationInputForm.
    - Selecting a medication navigates to the MedicationDetailView.
  + Medication Detail View
    - Displays detailed information about a selected medication including Rx number.
    - Shows reminders associated with the medication.
    - Buttons to delete and edit the medication which navigates to MedicationInputForm with existing medication details.
  + Medication Input Form
    - Medication Details Section:
      * Form for adding or editing a medication.
      * User inputs the medication details including name, dosage, total number of doses, refill threshold, Rx number, and notes.
    - Reminders Section:
      * Heading: "Reminders"
      * These reminders are not mandatory fields.
      * User can add a reminder by:
        + Selecting the start date using a date picker.
        + Selecting the start time using a time picker.
        + Specifying the interval value and selecting the interval type from a dropdown.
      * Includes a button "Add reminder" to add further reminders.
* ViewModels
  + MedicationListViewModel
    - Properties: Medications
    - Commands: LoadMedications, AddNewMedication, SelectMedication, DeleteMedication
  + MedicationDetailViewModel
    - Properties: Medication, Reminders
    - Commands: LoadMedicationDetails, DeleteMedication, EditMedication
  + MedicationInputFormViewModel
    - Properties: Medication, Reminders, SelectedStartTime, SelectedDate, IntervalType, IntervalValue
    - Commands: SaveMedication, AddReminder, DeleteReminder
* Data Access Layer
  + **DatabaseContext**
    - Manages database connections and provides methods to perform CRUD operations on Medication and Reminder.
* Services
  + MedicationService
    - Methods: AddMedication, UpdateMedication, DeleteMedication, GetAllMedications, GetMedicationById
  + ReminderService
    - Methods: AddReminder, UpdateReminder, DeleteReminder, GetRemindersByMedication
  + NotificationService
    - Methods: ShowNotification, ScheduleNotification, CancelNotification, HandleDosageReminder

# Data Storage

* **SQLite** for persistent storage.
  + **Tables:** Medications, Reminders
  + **Schema:**
    - **Medications Table:**
      * Id (Primary Key)
      * Name
      * Dosage
      * Notes
      * TotalDoses
      * RefillThreshold
      * RxNumber
    - **Reminders Table:**
      * Id (Primary Key)
      * MedicationId (Foreign Key)
      * StartDateTime
      * IntervalType
      * IntervalValue
      * IsActive
      * ReminderType (either "Dosage" or "Refill")

# Sample Workflow

1. **Medication List View (Main Page)**
   * User sees a list of all medications.
   * User can add a new medication by clicking "Add Medication," which opens MedicationInputForm.
   * User can delete a medication by swiping left on the item.
   * User can select a medication to view its details in MedicationDetailView.
2. **Medication Detail View**
   * User sees detailed information about the selected medication.
   * User sees a list of reminders associated with the medication.
   * User sees the Rx number for easy reference when refilling prescriptions.
   * User can edit the medication by clicking "Edit Medication," which opens MedicationInputForm with the existing medication details pre-filled.
   * User can delete the medication, which also deletes associated reminders.
3. **Medication Input Form**
   * **Medication Details Section:**
     + User inputs medication details including name, dosage, total number of doses, refill threshold, Rx number, and notes.
   * **Reminders Section:**
     + Heading: "Reminders"
     + These reminders are not mandatory fields.
     + User can add a reminder by:
       - Selecting the start date using a date picker.
       - Selecting the start time using a time picker.
       - Specifying the interval value (e.g., every X hours, every Y days) and selecting the interval type from a dropdown (hourly, daily, weekly, monthly).
     + Includes a button "Add reminder" to add further reminders.
   * Medication and reminders are saved to the database.
   * Notifications are scheduled using NotificationService.
4. **Notification Logic**
   * When a dosage reminder notification is sent, TotalDoses is automatically decremented.
   * If TotalDoses falls to or below RefillThreshold, a refill reminder is scheduled.