

Software Requirements Specification (SRS) for Medication Adherence Tracker

1. Introduction

The “Medication Adherence Tracker” is a healthcare-focused application designed to help patients manage their medication schedules effectively. It ensures patients take their medication on time by providing reminders and tracking adherence through check-ins. This system helps reduce the risk of missed doses and promotes better health outcomes through detailed adherence reporting.

1.1 Purpose

This document specifies the requirements for the “Medication Adherence Tracker” application, focusing on functionality, user interface, and database structure. The goal is to build a robust, user-friendly, and secure system for managing medication adherence.

1.2 Scope

The application allows patients to:

- Receive medication reminders.
- Track adherence through patient check-ins.
- Monitor medication schedules and track missed doses.
- Set adherence goals.
- Access adherence reports for personal or doctor use.
- Healthcare professionals can monitor patient adherence in real-time.

The application will be built using C#, WPF, and SQL Server for data storage.

1.3 Definitions, Acronyms, and Abbreviations

- **WPF:** Windows Presentation Foundation.
 - **SQL:** Structured Query Language.
 - **API:** Application Programming Interface.
 - **CRUD:** Create, Read, Update, Delete.
 - **Adherence:** Degree to which the patient follows prescribed medication schedules.
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2. Overall Description

2.1 Product Features

- **Medication Reminders:** Automated notifications to remind patients to take medication.

- **Check-ins:** Patients confirm they've taken medication through app check-ins.
- **Adherence Tracking:** Displays adherence percentage and missed doses over time.
- **Adherence Reports:** Generate reports on adherence that can be shared with healthcare professionals.
- **Goal Setting:** Patients can set medication adherence goals.
- **Doctor-Patient Interaction:** (Optional) Doctors can monitor adherence and adjust schedules.

2.2 User Characteristics

The application is intended for patients of all ages who need help managing their medication schedule, especially those on complex or long-term regimens. Healthcare professionals (doctors, pharmacists) may also use the system to track patient progress.

3. System Features

3.1 Sign-up / Registration Page

Purpose: Allows patients to create an account by providing personal and medical information.

Features:

- Input fields: Name, email, password, date of birth, medical history.

3.2 Login Page

Purpose: Allows registered patients to log in to the application.

Features:

- Input fields: Email, password.

3.3 Dashboard

Purpose: Central hub displaying an overview of the patient's medication schedule and adherence status.

Features:

- Daily medication schedule.
- Adherence percentage.
- Recent and upcoming reminders.

3.4 Add Medication Page

Purpose: Allows patients to add new medications.

Features:

- Input fields: Medication name, dosage, start/end dates, frequency.

3.5 Medication Schedule Page

Purpose: Displays the complete medication schedule.

Features:

- List of past and upcoming doses.
- Option to mark doses as taken or missed.

3.6 Adherence Tracking Page

Purpose: Tracks patient adherence and generates detailed reports.

Features:

- Visual adherence report.
- Missed or delayed doses history.

3.7 Reminders & Notifications Page

Purpose: Lists reminders sent to the patient and allows customization of notification settings.

Features:

- List of past and upcoming reminders.
- Reminder settings: Notification frequency, preferred time.

3.8 Check-in Page

Purpose: Patients can confirm they've taken their medication.

Features:

- Option to report side effects.
- Log medication as taken.

3.9 Reports Page

Purpose: Provides adherence reports and allows export for medical review.

Features:

- Visual adherence summary.
- Exportable PDF/CSV reports.

3.10 Profile Page

Purpose: Manage personal and medical information.

Features:

- Input fields: Name, medical history, allergies.

4. External Interface Requirements

4.1 User Interfaces

The app provides an intuitive interface for patients to manage medication schedules, receive reminders, and track adherence, along with optional healthcare provider access.

4.2 Hardware Interfaces

The application will integrate with external healthcare systems and may optionally sync with wearable devices through APIs.

5. Database Design

5.1 Tables and Relationships

- **Users Table:** Stores user details (UserID, Name, Email, DateOfBirth, MedicalHistory).
- **Medications Table:** Stores medication information (MedicationID, UserID, MedicationName, Dosage).
- **MedicationSchedules Table:** Tracks scheduled doses (ScheduleID, MedicationID, ScheduledTime, Status).
- **CheckIns Table:** Logs check-ins for each scheduled dose (CheckInID, ScheduleID, CheckInTime).
- **Reminders Table:** Stores reminder notifications (ReminderID, UserID, ScheduleID, ReminderTime).
- **Notifications Table:** Stores general notifications for users (NotificationID, UserID, NotificationType).

Relationships:

- A user can have many medications.
 - Medications can have multiple schedules.
 - Each schedule can have multiple check-ins.
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6. Non-functional Requirements

6.1 Performance

The system should efficiently handle up to 5,000 concurrent users and support high traffic during medication times.

6.2 Security

- All user data should be encrypted during transmission and storage.
- Passwords should be securely hashed.
- Role-based access control (RBAC) for healthcare professionals.

6.3 Scalability

The system should scale to support additional users, medications, and adherence tracking data over time without performance loss.