AUTOMATIC MEDICINE REMINDER

Mini Project Report

Submitted in partial fulfilment of the requirement of the degree of

BACHELORS OF TECHNOLOGY

to

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STUDENT CERTIFICATE

This is to certify that the Mini Project Synopsis entitled, "Automatic Medicine Reminder"

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is a bona fide record of original project work carried out by us during the academic session 2024-25, as a partial requirement for the subject "Mini Project" under the B.Tech CSE program at K.R. Mangalam University, Gurugram, India.

We further certify that:

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- **All external references, tools, or frameworks used during the development of this project have been properly acknowledged.**

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Abstract

"Automatic Medicine Reminder" is a mobile application aimed to assist users in scheduling their medicines on time. The proposed system provides for user registration, in which the user provides their name and age, address, and contact number. After registration, users can add the details of the medicines they have to take, along with the specified times. The app sends notifications to remind users to take their medicines at the correct time, thus ensuring that no doses are missed.

Key features include adding multiple medicines with customizable schedules. Users can receive automatic reminder notifications and maintain a directory of doctors. Detailed information is available about doctors from various specialties such as physicians, psychologists, cardiologists, and neurologists, containing doctor names, hospital names, specializations, and available timings. The UI/UX is designed to be simple with a clean and user-friendly approach based on modern design practices.

The application, in all its significance, will assist in medication adherence among elderly patients or chronic disease patients since they will be given information about trusted healthcare providers very quickly, thus saving time. That is what this application strives to achieve: improve health outcomes for everyone, plus advantageous for user convenience and healthcare management.

Problem Statement

In today's fast-paced society, it is very easy to forget to take prescribed medicines on time, standing true for elderly individuals and patients holding chronic complaints. While missing a dose or taking it at the wrong time can result in compromised health, patients often have trouble even recounting the names of some doctors who have rendered consultation to them-what to say of their specializations and time schedule.

The issues of main concern in the project are:

- Remembering multiple medication timetables, if a patient is taking multiple types of drugs during a day.
- Receiving information rather late.
- The safety and quality challenges faced in terms of missing dosages and unclear communication regarding consultations.

It is now proposed to develop an Automatic Medicine Reminder Application, capable of:

- Collecting personal details (name, age, address, phone number).
- Recording the dates and times of the medication along with the medication name.
- Sending timely notifications, which act as reminders.

- Providing a system to record details for multiple doctors (physician, psychologist, cardiologist, neurologist) like respective names, affiliated hospital name, specialization, and consultation days and timing.

Objectives

- To design a mobile-based application where the user takes medicines and is reminded through notifications at scheduled times.
- To allow the users to add their information (e.g., name, age, address, and contact number) for more personal interaction.
- To allow users to easily enter medicine details, such as the medicine name and scheduled time, with a user-friendly UI/UX.
- To maintain a doctor's database (such as physicians, psychologists, cardiologists, and neurologists), including fields like doctor name, hospital name, specialty, and consultation timings.
- To create an organized platform for medicine reminders and doctor information in one place to facilitate user health care management.

Introduction

1. Problem Background

Mental health is one of the essential components of health. Millions of people around the world are suffering from mental conditions like depression, anxiety, bipolar disorder, and other mental ailments. At some point during treatment, a medication regimen should be adhered to, and a mental health practitioner consulted regularly. Unfortunately, nonadherence is highly prevalent among mental health patients. Forgetting to take prescribed medicine can have dire consequences, such as aggravating a condition and increasing the chances of hospitalization or even the risk of losing one's life.

A mental patient may have a greater struggle in taking their medication regularly because of cognitive limitations, forgetfulness, or incapacitating effects of the disorder itself. The solution, really, is a simple combination such as automatic reminders for taking medicines and easy access to information about their doctors.

Statistical Insights and Impact

According to the World Health Organization (WHO):

- Over 970 million people have a mental disorder worldwide.
- Depression is one of the leading causes of disability in the world.

Adherence Rate:

- Some 50% of patients with chronic illnesses, including mental health disorders, do not take medications as prescribed.
- Non-adherence causes almost 125,000 deaths in one year in the United States alone.

Statistic	Value
Global mental health disorder prevalence	1 in 8 people
Medication non-adherence rate	50%
Annual deaths due to non-adherence	125,000
Financial burden of non-adherence (US)	$100 billion per year

The Significance of Timely Medication and Doctor Access

- Appropriate adherence to medications will ensure
- Better control of mental health symptoms.
- Reduced risk of hospitalization.
- Better quality of life.

2. Proposed System: Our Project Overview

Key Features:

- User Profile Management: Name, Age, Address, Contact Details

- Medicine Reminder: Add medicine name and reminder time. Notification-based alert.

- Doctor Directory:

    o Categories: Physician, Psychologist, Cardiologist, Neurologist

    o Doctor details: Name, Hospital, Specialization, Timing

- UI/UX:

    o Simple and intuitive, based on Figma design shared.

    o Easy navigation for elderly and mental health patients.

- GenAI Integration (Future Scope):

    o Predictive medicine scheduling based on user's condition.

    o Chatbot to answer simple medical queries.

    o Symptom checker and appointment suggestions.

Proposed Solution

1. Data

1.1 User Data

- Name

- Age

- Address

- Contact Number

1.2 Medicine Data

- Medicine Name

- Time of intake

1.3 Doctor Data

- Doctor Name

- Hospital Name

- Specialization (Physician, Psychologist, Cardiologist, Neurologist, etc.)

- Doctor Timing (Availability Time)

2. Solution Discussion

2.1 Features

- Add user details.

- Set multiple medicine reminders.

- Push notifications at the set time.

- View and store doctor information categorized by specialization.

- Easy-to-use UI/UX (designed in Figma).

2.2 Problems Solved

- Ensures users do not miss medicine schedules.

- Reduces medical complications from missed doses.

- Centralized storage of doctors' information for emergencies.

- Assists elderly or busy users by automating the reminder system.

3. Description of Data

- Origin: Data is collected directly from users during app setup and while adding medicines or doctor information.

- Features:

  - User details are essential for personalization.

- o   Medicine name and time are critical for sending notifications.

  - o   Doctor information allows easy consultation when needed.

- Why taken: The app needs minimal, relevant data to maintain simplicity while offering essential functionalities.

- Usefulness:

  - o   Personalized reminders.

  - o   Emergency doctor contact.

- Reference:

  - o   No external dataset; all data is user-provided.

4. Mathematical Model

We can represent the system mathematically as:

Let:

- U = Set of users $\{u_1, u_2, ..., u_n\}$

- M = Set of medicines $\{m_1, m_2, ..., m_n\}$

- D = Set of doctors $\{d_1, d_2, ..., d_n\}$

Functions:

- f1 (User Input) → Add user details (U).

- f2 (Medicine Input) → Add medicine name and time (M).

- f3 (Reminder Trigger) → Notify when system time = medicine time.

- f4 (Doctor Input) → Add doctor details (D).

Condition:

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If CurrentTime == MedicineTime
    → Trigger Notification for MedicineName
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Thus, the app works by mapping time-based events to notification actions.

5. Solution Details

5.1 Steps / Procedure / Algorithms

1. User opens the app and registers (name, age, address, contact).

2. User adds medicine details (name, intake time).

3. User adds doctor details (name, hospital, specialization, timing).

4. Background service checks the current time continuously.

5. If current time matches any saved medicine time, trigger a push notification with medicine name.

6. Users can view doctor details categorized by specialization.

5.2 Flowchart

[Start]

↓

[Register User Details]

↓

[Add Medicine Details] → [Save to Database]

↓

[Add Doctor Details] → [Save to Database]

↓

[Wait for Scheduled Time]

↓

[Trigger Notification]

↓

[Done]

6. Problem Architecture / High-Level Diagrams

6.1 System Architecture

[User Input]

↓

[Database Storage]

↓

[Time Monitoring Service]

↓

[Notification System]

↓

[User Reminder]

Results

1. Evidence of Developed Tool/UI

UI Screenshots:

- Take many screenshots from your Figma design and compare it with the actual developed UI of the app.

Photograph important screens such as:

- User Details Screen (where users fill in their name, age, address, and contact number).
- Screen to remind users of their medicines (where one maintains the name of a medicine and time).
- Doctor Details Screen (where the user can give input on the name, specialization, hospital, timings, etc. on doctors).
- Notification Alert (a sample for how the reminder notification looks).
- It should represent the complete flow of activities from user input to receiving reminders organized into a series of stages.

2. Performance of Algorithms Used (in Metrics)

- Algorithms:
- Reminder Algorithm: You may also quantify the accuracy and punctuality of reminder notification and specify.
- Success Rate: Percentage of notifications being sent out at the correct time.
- Notification Latency: Average time difference between scheduled time of the reminder and actual notification delivery.
- Data Handling Algorithm: You may also include statistical measures if you are using any algorithms for storing/retrieving user or doctor data.
- Response Time: Time taken to save user data.
- Database Query Performance:Speed at which the application fetches doctor details when required.

Metrics to Include:

- Percentage of correct timings of reminders.
- Average response time for saving/retrieving user/doctor details.
- Success rate of notifications (for example, how many of the notifications are received on time).

3. Statistical Performance

- User Data Number of Users: How many have registered and used the app.

- Number of Reminders Set: Average number of reminders per user per day.
- Doctor Details Added: Number of doctor profiles entered by users.
- You can also picture this in a bar graph or pie chart.

Notification Data

- Reminders Success Statistics: A bar or line chart showing the percentage of reminders sent on time versus late.
- Frequency Usage: A chart which indicates how many times remind feature has been interacted with by users.

Doctor Data:

- Total number of doctors added (you can show a table with details of doctor types and frequency of each type being added by users).

4. Impact/Relevance/Usefulness of Results

Relevance of Use:

- Timely Medication: Discuss how the app ensures that users take their medication on time and how it prevents them from skipping doses.
- Doctor Information Access: Convenience of having those details at hand-to-hand reach in emergencies when they have specialized timings.

Health Impact:

- You could mention the qualitative results or feedback from users on how the app is helping improve health management due to reminders about medication and quick access to doctor details.

Real-World Relevance:

- Describe how this app can be quite helpful for chronic illness patients or elderly people who need medication scheduled with some help.
- Put forth how it could prove to be a significant tool to ensure appropriate adherence to medication routines and better health management.

Conclusion:

The proposed automatic medicine reminder app provides a valuable solution for ensuring timely medication intake and easy access to doctor details, particularly for individuals with chronic conditions or those requiring regular treatments. The app's reminder system aids in improving medication adherence, while the doctor information feature enhances healthcare management. Future directions include integrating voice recognition for hands-

free operation, adding medication history tracking, and expanding the app to support multiple languages for broader accessibility.