**Real-time Tracker Healthcare System**

# Chapter 1 (Introduction):

## What is the real-world problem?

In modern healthcare, effective communication and efficient management of personal health information are crucial for enhancing patient outcomes, especially for those managing chronic conditions. However, many patients face significant challenges in tracking their medications, remembering dosage schedules, and providing timely updates to their healthcare providers. Such issues contribute to medication non-adherence—a major factor leading to worsening health conditions, increased hospital admissions, and rising healthcare costs. Studies indicate that non-adherence rates can exceed 50% for certain chronic medications, which highlights the need for tools that support patients in consistently following their treatment plans.

Beyond medication management, scheduling appointments and maintaining a comprehensive record of health interactions can be complex and overwhelming. Patients often lack a centralized platform where they can view, update, and share their health data with their doctors in real-time. This disconnects not only burdens patients but also limits healthcare providers’ ability to monitor adherence and adjust treatments effectively.

To address these challenges, this project seeks to develop a user-friendly web application that allows patients to manage their medication schedules, document adherence, and seamlessly book appointments—all within a single, integrated system. By providing a centralized, accessible solution, this app aims to empower patients to take an active role in their health management, ultimately improving adherence and facilitating a more collaborative, transparent patient-doctor relationship.

## Importance:

The importance of a healthcare management platform that facilitates medication tracking and doctor-patient communication cannot be overstated, particularly in today’s digital age where access to health information is vital for both patients and providers. Non-adherence to prescribed medications is one of the leading causes of treatment failure, especially for chronic illnesses like hypertension, diabetes, and cardiovascular disease. When patients forget to take their medication or fail to inform their healthcare providers about changes in their regimen, it can lead to significant health complications, preventable hospitalizations, and even increased mortality rates. By providing a system where patients can easily update and monitor their medication intake, this project aims to address these critical issues. Empowering patients to take control of their health through timely reminders and streamlined communication with their doctors can have a direct, positive impact on adherence rates and overall health outcomes.

Moreover, the healthcare landscape is increasingly shifting toward patient-centered care, where patients are encouraged to be active participants in their health management. A centralized platform that integrates multiple health management functions—such as medication tracking, appointment scheduling, and health data sharing—supports this model by making it easier for patients to stay informed and engaged in their care. This app not only offers a convenient solution for patients but also serves as a valuable tool for healthcare providers, who can monitor their patients’ adherence and adjust treatments as needed. In addition, having a digital record of medication updates and appointment history can be especially helpful in reducing errors, improving the accuracy of medical records, and allowing for better-informed clinical decisions. By aligning with these principles of modern healthcare, this project has the potential to contribute meaningfully to patient empowerment and improved healthcare delivery.

## Aims and goals:

 Develop a digital solution that empowers patients to manage their health information and engage actively in their healthcare.

 Enable users to:

* Register personal details securely.
* Update and track medication adherence.
* Share medication and health information seamlessly with healthcare providers.

 Improve communication between patients and healthcare providers, facilitating real-time access to essential health data and supporting better treatment adherence.

 Streamline the appointment scheduling process, allowing patients to arrange consultations easily and maintain consistent follow-up with healthcare professionals.

 Support a patient-centered approach to healthcare by addressing gaps in medication management and doctor-patient communication.

 Prioritize security, usability, and data privacy in the system's development to ensure it meets the needs of both patients and healthcare providers effectively.

# Chapter 2 (Literature review)