

Patient Monitoring and Database System

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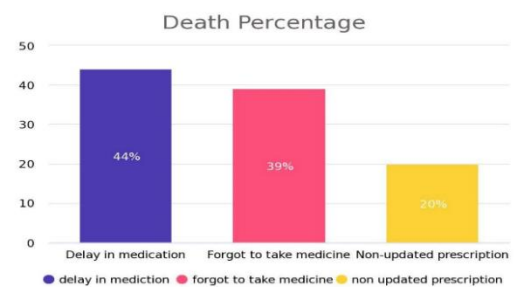
Abstract ---- Both urban and rural areas struggle with a serious healthcare crisis. This research paper explores the implementation of patient monitoring as well as the patient's database system using the modern technology. The goal of this study is to create a time- and resource-saving, effective system for managing healthcare and database. The proposed system consists of a combination of database and monitoring services which provide valuable insights into patients' diagnosis and recovery and help healthcare providers make informed decisions about patients' care. In summary, the Patient Monitoring and Database System aims to digitalize the medical and record management system in India. The app provides valuable information which can be used to improve patients' treatment, enhance clinical decision making and optimize resource utilization.

Keywords — *Mobile application development, Android studio, database and monitoring.*

I. INTRODUCTION

India influences and develops global healthcare significantly because it has one of the fastest-rising populations in the world. A larger population puts more pressure on the healthcare system and resources leading to potential shortages of healthcare professionals, medicines and technologies. Population, poverty and healthcare are interlinked factors and their relationship can significantly impact the health outcomes of a population. India is a prime example of a country where population, poverty and healthcare are interlinked. With a growing population of over 1.4 billion people, poverty is still prevalent, particularly in rural areas.

The lack of access to healthcare services and infrastructure can lead to poor health outcomes for those living in poverty, such as malnutrition, infectious diseases and maternal and infant mortality. According to a 2017 study, participants forgot to take their meds 44–46% of the time and delayed taking them 80–85% of the time. Each year, it



is estimated that 125,000 people die as a result of not taking drugs as directed.

We therefore suggest a project to address this issue that focuses on creating a public application that offers database management and patient monitoring options.

- The application allows the doctor/hospital to monitor their patients.
- As a part of the monitoring services, the app provides an efficient medicine reminder which also stores the exact medicine intake time of the patient in a database.
- The application stores patients' medical records as well, thereby virtualizing important data.

Patient database and monitoring goes with hands clasped, as the information collected through patient monitoring is often recorded in the patient's database.

II. METHODOLOGY/EXPERIMENTAL

The process to successfully implement Patient Monitoring and Database System involves the development of the mobile application in a software such as Android Studio. Various features of mobile UI have been used to implement the medicine reminder system. A cloud database and Backend-as-a-Service Firebase is used to store the patient's records and medicine intake data.

The tools listed below have their own functionalities:

- Java - coding language
- Android Studio – development software

- Firebase – data storage and authentication.

A miniature model with all the advanced solutions were created. According to the rough sketch all components were assembled, programmed and debugging issues were resolved.

A. Theory

I. The app has two types of user interfaces

1) for doctor 2) for patient

On the doctor's first login, they would be asked to sign in to their account. If the doctor has an account, they can simply login to the existing account, which they will create using all the necessary details such as their name, contact number, education and experience, specialty and hospital details and only then are they allowed to proceed. In this way we carry out the user authentication for the app. They can "add patients" and "see patient details" once they log in to their newly formed account. Through "view patient details" they can view a patient's medical records, monitor their medicine intake and prescribe a new medical prescription which would be stored in the prescription database. When a person tries to sign in as a patient would have to go through the same authentication procedure to login. The patient has the options to check or edit their medical records, check inbox or view prescription given to them by the doctor. The app also reminds the patient of their medicine intake time.

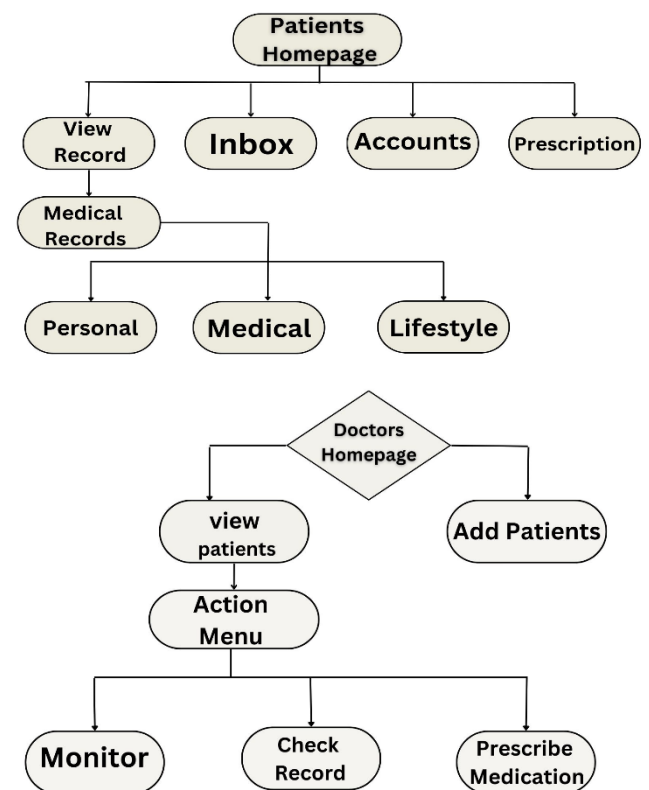
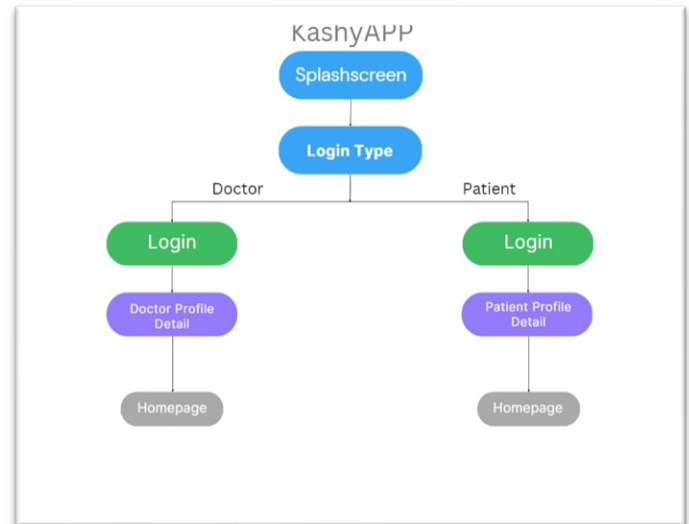
Ambulances and accidents are linked in a variety of ways. First and foremost, ambulances are frequently the first responders to accidents and serve an important role in giving medical care to those who have been harmed. Second, ambulances can be outfitted with a variety of sensors that collect information regarding incidents, such as the location, severity, and number of cars involved. This information can help enhance traffic safety and emergency response. Third, ambulances can be linked to a central dispatch system, allowing paramedics to interact with one another as well as with other emergency workers. This communication can aid in ensuring that patients receive the care they require as soon as feasible. India has one of the highest rates of traffic accidents in the world. In India in 2021, there were 4,12,432 traffic accidents, resulting in 1,53,972 deaths and 3,84,448 injuries. This translates to 1130 accidents and 422 deaths each day, or 47 accidents and 18 deaths per hour.

In general, ambulance response times in India are slower than in developed countries. According to a National Crime Records Bureau (NCRB) data from 2019, the average response time for ambulances in India was 16 minutes. However, response times varied significantly across the country, with some states, such as Kerala, having substantially faster response times than others.

Patients can call for ambulance through the app which would automatically ping the hospital nearest to the point of emergency. After booking an ambulance the patient can track real time location of the incoming ambulance. This also makes it easier for the driver to get to the emergency

location quicker. Ambulance tracking helps find the nearest hospital that provides ambulance service and helps drivers reach the emergency location quickly.

B. Algorithm



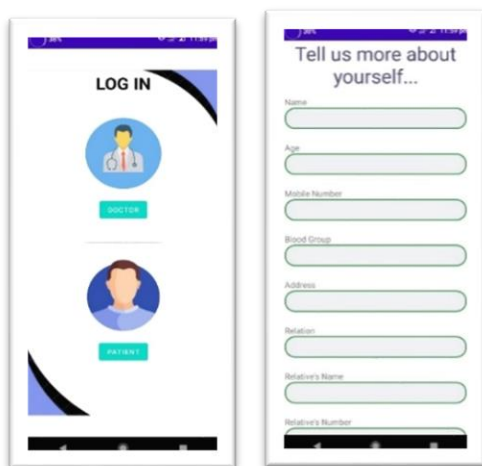
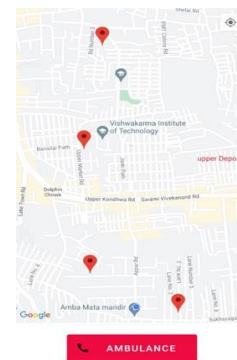
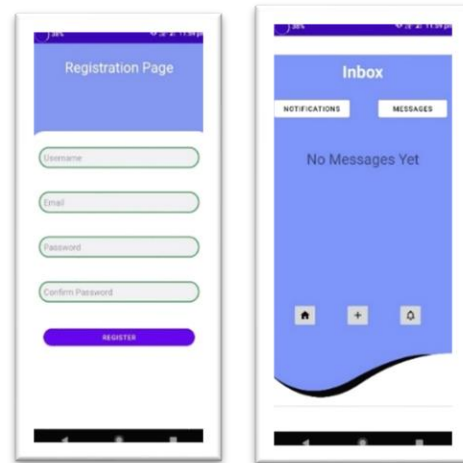
LIMITATIONS

- At present the app only supports one language i.e., English which would make it difficult to be used by the ordinary population.
- No website support as of yet. The introduction of a website would make the whole operation of recording databases much faster.
- No concrete way of authenticating the registering doctors and hospitals.

III. RESULTS AND DISCUSSION

The project aims to help India with digitalization. The data is stored in a safe manner which prevents the records from being lost. Digital storage also allows the app to generate charts and graphs to display various treatment results collected over a span of time.

Since the prescriptions are provided digitally, this reduces the patient's dependency on chemists for interpretation. The messaging features allows the doctor to remain touch with the patients even after the offline diagnosis. The online payment feature helps government keep an eye on the money charged by hospitals.



IV. Future Scope

The future scope of Patient Monitoring and Database System is vast. We have planned a lot of advancements in the app such as vaccine registration, providing medical certificates, introducing a direct messenger system which would connect the doctor and their patients. All these features would allow for a stable scalability. In order to tackle the limitations, we plan to integrate different languages support in the app as well as release the website version of the app for hospitals, which would increase the overall reach of the app.

V. CONCLUSION

Patient Monitoring and Database System plays a crucial role in healthcare, as it allows healthcare providers to congregate, store and analyze patient data to improve patient's treatment. All this data gives information about demographics, medical history, diagnoses and treatment data about a patient and can be used to identify trends and patterns in the patient's health, track diseases, outbreaks and monitor effectiveness of a cure. This has a potential to improve patient treatment outcomes and reduce healthcare costs by enabling early detection and intervention of health problems. As all of these things are digital it

helps reduce time and automates tasks. This is an approach to make the system adoptive and intelligent.

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