

Online Medical Prescription Management System

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Abstract - An Online Medical Prescription Management System is a platform that enables healthcare providers to manage, track and store medical prescriptions electronically. This system streamlines the prescription process by eliminating manual paper-based methods and enables secure and efficient management of patient prescriptions. The platform is accessible from any device with an internet connection and provides real-time updates, secure data storage, and electronic prescription renewals. The system improves patient safety by reducing the risk of errors associated with manual prescription processes and improves the overall efficiency of the healthcare system by facilitating communication between healthcare providers and pharmacies.

Key Words: Healthcare, digital prescription, online medical prescription management, digital prescription management, electronic prescription.

1. INTRODUCTION

The healthcare industry has undergone a significant evolution over the past few years, with the increasing usage of digital technologies. The use of electronic medical records and remote medication has revolutionized the way healthcare services are delivered, making it more efficient and accessible. However, the management of medical prescriptions still largely relies on paper-based systems, which are prone to errors and can result in serious consequences for patients.

To address this issue, we propose the development of an "Online Medical Prescription Management System" – a web-based application that enables healthcare providers to manage, track, and store medical prescriptions electronically. This system streamlines the prescription process, eliminates manual paper-based methods, and enables secure and efficient management of patient prescriptions. The application is accessible from any device with an internet connection and provides real-time updates, secure data storage, and electronic prescription renewals.

1.1 Objectives

The objective of the "Online Medical Prescription Management System" project is to create a modern and

efficient platform for healthcare providers, doctors and patients to manage, track, and store medical prescriptions electronically. By digitizing the prescription process, the system aims to improve patient safety, accessibility, and satisfaction while reducing the risk of errors associated with manual processes.

The project aims to address the limitations of the existing manual paper-based system for managing medical prescriptions and streamline the prescription process, making it more efficient and effective for both healthcare providers and patients. The system will provide a secure and accessible web-based platform for healthcare providers to manage and track patient prescriptions, allowing for real-time updates and secure data storage.

1.2 Problem Statement

The current manual paper-based system for managing medical prescriptions is outdated, error-prone and inefficient. Traditional paper-based prescription management system often leads to delay, inaccuracies, and difficulty in accessing and updating information, which can lead to serious health consequences for patients. Patients might lose their physical prescriptions, or the prescription papers might get damaged, resulting in the loss of the patient's previous prescription records. Therefore, there is a need for a more efficient and convenient way to manage medical prescriptions of patients.

2. LITERATURE REVIEW

According to Abeysinghe, Sachini. (2021), developing a prescription management system is very valuable and important product for future medical field. Because since long period of time, lot of people has done researches on prescription management. But there isn't proper solution for the illegible hand writing and unclear handwritten prescriptions.

The author proposed a prescription management system that requires patients to download a mobile application and create an account, while doctors need to register on the system's website. Once registered, doctors can upload patient details and generate unique prescriptions that are saved in the database with a QR code for patients to scan and

receive. Pharmacists can scan the QR code to ensure accurate dispensing of medicine within the prescription's validity period. The system has an accuracy rate of 99%, and the admin can manage doctors, patients, pharmacists, and drug details. The author states that this system aims to improve the efficiency and interaction among doctors, patients, and pharmacists, addressing the inconveniences in the current prescription process. (Abeysinghe, Sachini, 2021).

Few drawbacks of this approach are listed below:

- 1) Patient can access the app using mobile app only. Hence this limits the scope of the system to mobile devices only.
- 2) Self-registration of patients and doctors might lead to duplicate data and data redundancy.
- 3) Prescriptions are not downloadable. Hence the access to the prescription completely relies on internet connectivity.
- 4) The system might fail in case of failure of camera in smartphones that are used to scan the QR code.

This paper explains about a survey conducted in 2014 to explore the impact of electronic prescriptions (e-Prescriptions) on the dispensing process in Finnish community pharmacies. The survey collected responses from a random sample of dispensers and pharmacists, and found that some aspects of the dispensing process have become easier with e-Prescriptions, such as prescription renewal and transferring prescription data. However, correcting dispensing entries and errors on the prescription have been hindered. The study concludes that the e-Prescription system needs further development to ensure easy and efficient use in the future. (Hanna Kauppinen, Riitta Ahonen and Johanna Timonen., 2017)

This paper examines the high rate of medication prescribing errors in Ethiopia, which is 58.07% due to the traditional paper-based prescription system. The study aims to assess the perceptions of physicians towards the implementation of an electronic prescription system in Ethiopia. A cross-sectional study was conducted among 384 physicians working in public hospitals in the Amhara region. Results showed that 76.5% of participants had a positive perception of electronic prescription, with technical skill, good internet access, and perceived usefulness of the system being significant factors associated with their perception. The study highlights the potential of electronic prescription systems in improving medication safety and reducing prescribing errors in resource-limited settings. (Hailiye Teferi G, Wonde TE, Tadele MM, Assaye BT, Hordofa ZR, Ahmed MH, et al., 2022)

This paper proposes the development of an Electronic Health Records (EHR) system to integrate with healthcare

providers all over India and implement it with cloud infrastructure. With a population of 1.27 billion, EHR aims to provide access to evidence-based tools that health providers can use to make decisions and diagnose diseases about patients' care delivery. Challenges include handling heterogeneous data, data storage, data analytics tools for decision-making, data privacy, and security. Once implemented, EHR can be used for remote medication, vaccination management, disease diagnosis, remote diagnosis, real-time monitoring, and personal health records. (R. Kavitha, E. Kannan and S. Kotteswaran., 2016)

This paper evaluates the impact of HUMIRA Complete Pro (HCPPro), an online prescription management system, on patients initiating adalimumab treatment. The retrospective cohort analysis found that patients using HCPPro had a lower abandonment rate and reduced time to prescription fill compared to those not using the system. After controlling for baseline characteristics, abandonment odds were 43% lower for HCPPro users. The study suggests that online prescription management systems can significantly improve treatment initiation outcomes. (Hawkes, J.E., Mittal, M., Davis, M. et al., 2019)

This paper proposes a smart medical prescription service (SMPS) model, utilizing a cloud-based database management and control system for doctors, patients, and diagnostic centers. The SMPS system offers a website-based platform with a MySQL database, allowing doctors to access patient details, prescribe medication, and recommend medical tests. Patients can access their prescription details using their own access method, and diagnostic centers can upload patient test reports on time. Additionally, the system offers a pharmacy view feature for searching medicine with price and specifications. This system offers a modern alternative to the conventional medical system, with better options for exploring drugs and lessening patient suffering. (Lala, Bijoya & Naher, Sabikun & Mahmood, Mohammed & Hoque, Md Murshadul., 2018)

3. EXISTING SYSTEM

The existing system for managing medical prescriptions has been in place for many years, and while it has served its purpose in the past, it is becoming increasingly outdated and inefficient. Doctors must write prescriptions by hand on paper, which can be problematic for many reasons. For one, paper prescriptions can easily be lost or damaged, leading to a lack of information for both healthcare providers and patients. Moreover, illegible handwriting can lead to confusion and mistakes in medication dosages or instructions.

4. PROPOSED SYSTEM

The proposed Online Medical Prescription Management System is a web-based application that aims to address the

shortcomings of the existing system by providing a modern, secure, and accessible platform for managing medical prescriptions. The system allows healthcare providers to write and renew prescriptions electronically, eliminating the need for paper-based processes and reducing the risk of errors associated with manual processes. The system is designed to be easy to use, with an intuitive interface that simplifies the process of managing prescriptions.

The proposed system enables real-time updates and easy accessibility from any device with an internet connection, providing patients with greater control over their own healthcare. Patients can view and download their prescriptions, making it easier for them to manage their medications and ensuring that they always have access to their prescription records.

5. SYSTEM SPECIFICATIONS

The system specifications for the Online Medical Prescription Management System include the use of Angular as the front-end web application framework, Bootstrap for providing responsive and mobile-friendly UI components, Spring Boot as the backend Java framework, and SQLite as the database management system. These technologies provide a robust and scalable platform for developing a modern and efficient medical prescription management system.

6. SYSTEM ARCHITECTURE

The below given figure clearly explains about the system architecture of Online Medical Prescription Management System.

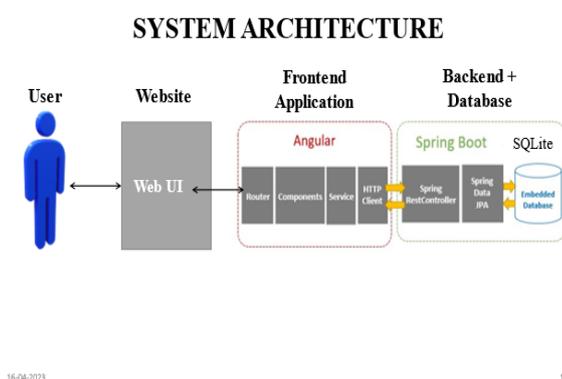


Fig – 1: System Architecture diagram

7. MODULE DESCRIPTION

The list of various modules of the system and their brief descriptions are given below:

- ❖ Admin module – Register, view and edit doctor & patient details.

- ❖ Doctor module – View patient details and add, renew and delete prescriptions.

- ❖ Patient module – View and download prescriptions.

7.1 ADMIN MODULE

The admin module is an important component of the Online Medical Prescription Management System. It provides administrators with the necessary tools to manage and maintain the platform. One of the main functions of the admin module is to allow administrators to register, view, edit, and delete doctor and patient details on the platform. This ensures that all user information is accurate and up-to-date.

Another important feature of the admin module is the ability to create new accounts for doctors and patients and manage their access to the system. The admin can grant or revoke access to the platform as needed, ensuring the security and privacy of patient data.

In addition, the admin can also update and maintain the accuracy of doctor and patient information on the platform. This includes updating contact information, name, age, email and other details. Any changes to the account details must be done by the admin only, to ensure the accuracy and security of the data.

The admin login credentials will be created during development and shared with the admin. Using those credentials, the admin can log in to the system and manage user accounts and data. This ensures that only authorized personnel can access the platform and make changes to the data.

7.2 DOCTOR MODULE

The doctor module of the proposed Online Medical Prescription Management System allows doctors to view patient details and manage prescriptions. The login credentials of doctors will be created by the admin during registration of doctor details, and doctors can use these credentials to log in to the system.

Using the module, doctors can access patient information such as medical history and previous prescriptions. Doctors can also add new prescriptions, renew existing prescriptions, or delete prescriptions as needed. The module provides doctors with a search function to look up and manage patient prescriptions based on the patients name or contact number. Thus, the doctor module allows doctors to have greater control over the management of patient prescriptions, which can lead to improved patient outcomes and a more efficient healthcare system.

7.3 PATIENT MODULE

The login credentials for patients will be created by the admin during the registration of patient details. Once the registration process is complete, patients can use the provided credentials to log in to the system.

The patient module allows patients to access their prescription history, view their current prescriptions, and download their prescriptions. Patients can also search for the list of prescriptions prescribed by various doctors based on the date of prescription to view and download the required prescription.

With the online medical prescription management system, patients can easily access and manage their prescription history. This system also provides patients with greater control over their healthcare by allowing them to access their prescription information from any device with internet connectivity.

8. USE CASE DIAGRAMS

The below given figures are the various use case diagrams of the Online Medical Prescription Management System.

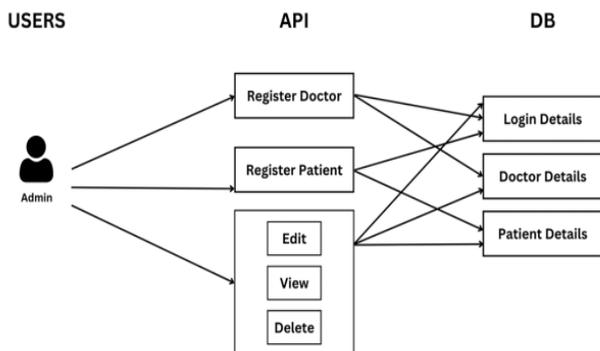


Fig - 2: Admin Use case diagram

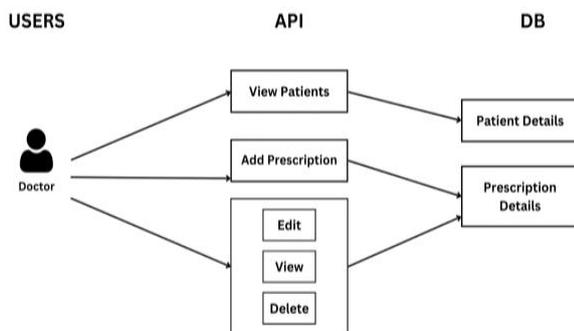


Fig - 3: Doctor Use case diagram

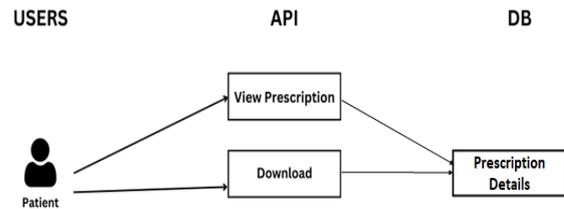


Fig - 4: Patient Use case diagram

9. IMPLEMENTATION DETAILS

The web application for Online Medical Prescription Management System is developed using Angular, Bootstrap CSS, Spring Boot and SQLite3 Database. Initially, the login credential of the admin is created by the developer. Using this credential, the admin can login to the web application and register Doctor details and Patient Details to the system. While the admin creates registrations of other users, the system automatically generates username for those users.

For Doctors, the system generated username will be their email ID and for patients the system generated username will be their mobile number followed by their full name in lowercase letters. However, the password is created by the admin only. Once the admin created the Doctors and Patients registrations successfully, he/she can view the list of patients and list of doctors. The admin can edit and delete the user registrations from there.

Once the username and password details of doctor gets shared with him/her by the admin after successful registration, the doctor can login to the system. After logging in, the doctor can view the list of patients along with their other details except password. The doctor can search through the list of patients by using the search box, where he/she can search based on the patient's name or phone number.

After identifying the details of the required patient, the doctor can view the patient's previous prescription records, if any, or can create and add a new prescription. Note that the date of the prescription, patient details and doctor details of the prescription will be automatically generated by the system and cannot be changed. The doctor can add patient's body temperature, pulse rate and prescribed medicine list along with the prescribed quantity, type etc., to the prescription. The doctor can edit or delete the prescriptions at any time.

Once the username and password details of patient gets shared with him/her by the admin after successful registration, the patient can login to the system. After logging into the system, the patient can view the list of prescriptions available with the date of prescription. The patient can search through the list of prescription by specifying the date of prescription they are looking for. Once they have

identified their required prescription, they can easily view the prescribed medicines online.

The prescription details can also be downloaded as a pdf file and can be stored in patient’s device or cloud storage for future access. In case of poor or no internet connectivity the patients can use their downloaded copy of prescription details to get medicines. The downloaded prescription pdf file can easily be shared to other through any application such as WhatsApp or email.

10. RESULTS

The Online Medical Prescription Management System has been successfully implemented and the following screenshots are the sample of the web application’s user interface:



Fig – 5: Login Page

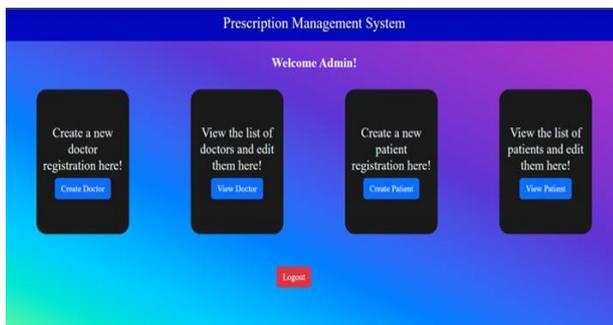


Fig – 6: Admin Dashboard

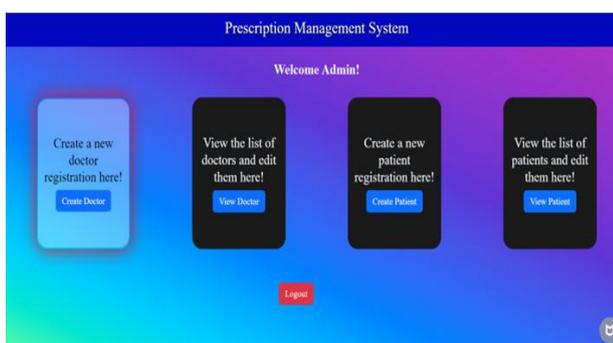


Fig – 7: Hover Effects

11. CONCLUSION

In recent years, there has been a growing demand for digitization in the healthcare industry, with many healthcare providers moving towards implementing electronic health records and other digital solutions. The Online Medical Prescription Management System developed in this project is an important contribution towards this trend, offering a modern and efficient approach to managing medical prescriptions.

Through the use of Angular, Bootstrap CSS, Spring Boot, and SQLite database technologies, this system offers a user-friendly and intuitive interface for healthcare providers and patients to manage medical prescriptions. The system provides healthcare providers with the ability to manage prescriptions electronically, reducing the risk of errors associated with manual processes, and enabling real-time updates and easy accessibility from any device with an internet connection.

Patients can access their prescription history and view the details of their current prescriptions, as well as search and download their prescriptions from the platform. This offers patients greater control over their own healthcare, as they are no longer dependent on physical copies of their prescriptions, and can access their prescription history from anywhere with internet connectivity.

In conclusion, the Online Medical Prescription Management System developed in this project has the potential to revolutionize the way medical prescriptions are managed, making the process more efficient, secure, and accessible for both healthcare providers and patients. With further development and integration with other digital healthcare solutions, this system can play a critical role in improving the quality of healthcare delivery and patient outcomes.

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