Smart Healthcare Management System

Rutuja Murge
Department of Computer Engineering
Keystone School of Engineering,
Savitribai Phule Pune University
Pune, India
murgerutuja@gmail.com

Rutika Rana
Department of Computer Engineering
Keystone School of Engineering,
Savitribai Phule Pune University
Pune, India
rutika08rana@gmail.com

Nikhat Shaikh
Department of Computer Engineering
Keystone School of Engineering,
Savitribai Phule Pune University
Pune, India
nik842196@gmail.com

***Abstract*—Smart Healthcare Management System is an organized, computerized system which will be designed and programmed to deal with day to day operations and management of the hospital activities. The program can look after inpatients, outpatients, records, database treatments, status illness, billings in the pharmacy and labs. It also maintains hospital information such as ward id, doctors in charge and department administering. The purpose of the project entitled as "SMART HEALTHCARE MANAGEMENT SYSTEM" is to computerize the Front Office Management of Hospital to develop software which is user friendly, simple, fast, and cost effective. Traditionally, it was done manually, but now System input contains patient details, diagnosis details, while system output is to get these details on to the screen.**

Keywords—Healthcare; Admin; Doctor; Patient; Appointment

I. INTRODUCTION

Smart Healthcare Management System is designed for multispeciality hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Healthcare System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow.

In the present work, the focus is on problems related to timeliness, in particular, real-time dynamic patient scheduling and routing to minimize patient waiting time [1]. Patient waiting time is regarded as an important quality indicator by the Agency for Healthcare Research and Quality (AHRQ) and counts against hospital performance [1].

Smart Healthcare Management System enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital and helps you manage your processes.

The Smart Healthcare Management System can be entered using a username and password. It is accessible either by an administrator or receptionist. Only they can add data into the database. The data can be retrieved easily. The data is well protected for personal use and makes the data processing very fast.

II. Procedure

The aim of the system is to achieve the best possible support of patient care and administration by electronic data processing [2]. Django is used to develop a menu driven software package to implement the system. SQLite database management system is also employed to store various hospital data which would be used in the management system software. The doctor details are shown in Table I. The room details are shown in Table II. The patient details are shown in Table III.

Name-Doctor Details			
Name	**Type**	**Size**	**Description**
ID	Integer		ID of the Doctor
Name	Varchar	50	Name of the Doctor
Address	Varchar	150	Address of the Doctor
Phone Number	Varchar	90	Contact number of the doctor
Qualification	Varchar	100	Qualification of the Doctor
Gender	Varchar	30	Gender of the doctor

Table I. Doctor Details

Name-Room Details			
Name	**Type**	**Size**	**Description**
Room_no	Integer		Id of the Room
Room Type	Varchar	50	General or Private Room

Table II. Room Details

Name- patient Details			
Name	**Type**	**Size**	**Description**
Patient_no	Integer	20	ID of the Patient
Name	Varchar	60	Name of the patient
Age	Integer	20	Age of the Patient
Gender	Varchar	30	Gender of the Patient
Address	Varchar	90	Address of the Patient
Date	Datetime	30	Date of admission
Contact Number	Varchar	90	Contact number of the patient
Room No	Varchar	50	Admitted patient room no.(in case of IP)

Table III. Patient Details

III. METHODS

A. Basic functions of SHMS

In general, health management systems are realized by software to get a variety of examination and financial data into information systems of the hospital, and then to do some data analysis and report forms using these original data, so as to make the health management process more computerized, effective and accurate [3]. It is necessary for the hospitals to keep track of its day–to-day activities & records of its patients, doctors, and other staff personnel that keep the hospital running smoothly & successfully. To handle such activities across the system, modules like admin, doctor, patient and appointment are created and described in detail.

B. Modules

1) Admin Module

- Login the account.
- Can register/view/approve/reject/delete doctors (approve those doctors who applied for a job in their hospital).
- Can admit/view/approve/reject/discharge patients (discharge patient when treatment is done).
- Can Generate/Download Invoice pdf (Generate Invoice according to medicine cost, room charge, doctor charge and other charge).
- Can view/book/approve Appointment (approve those appointments which is requested by patient)

2) Doctor Module

- Apply for a job in a hospital. Then Login (Approval required by hospital admin, Then only doctor can login).
- Can only view their patient details (symptoms, name, mobile) assigned to that doctor by admin.
- Can view their discharged(by admin) patient list.
- Can view their Appointments, booked by admin.
- Can delete their Appointment, when the doctor attended their appointment.

3) Appointment Module

- For hospitals having their own site, appointment widgets will be integrated onto the site.
- Patients visiting the hospital's website can book online appointments with ease.
- Healthcare Management System makes it easy to get access to the appointment system facilities for the authorized users and keep it safe from unauthorized users.
- Admins and Doctors can view and approve/reject appointments.

IV. RESULTS

The home page of the Smart Healthcare Management System is shown in Fig. 1.

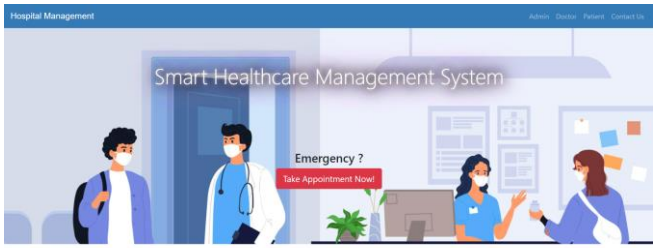


Fig. 1. Home Page

The admin can login to the system using username and password. The admin login page is shown in Fig. 2.

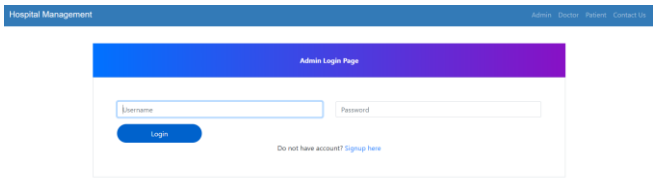


Fig. 2. Admin - Login Page

Any doctor can apply to the hospital to get a job. For applying to the hospital, the doctor has to fill up the registration form which is shown in Fig. 3.

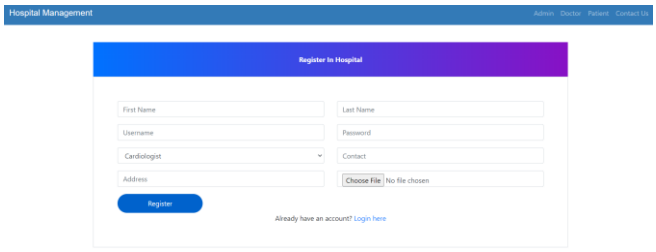


Fig. 3. Doctor - Registration Form

Patients can also get registered themselves to the hospital by filling up the registration form shown in Fig. 4.

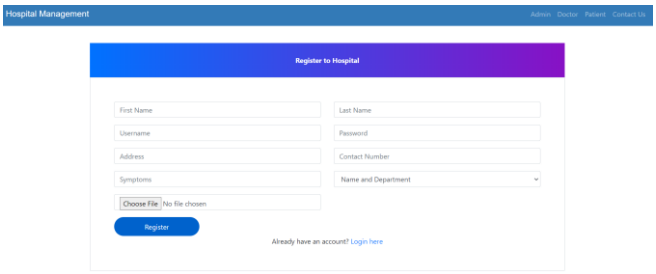


Fig. 4. Patient - Registration Form

Online Appointment Booking is also provided by the system, so that the patients can book an appointment from the comfort of their home. The appointment booking form is shown in Fig. 5.

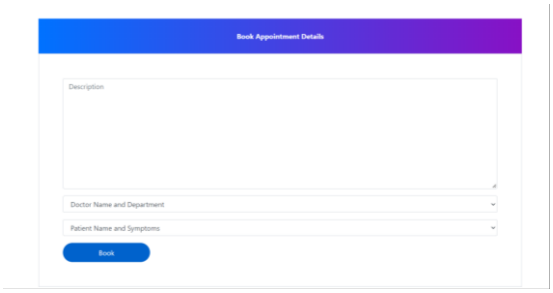
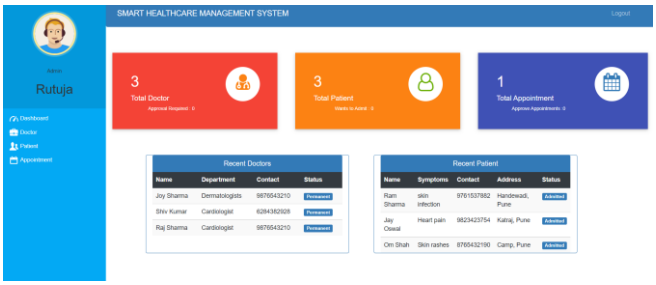


Fig. 5. Appointment Booking Form

The admin can view and handle all activities through the admin dashboard shown in Fig. 6.



[4] Fig. 6. Admin - Dashboard

V. CONCLUSION

The Smart Healthcare Management System (SHMS) is for digitizing the working in a hospital. It is a great improvement over the manual system. The digitisation of the system has speed up the process. In the current system, the front office management is very slow. The Smart Healthcare Management System was thoroughly checked and tested and thus is found to be very reliable. This is a developing field and many researchers are interested to develop new features and apply them to the software. This system is in modular form and can be adapted to any hospital. Eventually the developed system will be placed in the internet so that old and disabled patients can also have access to hospitals from the comfort of their homes.

Since we are entering details of the patients electronically in the “Smart Healthcare Management System”, data will be secured. Using this application we can retrieve patient’s history with a single click. Thus processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed. This system focuses on improving doctor’s advice for patients via the data of past reports, and helps patients get to know their physical condition as accurately as possible.

REFERENCES

[1] F. A. Alkhaldi and A. T. Alouani, "Systematic platform design of a real time healthcare management system: Minimizing overall patient waiting time," 2017 IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2017, pp. 2510-2515, doi: 10.1109/SMC.2017.8123001.

[2] B. Koyuncu and H. Koyuncu, "Intelligent Hospital Management System (IHMS)," 2015 International Conference on Computational Intelligence and Communication Networks (CICN), 2015, pp. 1602-1604, doi: 10.1109/CICN.2015.305.

[3] L. -J. Yu, H. -Q. Wang, L. Gou, Y. Tian and J. -S. Li, "Data Analysis on Health Management Systems for Improving Doctor's Advice on Patients," 2015 7th International Conference on Information Technology in Medicine and Education (ITME), 2015, pp. 68-71, doi: 10.1109/ITME.2015.111.