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Web Based Hospital Management System

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Abstract:

This paper presents a web-based hospital management system that allows patients, doctors, and administrators to interact with the hospital's information system through a web interface. The system is built using HTML5/CSS3, JavaScript, Bootstrap, XAMPP, PHP, MySQL, and TCPDF technologies. Web-Based Hospital Management System (HMS) enables various hospital and medical processes to be performed online. It consists of registration, login of patients, and booking their appointments with doctors storing their details in the system. It provides a login page for patients, doctors, and admins each have their username and password. It consists of three modules. Those are the patient, doctor and admin. This Web Application maintains authentication to access the information. Administrators can see patient and doctor information, appointment schedules and add new doctors as part of administrative tasks. A database was created one for the patient and the other for the doctors so that admin can access it. The Patient module includes booking appointments and checking prescriptions. A patient can pay a doctor's Fee online. The doctor module allows doctors to view appointments, give prescriptions and search for patients. Web-based technology provides a wide range of online services in practically every industry. The majority of jobs may be completed online, which helps to minimize the workload, expense, and effort. The paper discusses the concept of a web-based platform that would enable various hospital and medical processes to be performed online utilizing Web networking technologies, which could be crucial for implementing the functionality of online medical administration. This will aid in the administration of patients, the management of doctor schedules, and the maintenance of patient data that are accessible throughout the hospital online patient data storage, management, communication, analysis, and updating. Therefore, by implementing this web-based application many tasks that would be time consuming and inconvenient can be accomplished.

Keywords: Admin, Patient, Doctor, Hospital Management System, Web Application ,PHP ,MYSQL ,Appointments.

1.INTRODUCTION

Hospitals are the important part of our lives, providing good medical facilities to people suffering from various diseases which might be because of climatic Conditions, pressure, work load, stress. It is necessary for the hospitals to keep track of the patients and doctors records that makes management and maintenance good. But keeping all the records in paper is so difficult. Hospital Management System (HMS) consists of registration, login of patients, booking their appointments with doctors and storing their details into the system. It provides a login page for patient, doctor and admin. Each have their own username and password. It consists of three modules. Those are patient, doctor and admin. This Web Application maintains authentication in order to access the information. Admin task includes managing doctors information, patient's information. A database was created one for patient and other for the doctors so that admin can access it. By giving access to vital information and automating complex activities this Web-Based Hospital Management System allows staff to spend more time assisting patients. We can overcome various problems related to performance management and longer waiting time across processes, individuals and departments.

2. LITERATURE SURVEY

The paper "Design, Implementation of the Hospital Emergency Nursing Information Management System " influences the project's design and implementation by "Zhihong Liu ISSN: 0193-14120 Page No. 4493-4494 Published by: IEEE.

The paper "User Interactive Hospital Management System by using web applications," by S Sharmila Devi and J S Deepica, sets the kind of tasks to be done and handled. This paper provided a clear idea of the components to be included in the software solution of the Hospital Management System. This paper inferred the data flow of information in the hospitals.[1]

From the paper "A web-based hospital management system for enhancing healthcare service delivery" by I.O Olaoye, O.J Omotosho, and A.T Fadipe-Joseph (2018) Methods and Data Structures were inferred.

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From the paper " Hospital Management System" by Prof. Parineeta, Yadnyesh P. Kadam Digvijay H. Gadhari's idea of securing the login was inferred.[2]

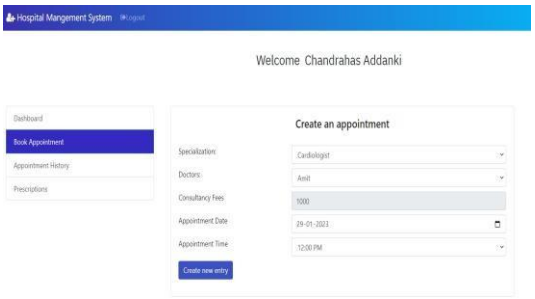
"A hospital resource and patient management system based on real-time data capture and intelligent decision making"Author(s):Ahmed Musa,Yahaya Yusuf,Matthias Meckel.(ICSAI), 2012 International Conference.This paper provided idea to reduce the costs associated with researching and assessing the current status, as well as developing gap analyses and extra requirements, this work intends to build a reference data model that will serve as a general starting point for any future HIS development initiatives.[3]

3. OBJECTIVE

The primary purpose of this project is to design, build, and implement a system that assists hospital administration. Improving user efficiency as measured by the concision and consistency of the graphical user interface. When using a system, a user is considered to be efficient if the time required to accomplish a job decreases with time. Another objective is to create a system that allows for future additions and modifications to the existing functionality. The system should be able to manage patient records, doctor details, scheduling appointments, prescription and medication viewing.[4]

The hospital management system will be created in two stages: first, a database will be created; next, the interface will be customized; finally, the interface will be programmed, and certain codes will be written. Learn from current systems and adapt from them for a better result. After thoroughly researching the current system, the development team were able to determine its benefits and shortcomings and find ways to address the latter. The five primary modules of the solution system were released. These include managing appointments, managing pharmacies, managing healthcare programs, and managing doctors[3]. To find a new system as a solution, the analysis of the current system is put through a comparing process. The best software will be selected after a review of the current software options[6]. Making a list of tables and specifying their relationships is the first step in building a local database[4].

The system was implemented using MERN technology which use JavaScript stack that is used by many large organizations in these days. To implement an end user attractive interface, development team used several react packages like material UI, React Bootstrap, and tailwind CSS and ant designs. Backend is developed using node is. While implementing the backend developers focused on security, authorization, validation, authentication, and performance. To achieve those developers, use several packages like package validator, crypted etc. All the inserted data are stored and managed by a non-relational database. Data administration team have chosen Mongo DB With a scaleout design, manage massive amounts of data quickly. Allow for simple field and schema modifications and the storage of unstructured, semi structured, and structured data.



4. EXISITING SYSTEM

In the existing System, Hospitals use book keeping system where records are maintained by hand for the maintenance and management of important information. Manual system requires a lot of paperwork. Organization's storage on a daily basis. All of these details are currently kept in the file system. There will accumulate several files because of this daily basis. The hospitals manage and handle every single task by hand. Therefore, it could require a lot of time and effort to complete each activity. A lot of labor is required. At the moment, manual processes are used only in Zone Hospital to manage daily operations. Patients will schedule appointments with doctors and lab tests with the receptionist. Only at hospitals may patients purchase pharmacy items; there is no option for patient delivery. Only at the hospital are the healthcare options offered to patients. All the patient details, doctor details, lab test results are manually taken on papers and feuded on computer latterly. And the reports will be generated by hands with the help experts. The existing system requires a lot of time. Absence of security components Every task needs to be completed by hand. The majority of tasks and activities depend on specialists and human resources. No direct communication with the senior officers. The accuracy level is subjective. High expense is required for manual system management. Difficulty in getting backup data and transfer data. Difficulty in inserting IoT technology and robotic intelligent. Manual system in lack in user friendliness and it not that much reliable with current technological world.

5. PROPOSED SYSTEM

In the proposed System, HMS can be used for any hospital. It stores the patient, doctor, and admin information. An admin can see patient, doctor information, appointment status and add or remove a doctor. All of a hospital's data and operations are compiled on a single platform by a hospital management system. The hospital information system includes all of the hospital's information processing and storage components. This means that

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it encompasses more than just the computer systems, networks, and computer-based application systems that are installed on them. Rather, it refers to the information contained within the hospital as a whole. The objective of this project is to develop hospital management web-based application with a frontend with react and the back end with mongo database. This software will help to be more efficient in handling the booking doctors, booking lab test slots, pharmacy services, and getting health programs. This system consists of an admin handling part, which means admin can manage users, pharmacy systems, health program management, and manage booking of doctor's appointments and lab tests. of their patients. It also explains the user interface, different models that could be used to develop software such as this.

A. Advantages over Existing System

Simple to use. Patients can make an appointment with a doctor and can download the prescription from a doctor as pdf through online, and pay bills online.[7]
Interface is user friendly. Patient can choose doctor based on specialization and interest.
Data is not redundant
It provides cost-effectiveness. There exists a fixed consultancy fees based on the specialization.
It reduces time and resources as well.
The data can be retrieved easily.
Data processing is incredibly speedy and information is highly secured for personal usage.
Increased accessibility: Patients can make appointments with doctors from anywhere, anytime. They don't have to travel to the clinic saving them time and money.

6. METHODOLOGY

Algorithm

Algorithm Description:

Step 1: BEGIN

Step 2: Patients must register in the queue.

Step 3: When a patient arrives for their appointment,

Step 4: Verify the second patient availability.

Step 5: If second patient is not there then add it to the end of the queue.

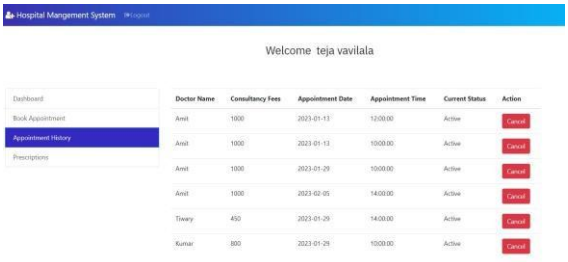
Step 6: The algorithm is then continued in this manner.

Step 7: Exit.

MODULES

A.Patient module:

Patients create an account, schedule an appointment with a doctor, and view their appointment history. Patient can book the appointment by selecting the doctor based on specialization and availability. Patient can pay bill online when a patient gets prescription. The doctor's fee can be paid online by the patient.



Patients can create an account, schedule a doctor appointment, and view their appointment history using this module. Patients must provide their First Name and Last Name, Contact information, Email ID , Password and gender using the buttons on the registration page (which is located directly on the home page). The patient will be taken to their Dashboard after clicking the "Register" button and creating their account (Fig 1).

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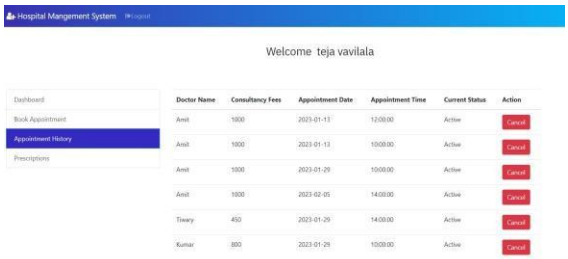
Patients need to select the doctor, date, time and consultancy fees will be shown accordingly. After clicking the create new entry button, the patient will receive an acknowledgement indicating that the appointment was successful. It provides login authentication system ensures that only authorized users can access the system and view or modify the data. Upon successful authentication, the user is redirected to their respective module where they can perform the required actions.



The patient examine their appointment history here, which includes the doctor's name, consultation price, appointment date, time and appointment status.

When patient has logged out of his created account, he can log in to it rather than registering it as new if he wishes to re access it. The patient will be taken to his dashboard page after clicking the "Login" button.

The patient module operates in this manner. Overall this module enables users to create an account, log in (if they already have one), schedule an appointment, and examine their appointment history. Patients can select a doctor of their choice, choose a date and time slot, and pay the consultation fee online. This feature eliminates the need for patients to carry cash to the doctor's office, making it a safe and convenient way to make payments.

Once the payment is made, the system will generate an electronic receipt, which will be sent to the patient's registered email address. This receipt can be used for future reference or reimbursement purposes. In case of any issues with the payment or booking, patients can also contact the customer support team through the platform for assistance

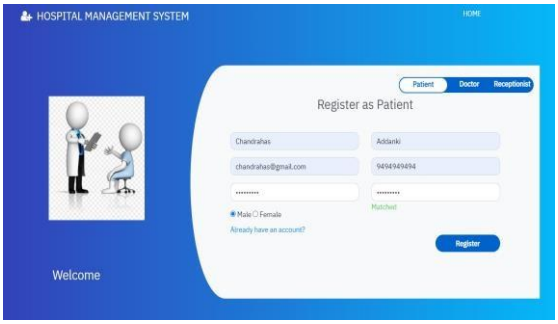


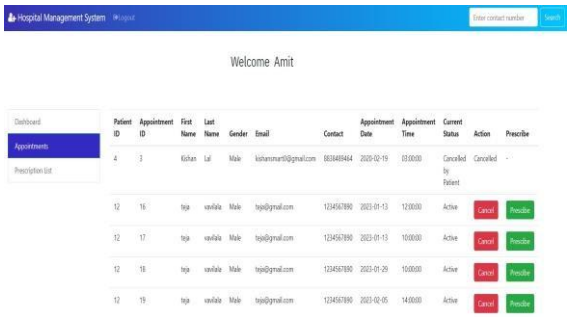
Fig. 4. Doctor Login

Doctor module:

Admin provides the login credentials to the doctor by which the doctor can login to his account and can see the appointments and can give prescriptions to the successful appointments.The doctors can access their accounts by switching the tab from "Patient" to "Doctor," which can be done by clicking on it. Doctor gives the prescription by providing the details such as Disease, Allergies, Medicines.

Doctor can easily access his account online and can update the appointments, treat the patients by giving the prescriptions.

Once doctors have logged in, they will be directed to their dashboard, where they can view their appointments and other information. They can search for specific patients or appointments using the search bar in the navigation menu.



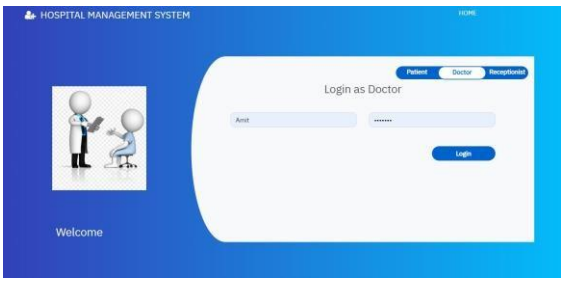


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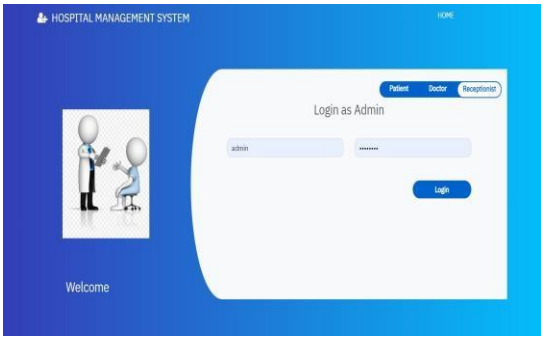
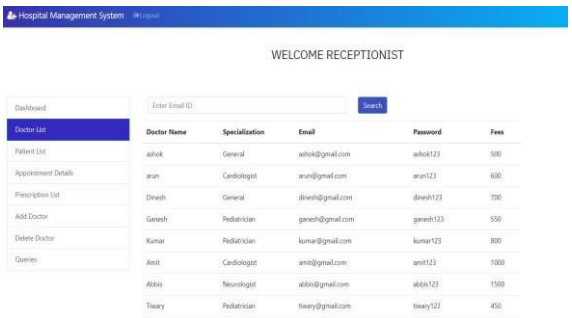
Fig. 5. Doctor Appointments

The doctor can view the appointments that the patients have made. Eg:The patient "Ram" scheduled an appointment with doctor "Chakravarty," which is depicted. This indicates that on 10/10/2019 at 10 AM, The patient, Ram will meet the Dr Chakravarthy. Doctor can treat the patient in the specified time and gives prescription which will be stored in online and the patient can view this and pay the bill of medications in the prescription.

There will be thousands of appointments for the doctors in real-time. If there are more appointments, a doctor will find it easier to



find appointment. It made it easy by adding a "Search" box in the navigation bar that enables doctors to look up a patient by their



phone number. The doctor can log out of their account once everything is finished. As a result, a doctor can log in to their account, view their appointments and treat a patient.

Once the payment is made, the system will generate an electronic receipt, which will be sent to the patient's registered email address. This receipt can be used for future reference or reimbursement purposes. In case of any issues with the payment or booking, patients can also contact the customer support team through the platform for assistance Only at hospitals may patients purchase pharmacy items; there is no option for patient delivery. Only at the hospital are the healthcare options offered to patients. All the patient details, doctor details, lab test results are manually taken on papers and feuded on computer latterly. And the reports will be generated by hands with the help experts. The existing system requires a lot of time. Absence of security components Every task needs to be completed by hand. The majority of tasks and activities depend on specialists and human resources. No direct communication with the senior officers. The accuracy level is subjective. High expense is required for manual system management. Difficulty in getting backup data and transfer data. Difficulty in inserting IoT technology and robotic intelligent. Manual system in lack in user friendliness and it not that much reliable with current technological world.

Admin module:

Our project's core module is where an administrator can view a list of all patients, doctors and appointments . Admin can also add/remove a doctor.

By switching to the admin tab on the Home page, one can login to an admin account by the credentials provided by the hospital management.View registered patients: Every registered patients are visible to the administrator. First and Last Name, Email, Contact Details, and Password for the patient can be seen. Similarly to the doctor module, admin may utilise the search box to find a patient by phone number.

View registered doctors: The admin can also see the details of the doctors. This information is presented in Fig. 8 and includes the doctor's name, password, email address, and consultation costs. By entering the doctor's email address into the search field the admin can find a doctor.

Check out the appointment lists: The administrator has access to all of the information of the appointment which includes the information regarding the patients appointments with their various doctors. This comprises the patient's first and last names, email addresses, phone numbers, and doctor names, as well as the appointment date, time, and consultation fees.*Add Doctor* **:** Only the administrator can add a new one due to security concerns. This form asks for the doctor's name, email address, doctor

specialization, password, and the cost of the consultation. We can notice the new doctor's information has been added if we look at the list of doctors after adding a new one.

An admin can delete a doctor by entering doctor mail without any problem. Only admin has the access to delete the credentials of the doctor from the database.

Admin has all the access to the database .He can access the patient appointment details, doctor details, prescriptions given by the doctor to the patient and he can even retrieve the details of the patients who visited the hospital previously. He can also modify the patient and doctor details in the database. The user interface is easy to use , efficient and helps to perform various tasks faster with less staff. Overall, the admin module provides complete control to the admin over the system, enabling them to manage the details of patients, doctors, appointments. Once everything is done, the admin can log out from their account.

7. RESULTS & DISCUSSION

The proposed web-based HMS was successfully implemented using HTML, CSS, TCPDF, JavaScript, MySQL, XAMPP, PHP, and Bootstrap technologies. The system is simple and easy to use and enables the management of patient and doctor data, appointments, and prescriptions. Additionally the system enables patients to pay for their appointments and medications online, reducing waiting times and improving the overall patient experience. The system saves time and increases efficiency in hospital management. The system was tested thoroughly and it was observed that the application was fast and responsive, with a user-friendly interface that allowed easy navigation. It eliminated the manual processes of record keeping and reduced the waiting time for patients.

8. CONCLUSION

Since the Hospital Management System is vital for keeping accurate records of the patients appointments, doctor appointments, prescriptions, hospital personnel etc. It is acknowledged that following the unveiling of the Work at the hospitals would be efficient and seamless with the Hospital Management Project in place. All of the needs of a typical hospital are met by this project. It is capable of storing information of doctors and patients who visit the hospital in an efficient and effective manner. Compared to the conventional method of transmitting the file manually, the patient data transfer would only take a few seconds. This project made the process incredibly simple and time-efficient. The proposed system provides advantages over the existing manual system, such as reducing data redundancy, inconsistency, storing vast amounts of data, and improving staff efficiency. The digital process of gathering, storing, and retrieving the information would make it possible to improve the efficiency and effectiveness of hospital management and provide better healthcare services to patients.

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