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Remote Patient Monitoring System

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Abstract - *Healthcare is a field that is rapidly developing in technology and services. Therefore we are concentrating on the implementation of a Healthcare and Monitoring System which will provide advantages and enable them to access different facilities anywhere and at any time. The system developed will be a website mainly consisting of two roles: Patient and Doctor. This will include functions such as registration of oneselves, filling out their health details including undergoing treatment, any medication being and downloading the report which can be sent to doctor with health condition via mail. Nearby hospitals can be found with the help of Google Maps API. Doctors can prescribe the required essentials medicines and precautions to be taken . At times of emergency patients can send an alert notification to doctor or hospital staff and can avail ambulance services. With the prescription, online ordering of medicines can be beneficial to users avoiding going to shops and waiting in queues. The symptoms checker allows users to mark their problems so that a required test and the best doctor in that field can be shown. For example if a user complains of having sore throat, cough and runny nose, which are symptoms of fever, can be detected and be directed to the apt doctor.Therefore this further adds online booking, updating and deleting of appointments with doctors. The ones who don't know the best doctors, can find them according to doctors and medical specialists and location. All records are maintained together and one can retrieve them using their reference number (unique for every patient). We are using a distributed database to gather and retrieve information stored in different computers and locations.*

***Key Words*: Google Maps API, Prescription, Symptoms Checker, Appointment Booking, Emergency.**

1. INTRODUCTION

The health care system focuses on the measurement and monitoring of various biological parameters of the patient's body like heart rate, weight, height and any undergoing vaccination using a web server and web technologies, where a doctor can continuously monitor the patient's condition using this application. With the increasing advancement in the medical field, here we are trying to create a system which will help us in storing one's health details. The add-ons to this are finding nearby doctors and hospital's location. One can find the best doctor based on the rating given online and book appointments accordingly. The system allows us to send your details to the interested doctor to avoid carrying reports and files with them. All the records are maintained at the same place so it is more convenient rather than carrying the files every time. Symptoms checker allows users to mark their problems so that a required test and the best doctor in that field can be shown. The main motive behind creating such a system is to minimize the patient's work of carrying files to doctor's visits. An emergency occurs, a patient can send a mail to doctor and hospital staff about the situation and can receive an online prescription too.

LITERATURE SURVEY

2.1 Effective Healthcare System:

Ahmed Imteaj and Muhammad Kamrul Hossain developed of a mobile application(app) to help providing an effective health care system. Using this app people can get numerous benefits like finding hospital information in the city, information about cabin, cabin booking with payment, intelligent suggestion on choosing suitable hospital, finding a doctor, emergency service calling, first aid information, alarm system for medication. The method is application based and the evaluation of the system shows that it is capable of storing valid data and showing the correct results that a person opt for.

2.2 Appointment Booking System

Hema Kumar, J.Uday Kiran, V.D.Ambeth Kumar, G.Saranya and Ramalakshmi V highlighted the

advantages of the healthcare web based application which finds and suggests the best doctors among specialists according to patients issues and requirements, for ones who don't have any contact with the specialists. Doctors give their following information such as timings, designation and medication to patients for their respective problems.

2.3 Hospital emergency nursing information management system

Here Zhihong Liu tries to concentrate on design and implementation of a hospital management system consisting of several modules such as registration, medical treatment, medicine information management, report printing, pharmacy dispensing. Therefore based on the above design and modules the proposed system provides high quality treatment and good services to patients and their families.

2.4 Distributed Database Systems in Healthcare:

Indrespal Kaur and Kathy A.Johnson-Troop focused on how Distributed databases integrate heterogeneous data from multiple sites and formats for an easy retrieval of information for the users.

Table -1: Sample Table format

Literature Paper	Objective	Implementation
S.Hema Kumar, J.Uday Kiran, V.D.Ambeth Kumar, G.Saranya, Ramalakshmi V, 2019 [1]	Online medical Appointment System	Appointments booked via website or web application
Asst. Prof. N. V. Chaudhari, Akshay Phadnis, Prajakta Dhomane, Jayshree Nimje, Akansha Sharma, 2017 [2]	Appointment Booking	Android application and MySql Database
Ahmed Imteaj, Muhammad Kamrul Hossain, 2016 [3]	Healthcare system	Android application
Zhihong Liu, 2016 [4]	Hospital management system	Design of hospital emergency nursing
Maradugu Anil Kumar, Y.Ravi Sekhar, 2015 [5]	Patient's healthcare monitoring	Android application integrated with Pulse oximeter sensor and temperature sensor
Indreshpal Kaur, Kathy A. Johnson-Troop. [6]	Distributed Database in healthcare	

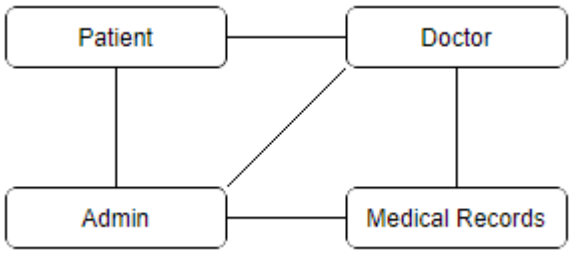
PROPOSED SYSTEM

Our idea is to combine these functions in our healthcare application with also a facility which will remind the user to take medicine and which will help us in storing one's health details such as heart rate, blood pressure and undergoing treatment. The add-ons to this are finding nearby doctors and hospital's location. Creating reminders for medicine and appointments for a day are also available. One can find the best doctor based on the rating given online and book appointments accordingly. The system allows us to send your details to the interested doctor to avoid carrying reports and files with them. All the records are maintained at the same place so it is more convenient rather than carrying the files every time. Healthcare system with the help of medical experts provides advantages to patients, enabling them to access medicinal information and support systems, irrespective of their current location and time.

3.1 System Architecture

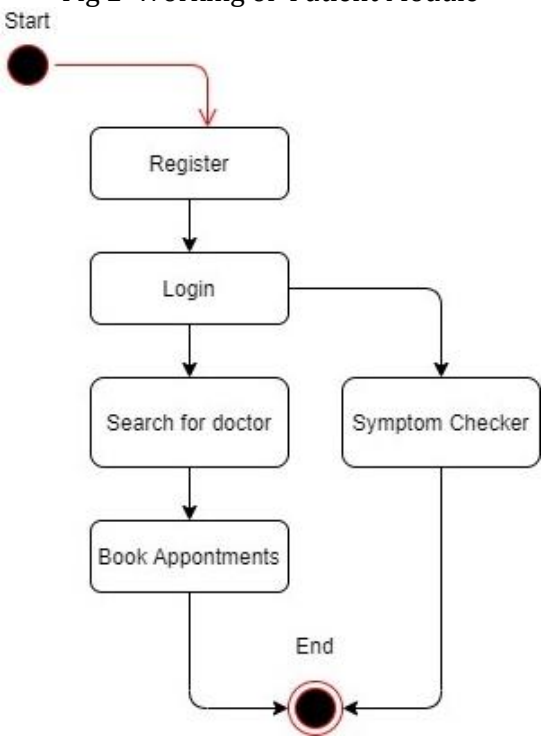
The system architecture consists of four modules ie. the Patient, the Doctor, Admin, Medical Records. The system architecture is given in Figure 1. Each block is described in this Section.

Fig. 1 Proposed system architecture



A. Patient : The Patient has to first register and log in as shown in Fig. 2 to avail the features . They can search for the doctors available and book appointments which will be notified to the patient by an email once confirmed. The symptom checker helps the patient get help from the doctor according to the diagnosis.

Fig 2 Working of Patient Module

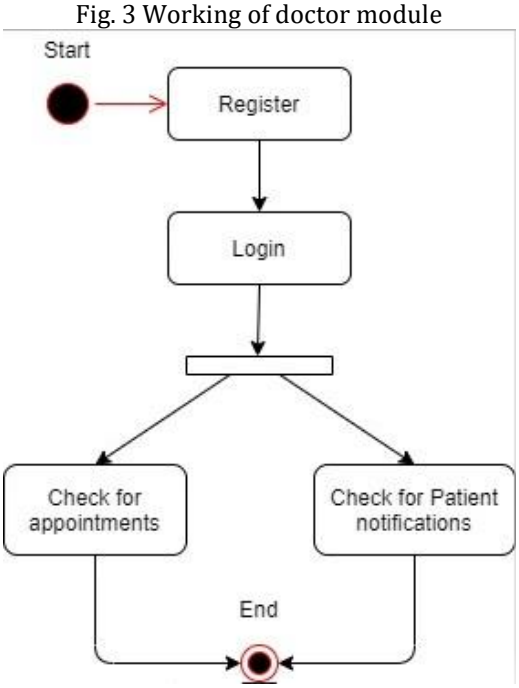


B. Doctor : The Doctor needs to register and log in. After registering, the doctor can view the patients that have requested for medical assistance. The doctor can share prescriptions for the patient. He/she can also access the medical records of the patient. The doctor also diagnoses according to the symptoms chosen by the patient. The working is shown in Fig. 3

C. Admin: The Admin takes care of smooth functioning between the Patient and the Doctor. The Admin plays an important role in appointment booking. The Admin checks the doctor's schedule for booking appointments and sends the confirmation email to the patient. The admin is also responsible for maintaining the databases

D. Medical Records: The Medical Records is a database consisting of basic information about which is entered while registering. This can be updated by the doctor consulted so that it becomes easy while switching doctors.
Doctors can access these records from anywhere.

Fig. 3 Working of doctor module



Requirement Analysis

The implementation detail is given in this section.

Software

Our Healthcare System is made using a Web development framework. This enables software programmers to build applications for mobile devices using CSS3, HTML5, and JavaScript . Having some advanced features makes it easy to use. All the information provided from the user like sign up details, health history gets stored by using SQL queries. All these functions and pages are created using CSS, HTML and JavaScript. PHP is used as a

server side scripting language. Applications which need to be installed separately are XAMPP.

3.2 Hardware

No specific hardware be needed to be added.Only the requirements are devices like Laptops, Desktops or phones.

3.3 Dataset and Parameters

Datasets play a very important role in the HeathCare domain to understand health discrepancy and to address health imbalance in patients. Many health care datasets catch information about the individual patient during interaction with the system. Parameters which a health care system includes are biological parameters such as Bio Mass Index (BMI), weight, height, primary health disease, general health condition and geriatric and nutritional assessment.

4. CONCLUSIONS

With increase in demand for proper healthcare in urban as well as rural areas, this healthcare system with many features combined into one may increase efficiency and also help in reaching the far and needy.

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