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Doctor Appointment System Using Cloud

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Abstract

This paper is about optimising the appointment scheduling in hospitals using an web application. Online Doctor appointment is a web-App, this provides a signup and sign in for both doctors and patients. Doctors can sign up by giving his necessary details like timings, fee, and category. After successful signup, the doctor can sign in by giving username and password. The doctor can view the booking request by patients and if he accepts the patient requests the status will be shown as patient booking. The patients must be signup and sign in to book a doctor basing the category and the type of problem patient is facing and the location. The search results will show the list of doctors matching patients required criteria and he can select one and send a request to doctor and if he is available he will send the confirmation booking request and says confirmed to the patient. The patient can view the appointment and also he will get the sms saying the appointment scheduling is Confirmed.

Keywords: Online Doctor Appointment, Cloud Computing, Healthcare Smart Appointment Booking

1. Introduction

The main problem of the patient is increased waiting time. People who are doing high level business don't get free time to visit hospital. They need their appointment to be booked earlier so that their busy schedule will not be interrupted. This web application will be helpful for the patient in case of time management in hospitals. Patient can give reviews about both the hospital and the doctors who have treated him/her. Patients have options for rating a particular doctor after each visit. Based on the reviews and ratings given by the patients, new patient can predict regarding the consultation of a doctor. The hospital which is near to the patient's location can be easily identified. The report of the patient is saved in his/her login which will be useful for future reference. The doctor fee is also mentioned in this web application. People must know the awareness about healthcare and hygiene. These can be taught to people by arranging medical camps. Any information related to medical camp is mentioned. People, above the age of 60, feel even sicker to wait in a hospital. They may get hurt both physically and mentally. When the patient waits for so long and if he couldn't consult the doctor, his entire day gets wasted. So booking earlier provides time consumption to the patient. Almost every hospital has appointment booking which is done manually, this may cause travel charges. So online booking is one of the best solutions for time and money consumption. In most of the hospitals the patient record is maintained as a hard

copy. This is not safe, the data may loss anytime. In world of emerging technologies, we should save the patient's information in the database. Here we use two Web-applications, in which one for the hospital and another for the patient can book their doctor's appointments. The appointment Web application is built using php language. The information about the doctor, patient and the hospital are stored and retrieved from the database with MONGODB. Doctor's data involves name, specialisation and visiting time. Patient data involves patient id, name, report, and appointment slot. Hospital data involves the place, doctor's detail, patient's detail and appointment fee. The user should have basic knowledge for using mobile and internet. The user must create an account initially by signing in with a username and password or with his phone number. Patient can update his/her profile and view, search and give reviews about a particular doctor or hospital. The Web application also provides discussion forum in which the user can discuss with our community regarding any issues. The user interface is designed in a user friendly way which provides efficiency for the user to operate the Web application. A separate interface is provided for the admin to update information regarding the availability of the doctors. Hospital management should update the information about the address, available doctors and hospital time properly.[1-5]

2. Problem Identification

2.1. Aim of the paper

This paper is proposed mainly to reduce the waiting time of the patients in hospital. When a patient waits for long, the contagious diseases can be spread to the entire patients in the waiting room. Finding the doctors in a particular field is a tedious task. The patient must consult the specified doctor for treating his/her disease. A heart patient can't be treated by a dermatologist. So it's necessary for the patient to know the doctors in a particular field. By using this Web application, people can find a particular doctor in treating various kinds of diseases. It will make the patient stress free and finish work on time and also reduces spreading of diseases.

2.2. Issue

Many hospitals have their own web application for booking appointments by the patients. This will be useful only for a particular hospital. So, the doctors who are available in the particular hospital can be viewed by the patient not other doctors are shown. There's no possibility for the information about other hospitals or doctors. It's important to connect all the doctors and the hospitals. So that searching is made easy and the experts in the nearby location can be easily identified by the patient. Another major issue is to get the approval from every hospital and doctors. The hospitals and doctors can't be connected easily with one another. If it's approved easily by a particular hospital or a doctor, it might take time to accept the proposal given by us in other hospitals or by other doctors. We need to convince the members of the hospital and the doctors to accept our proposal to implement the common appointment booking web application. The doctors must recommend it to the patient to reduce their waiting time.[6-10]

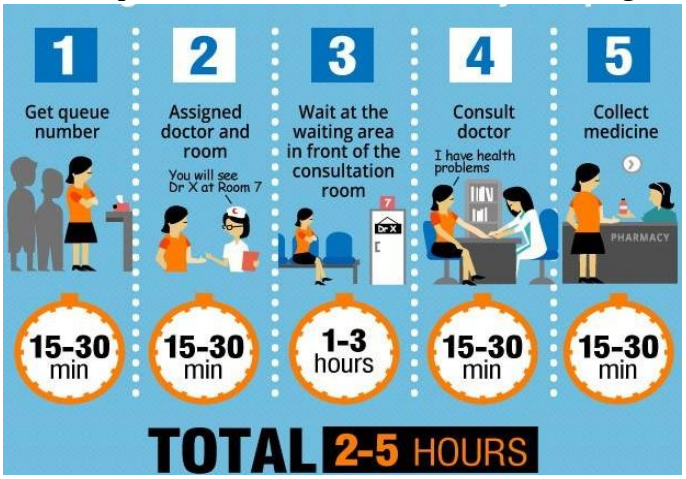

Fig.1. Total Time for Consult Doctor

2.3. Factors Influenced Outpatient Management

If the patient arrives from a distant location, unable to consult the doctor due to the absence of the doctor or unknown timing of the doctor his entire day well get wasted. The expenses for the travel are high and the patient gets disappointed without consulting the doctor. They can't move easily to their native without getting a proper consultation from the doctor. Nowadays it has become hard to find doctors belonging to particular field and the waiting time for the patient can also be reduced. So it's a vital process to manage the outpatient.

2.4. Patient Flow

The new user must sign up the Web- Web Application either using an email id and password or phone number and OTP. The registered users are said to login using their username and password. The users search a doctor by name and schedule his appointment. The confirmed booking is shown along with the slot allocated to the patient. If the particular doctor is not available, the currently available doctors are shown to the user and he can confirm booking or the user can select another date and book appointment with the searched doctor. Options like searching the nearby hospitals, saving the prescription and reviews about a particular doctor are provided.

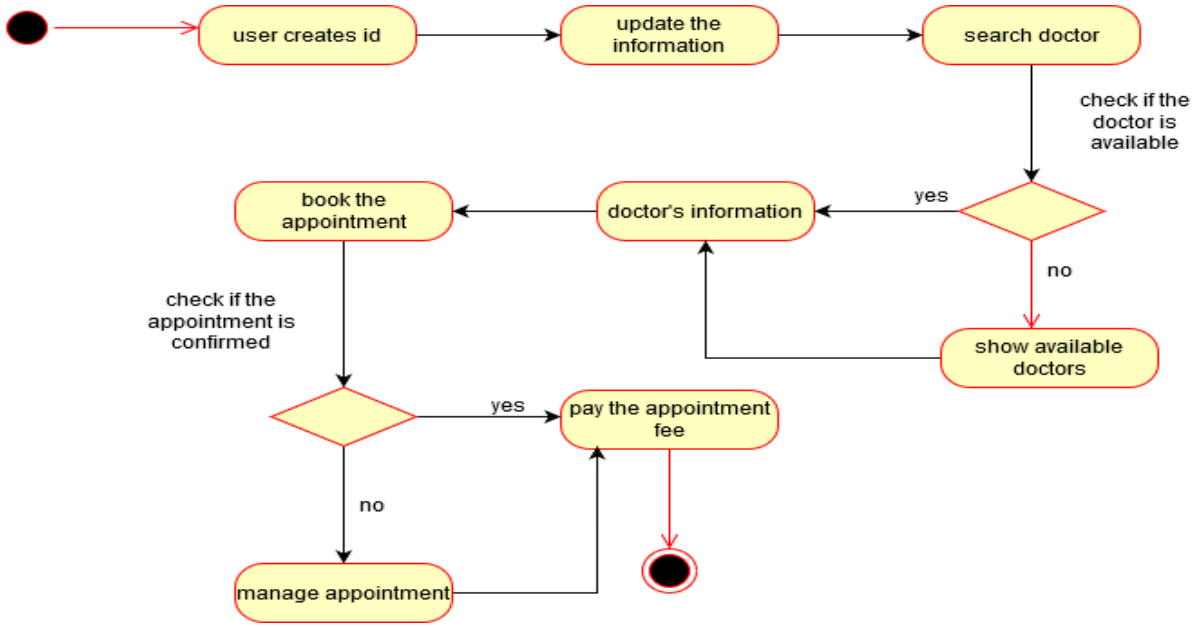

Fig.2. Flowchart of Web-Application

3. Proposed System

3.1. Web-App System

This web-application will be useful for the patient in searching a doctor based on their nearby location, doctor's specification and hospital. The patient can book the appointment in any hospital by specifying the date, when he needs to consult the doctor. In case, the appointments are booked already, the available hospitals and doctors are shown, where the user can select another doctor or schedule his/her appointment to another date. The users have a unique user id in which the details of the patient are stored. The prescription given by a doctor can be stored for reference. The users have options to rate the doctor and give reviews about their treatment.

3.2. Local Search Hospitals

The user's location can be accessed by this web-application when the user switches on the global positioning system (GPS) in his/her android device. The user can search the hospital which is near to him/her in case of any emergency by allowing the web-application to access his/her location. Patients can avoid travelling long distances to consult a doctor, instead they can search the nearby famous doctors and hospitals to schedule their appointment. This also provides time and money consumption to the patient.

3.2. Data Collection

The data like the location of each hospital, the

doctors who are available in a particular hospital, the specialisation of the doctors, availability of a particular doctor in various hospitals, the appointment time for the patients in each hospital and the total number of appointments given per day in any particular hospital must be collected for our web-application. The patient's review about the doctor after each visit is stored in the database, along with the login information and the prescription given by the doctor. Then information about healthcare awareness camps is intimated to the user by this web-application.

3.3. Data Analytics

We are using data analytics technique to get the appointment details in every hospital for our web-application. The hospital appointment data for the past 10 years has been collected; this will be helpful in predicting the future appointments. If a disease is spread among 10 members in a city, there is a future prediction that the disease is widely spread among the particular area. So the patients from that city can be given awareness about the vulnerable disease.

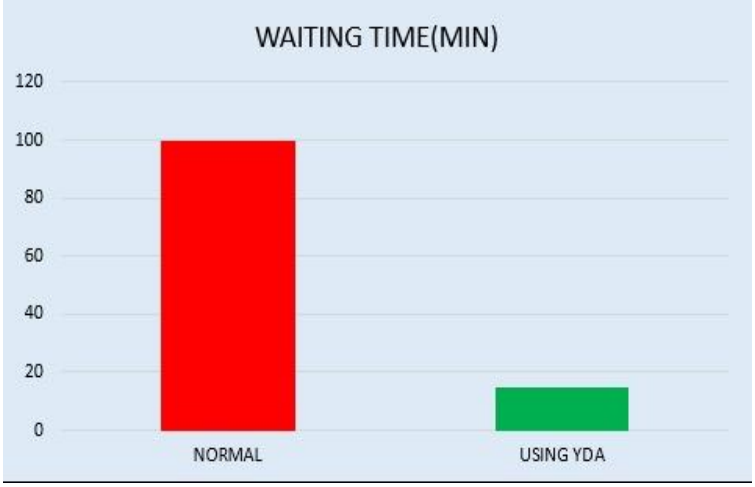

Chart.1. Waiting Time Analytics

3.4. Technology

The platform in which we have developed the web-application. The language used for designing front end is php. MONGODB is used to store, update and retrieve the data such us: user's login information, prescription details, hospital location details and search history from the database. Data analytics is used to analyse newly arrived contagious disease in certain region or to predict the number of patients visiting a particular hospital. The user needs a proper internet connection to book the online appointment.

3.5. Web-Appointment System

The manual appointment system is found to have so many difficulties faced among various patients in hospital environment. So network based online appointment booking is developed in various hospitals to provide stress-free environment to patients. The problem is that there is no common appointment system for all the hospitals. So patients can book online appointments only in a particular hospitals website or hospital web-application. Here the doctors aren't connected with other doctors and same happens with the situation of hospitals. We are proposing this appointment system mainly to get appointment details about every hospitals and doctors and not for only a particular hospital.

3.6. Outpatient Waiting Time

The appointment is booked in online by the outpatients so that their waiting time can be reduced. Without knowing the proper appointment time, the patient may visit the hospital too early or too late. This either leads them to stay somewhere outside the hospital which causes high expenses or they may not be able to consult the doctor. They don't need to travel earlier to reach a hospital to consult a specialist or wait in a common ward without knowing the appointment details. On time registrations by the outpatients is no needed anymore except the case of emergency situations.

Fig.3. Reduce the Waiting Time

Conclusions

As we conclude, this paper will be useful in solving the appointment scheduling problems in hospitals. It will be helpful in connecting every doctors and hospitals. Any kind of bacterial or fungal disease which can be spread through increased waiting time in hospitals can be mitigated. Travel expenses of any outpatient can be reduced due to the visibility of nearby hospitals. Thus the web application provide stress free environment to patient regarding their waiting time.

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