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SECURE WEB-APPLICATION: ONLINE DOCTOR CONSULTATION SYSTEM

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ABSTRACT

Online Doctor consultancy is a smart web application, this provides the set of questions for the patient, answers those questions also image or video can be uploaded to verify the condition of the patient. Once this all process complete the doctor will charge some fees and generate the prescription to patient. Adone as soon as possible in today's digital age, which is why immediacy is becoming the norm. The internet has recently emerged as another way of making appointment for various purpose and it has reached medical industry too for making doctor appointment online. This paper studies different parameters that are really helpful in bringing few advantages of Online Booking Doctor's Consultation System. Also, the paper focuses on how an Online Doctor consultation system can be implemented using the Firebase methodology.

Keywords: Firebasse, Module, Management, WEB-RTC, Appointment, Patient, Doctors.

1. INTRODUCTION

Aim of project is to create doctor patient handling management system that will help doctors in their work and will also help patients to book doctor appointment and view medical progess. The system allows doctors to manage their booking slots online. Patients are allowed to book empty slots online and those slots are reserves in their name. The system manages the appointment data for multiple doctors of various date and time. Each time a user visits a doctor his/her medical entry is stored in the database by doctor. This research project is aimed at computerizing all the records about Patients and Doctors. We implement this system for better user experience. This system is very easy to access. Also for established real-time communication, using modern and updated technology. So,usersr can see the update without reloading or refresh. This system will compatible with user devices such as pc, laptop, tab & smartphone. So user can easily access the system anytime anywhere. This system is very simple & user friendly so, any user can use this system easily.

2. METHODOLOGY

2.1 Waiting Time

Waiting time simply means a period of time which one must wait in order for a specific action to occur, after that action is requested or mandated (Fernandes et al., 1994). Patient's waiting time has been defined as "the legth of time from when the patient entered the outpatient clinic to the time the patient actually received his or her prescription''. It is defined as the total time from registration until consultation with a doctor. There were two waiting times, the first is time taken to see a physician and the second is time to obtain medicine. This paper deals with the waiting time to see physicians. Long waiting times are a serious problem for patients using urban health centers in developing countries. Waiting times of all patients were measure over one-week period before and after the patients. After introducing appointment, patients with acute and chronic illnesses and having appointments had significantly shorter waits time than similar patients without appointments. Appointments had no benefits for patients not seeing doctors or collecting repeat medication. There was, however, an overall increase in patients waiting times after introducing the system, mainly due to one typical day in the follow-up were positive about the system. Patients were enthusiastic about the appointment system at all stages. The study shows that block appointments can reduce patients' waiting times for acute patients, but may not be suitable for all patients. Staff and patients had different views, which converged with experience of the new system.

2.2 Patients' Appointment System

A patient appointment system or appointment schedule for health care center started long time ago (Harper, 2003). Management of patients' appointments has earlier works and has developed simplified queuing models and fairly static scheduling conditions. Another attempt was made to calculate the waiting time between patient and doctor using the mathematical queuing models to minimize waiting time. However; traditionally the appointment system has considered that the doctor time is more important than patient time. So an appointment system was designed to minimize the doctor idle time but current ddesignof an appointment system is based on decisive factors with respect to

both the patient and doctor. The patient appointment system has complex structures because it represents the patient appointment time in the healthcare center and controls the patient waiting time based on the type and the period of patient appointment. Moreover, a patient appointment system is International Journal of Computer Science & Information Technology (IJCSIT) Vol 6, No 4, August 2014 62 meant for: managing doctor's time, reducing patient's waiting time, reducing doctor's idle time, reducing nurse's idle time, and improving the quality of service in the health care.

2.2.1 Appointment Delay

Past research shows that the longer the appointment delay which is defined as the time between the day a patient requests an appointment and her actual appointment date, the higher the chances that he/she will cancel or not show up. This suggests an obvious way of minimizing no-shows and cancellations: this is done by asking the patients to come right away or make appointment requests on the day they want to be seen. This is called an open access (OA) or advanced access policy, and of late it has become a popular paradigm in practice and the subject of active research. Several authors report on their experiences in implementing OA, both positive and negative. Some practitioners strongly advocate OA, and there are some who are strongly against it.

2.2.2 Managing Patients' Appointment system

According to Dexter (1999), managing patient appointment system is a computer application used to manage and reduce the patient waiting time in the health care center. Some health care centers do not use any appointment system. So it has a longer average patients' waiting time than the health care center that adopts the patients' appointment system. While patients can wait for more than one hour to be attended to by a physician in a health care center, they also can feel that they are being disregarded and treated unfairly. So when patients are given the time of appointment in a health care centre, they can evaluate the quality of service in the centre (Dexter, 1999). Hence, developing patients' appointment process for health care centres necessitates the use of a sophisticated queuing model that captures much of the real system's features (saving time, reducing idle time, etc). Therefore the appointment schedule represents the real situation in the health care center faced by patient appointment schedulers (Rohleder, 2002). On the other hand, the standard practice for scheduling and processing patient appointments are based on the nature of treatments of the patients and that better approaches more sensitive to patient needs are desirable.

3. MODELING AND ANALYSIS

The IDE (Integrated Development Environment) that is chosen for developing the proposed system is Microsoft Visual Studio as it is a great application to use for running JavaS. Besides that, by using Visual Studio IDE, the users provide live coding assistance regardless of the programming language they are utilizing. The built-in intelligence provides hints and descriptions of the APIs and auto-completes lines for better speed. In addition, it has debug supports for developers to deploy apps on the desktop emulators in mobile devices and other debugging methods. Furthermore, it also contains customization options function for users as they can extend the functionalities of the platform through extensions and add-ons available from the Visual Studio Marketplace. The database that is chosen is Firestore Ddatabase server allows developers to use row-based filtering. The row-based filtering method filters data via database mode on a database. In addition, the filtered data is stored in a separate database for delivery. Hence, filtering multiple rows without considering the number of databases is simpler for programmers. The feature allows users to backup and restores large amounts of data without additional time and effort.. Using the above platform the proposed system is developed and the screenshots that explain the functionality of the proposed system are shown in the following section.

A) Application

This section describes the functionality of the proposed system and its associated screenshots. The first page is the Home page (Figure 1) where users first surf the website. There is some information for users to see. At the top of the page, there is where the navigation bar locates at. There are a few options for users to choose what they want to do with the website. But some of the functions like booking and feedback are exclusively for members which means they must sign up for an account and log in if they want to use those functions.

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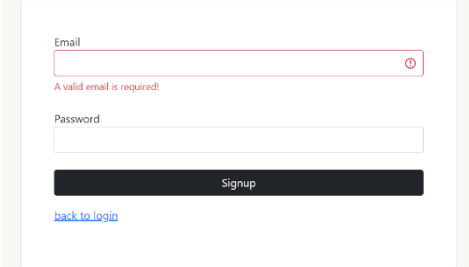

Fig. 1. Login Page

The login page is where the users enter their registered username and password to log into the system when they sign up for an account. The red button under the textbox is the login button and beside it is the sign-up label. For those who haven't registered an account, they can click on that label and the website will lead them to the sign-up page. Users must enter correct both username and password to log into the system, if not, they wouldn't be allowed to access the system.

It can also be used to Firebase authentication and authorization, shut down or even delete the entire database in the program. The sign-up is for the users that haven't created an account on the website and wanted to use the system. Without an account, they cannot log into the system which means they can't use the system's functions. Users are required to fill in their full name, username, email,l, and password to successfully sign up for the system.

After logging into the system. In Fig 2. Users can book the consultation time of doctors. First, the user requires to type their name and follow by selecting the category that their disease is such as dermatology, endocrinologists, etc. After that, they need to select the date and time that they want to meet the doctor. In the end, there is a section for them to describe their disease so that the doctor can know it earlier and prepare the suitable medicine first to reduce waiting to take the medicine.

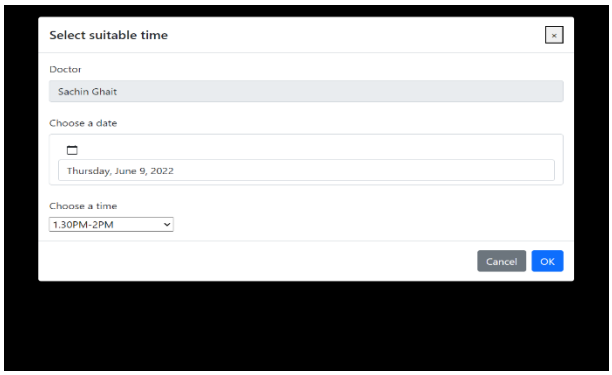

Fig 2. Book Appointment

If users want to edit the details of their profile, they can go to the edit profile page and make changes to their profile as shown in Fig 3. They can change the full name or username, email, and password also. However, all users can only edit their profile but not the others.

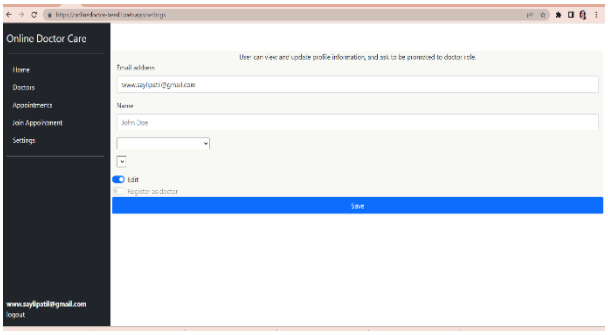

Fig 4. Edit Profile

If you log in as admin at the system, the system will log into the admin page which is different from the user's page. There are four pages on the admin page. The first page is the Dashboard as shown in Fig. 5. Here, the admin can view the overall information of the system. They can see how many total users registered their system now and how many consultations are waiting.

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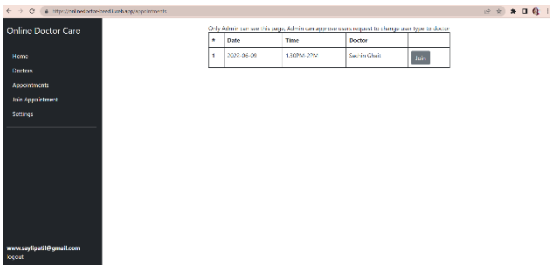

Fig. 5. Admin dashboard

On the Users page, the admin can view the details of members right now and they can also help modify it. They can even delete the users if they want.

On the consultation page, the admin can view the overall consultation booked by the users and the details of it. Therefore, they can arrange the consultations for users and register themselves as a doctor as shown in Fig. 6.

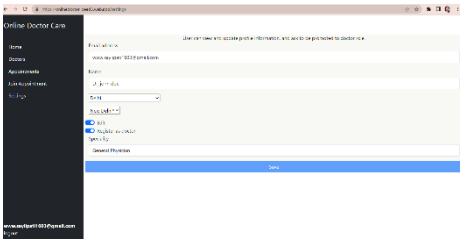

Fig. 6. Admin view consultation

When doctors see the appointment and make a call they start the webcam and the patient answers the call. With the help of WEBRTC Doctor and patient can create a call and start the consultation. Hence these are the core feature of this application i.e Doctors and Patient interaction. As shown in fig.7.

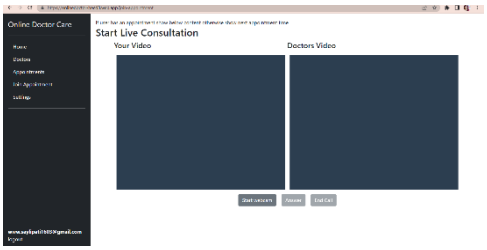

Fig. 7. Start Consultation

The above screenshots and their related explanation clearly described the functionality of the proposed system. After successful implementation, finally, the system is tested using the various testing methods and documented as per the software development standards.

4. RESULT AND DISCUSSION

Booking doctor consultation can be a troublesome issue for most people. It is very inconvenient when people need to physically be there just to book a consultation and wait for their turn. Therefore, theanine booking consultation is needed to solve this issue. In this paper, a study is performed on the online booking consultation system and a new system has been designed and implemented usidng vueJs framework and firestore in the database. The system's main function is for users to be able to book a consultation through the online system, therefore they don't have to go to the clinic or hospital to book it and then wait there for their turn. They can just sit at home and go there when the time is scheduled for their appointment.

5. CONCLUSION

The main point of view of these web-applicatiob is Doctor and Patient interaction. Furthermore, users can edit their profiles they register an account on the system. If they want to change the username, password, or email in the future, they can change it. The proposed system is also tested with different types of users to make sure that there are no bugs and that the user interface is friendly enough to use the system. In the final user acceptance testing, users have given positive feedback that the system has met their requirements in booking an appointment online through the proposed systems and felt that the online system is more viable than the traditional appointment system.

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