Hello Doctor- An Online Health Management System

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ABSTRACT

The world is going through rapid advancements in communication technologies and with it, we are getting faster and faster internet each passing year. All of us, including the doctors, are surrounded by smartphones and computers. Remote Medical care is a field that is emerging rapidly in this background. Results are transmitted to the Remote Medical Care centre, where they are automatically analyzed. If any abnormalities are detected, medical staff contacts the patient and calls an ambulance in the event of an emergency. In this paper we design an app for college students who often miss their regular health assessments and avoid going to doctors for various reasons. This app provides an interface for both the doctors and the students to interact and also digitizes the health report of the student/user. The student, when in

need, can enter his symptoms in the interface provided to him which would be the HelloDoctor app. Each time a student submits the symptoms, the doctor gets notified. The doctor responds and prescribes medication to the student based on his/her medical history through a web app using his login credentials.

1. INTRODUCTION

One of the issues that the students face in a campus is that they have to walk a long way to get to the health center to get a check-up. But some times the student might not be in the best health to walk all the way and procrastinate in visiting the heath centers for check up even in deteriorating conditions. Also, the doctors are not allowed inside the hostel to check up on any student.

Through the app, HELLO DOCTOR, we are trying to create an environment where any student can feel comfortable to reach out to the health center without having to walk that extra distance. Using this app the students can easily chat ,tell the symptoms and thus get the required medication which can be made available inside the hostel from the ground floor from a nurse by showing the prescription. The doctors can also keep a track of the students medical history to get a better understanding of his/her condition. In case of an injury or if the temperature needs to be checked, the nurse inside the hostel can take care of it under the virtual guidance of the doctor.

For the doctor, we create a website where he/she can login with a special ID and understand the symptoms of the student, review his/her medical history and give a prescription by just a click This app can bring an ease to the process of providing the required medical help to the student in need and will thus increase the reach and efficiency of the health center and also will have a positive influence on the student body.

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II. LITERATURE SURVEY

This section encompasses some of the literatures used for our project. Nowadays, smartphones can be found anywhere and everywhere. As a result, people are making use of the technology through mobile applications to make their day to day life more effective and easy. This paper focuses on development of a mobile application(app) to help providing an effective health care system.

The author in [1] proposed a mobile application which enables patients to manage their 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, Body Mass Index(BMI) calculator etc. . This application can be an aid for finding hospitals and coming in touch with a doctor for appointment or seeking help in emergency situation but in a large number of cases the basic health care facility is so far away from the user's location that people tend to skip visiting the doctor and thus compromises with their won health.

A mobile based application is proposed in [2] which enables patients to manage their vital statistics information and transmit the medical information to health care providers but the process of uploading the patient's document is very cumbersome and there is no statistical information of the hospital for the user.

A model of a wireless health monitoring system that can send SMS

related to the health status of the patient is developed in [3]. The project can is divided into three phases of data collection, data processing and communication .

A mobile application based system in discussed in [4] to assist doctors in monitoring Alzheimer's patient medication but this application is only developed for Alzheimer's patient.

Another mobile application of personal health care system for patients with diabetes is presented in [5].This has a major limitation of only pushing the blood glucose level to the an official sheet to receive services and cannot attain services from a particular doctor.

A web-based healthcare system proposed in [6]which aims at the diet of people. This comprehensively deals with the over-weight problem.An integrated model for looking for doctors in accordance with the patient's demand characteristics is put forth in [7] In the proposed method, a user's matching model is firstly suggested for finding the similarities between users' consultation and doctors' profiles.

A WAP-based telemedicine system is discussed in [8] for patient-monitoring. It utilizes WAP devices as mobile access terminals for general inquiry and patient-monitoring services.

Our main motivation is to develop a system integrated with a lot of features through which people would tackle different hard situation during disruption of health condition by saving time. For example, intelligent suggestion of hospitals, online cabin booking facility, allocate an appointment with a doctor, prescription displayer, medicine course reminder, emergency auto-call making to predefined important numbers, etc. features would help the user to make a quick decision and avoid unexpected situations. These features were not combinedly done in any previous works.

III. METHODOLOGY

Basic Working:

The project is based on two components, one app that is used bythe patients and the other that is used by the doctor. The patients interface consists of a portal to connect to medical professionals or doctors who they can consult to obtain medical advice and prescriptions after submitting their symptoms, they can also view their medical history. The doctor's interface consists of a portal to connect with their patients, view their symptoms, prescribes medicines and give any general advice if necessary.

The app features a real time overview of the process for the patient in which he/she can see whether a doctor has started the consultation session, has started prescribing the medicines and when the doctor has finally sent his prescription and diagnosis, the disease and recommended medicines are displayed to the patients via the app.

IMPLEMENTATION OF THE SERVICE:

CLIENT SIDE/FRONTEND:

The client-side application used by the patient on their mobile devices was implemented using react native. React Native is an open-source mobile application framework created by Facebook. It is used to develop applications for Android, iOS, Web and UWP by enabling developers to use React along with native platform capabilities. The working principles of React Native are virtually identical to React except that React Native does not manipulate the DOM via the Virtual DOM. It runs in a background process (which interprets the JavaScript written by the developers) directly on the end-device and communicates with the native platform via a serialization, asynchronous and batched Bridge. React components wrap existing native code and interact with native APIs via React's declarative UI paradigm and JavaScript. This enables native app development for whole new teams of developers, and can let existing native teams work much faster. React Native does not use HTML or CSS. Instead, messages from the JavaScript thread are used to manipulate native views. React Native also allows developers to write native code in languages such as Java for Android and Objective-C or Swift for iOS which make it even more flexible. Described by its creators as "A JavaScript library for building user interfaces", React focuses on the view portion of your application. In more concrete terms, this means that when writing a React Native app, your view code will consist of writing React components, which are small pieces of code that describe how a portion of your app should look based on some set of input data.

React Native facilitates cross platform development for both android and ios from a single codebase thus, eliminating the need for developing two separate apps for each OS thus reduce the development costs.

DOCTOR: the client side application on the doctor side was implemented using React.

React (also known as React.js or ReactJS) is an open-source JavaScript library for building user interfaces. It is maintained by Facebook and a community of individual developers and companies. React can be used as a base in the development of single-page or mobile applications. However, React is only concerned with rendering data to the DOM, and so creating React applications usually requires the use of additional libraries for state management and routing. Redux and React Router are respective examples of such libraries.

SERVER SIDE/BACKEND: the backend service connecting the client side applications both the patient and the doctor with each other was implemented using firebase.

Firebase:

Firebase provides a real-time database and back-end as a service. The service provides application developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud.[26][27] The company provides client libraries that enable integration with Android, iOS, JavaScript, Java, Objective-C, Swift and Node.js applications. The database is also accessible through a REST API and bindings for several JavaScript frameworks such as AngularJS, React, Ember.js and Backbone.js.

Firebase provides backend as a service from Google. It is an alternative to other noSql databases likeMongoDb and allows the developer to rapidly scale the server side requirements of their app according to the user load.

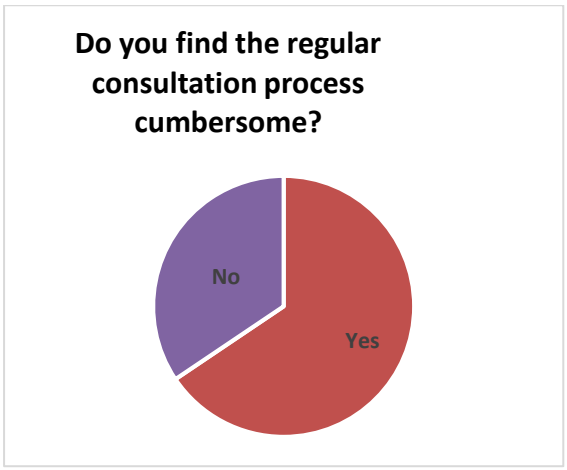
Additional Feature Implementation: Once patients have started using the product it could be given the choice to opt in to a product improvement program by sharing their medical consultations. The datacollected through this could be used to train a Machine Learning modelwhich could be used to provide low cost sessions for those patients in the future for minor diseases. This program would be purely optional

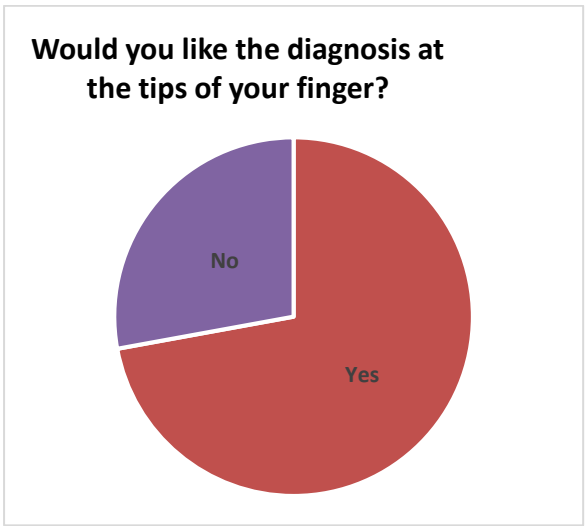
to ensure the patients data is collected only after obtaining their explicit consent.

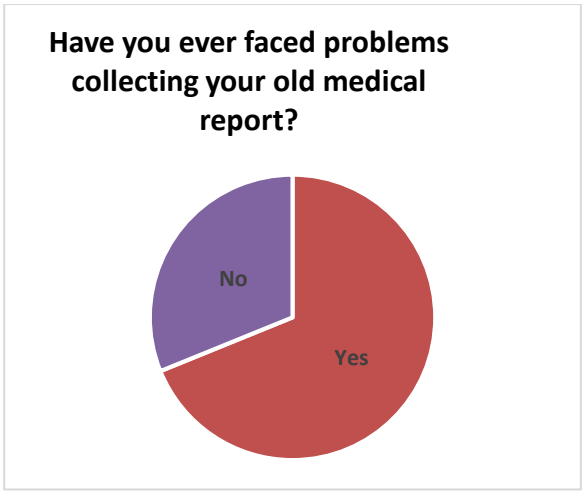
IV.RESULTS

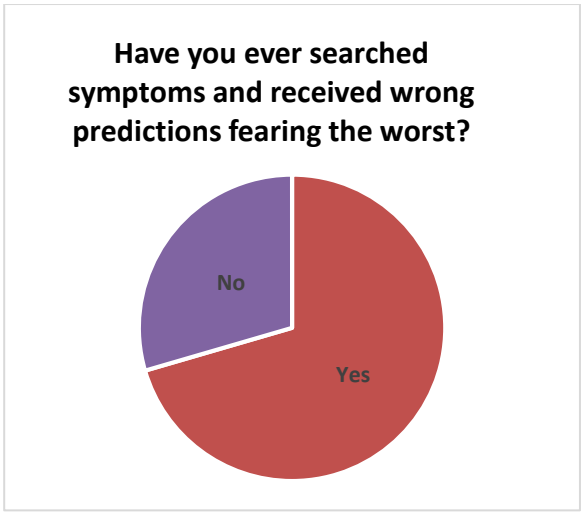
FEILD SURVEY

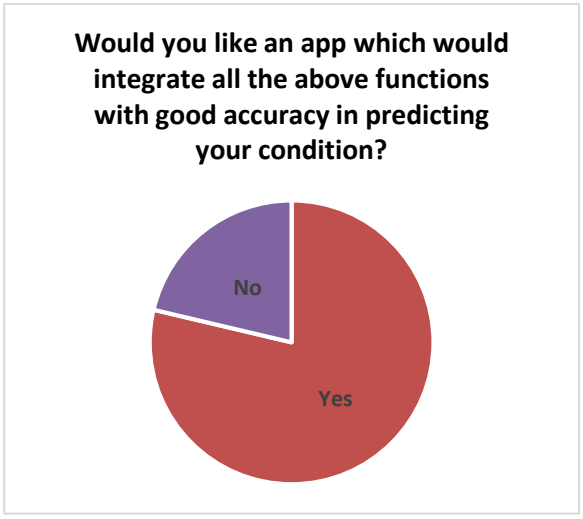
We conducted a survey around the campus and nearby localities about the facilitation of online medical service and it is presented as:











From the above graphs we observe that alot of students were facing the issue with the health facilities available now and consider it cumbersome and also find it difficult to collect old medical report.

We also conclude that more than 70% of the people believe tat having the medical system online will be useful for the campus and are willing to use it.

We tried running the app on many devices to see its operation and this app was working properly and executed all its functions without any errors. These are some of the results that we have got from the application designed.

MOBILE APPLICATION FOR THE PATIENT

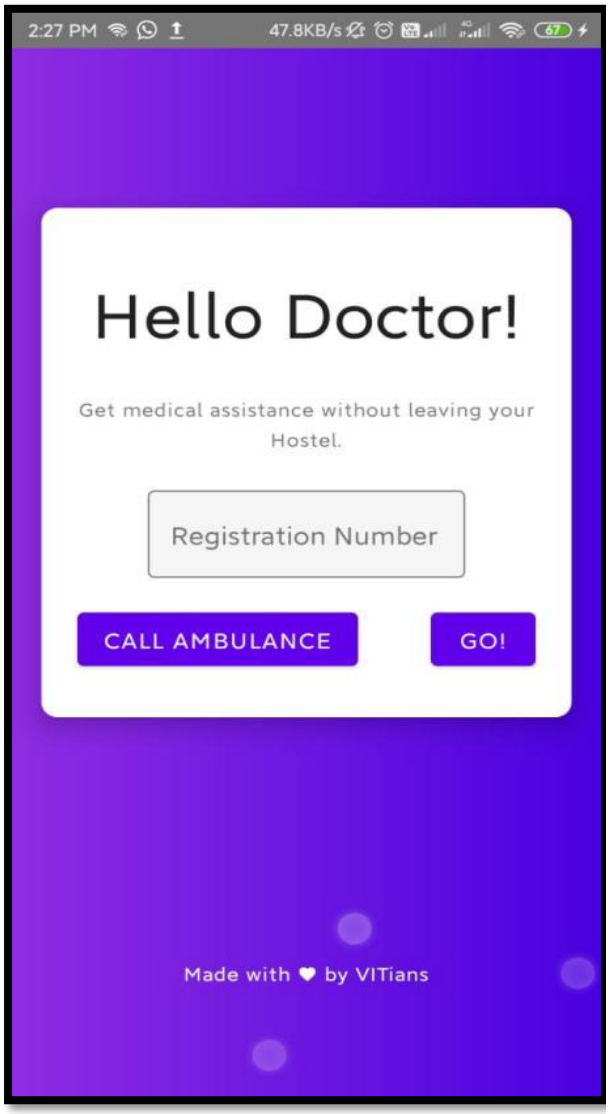


FIGURE 1: THE WELCOME PAGE

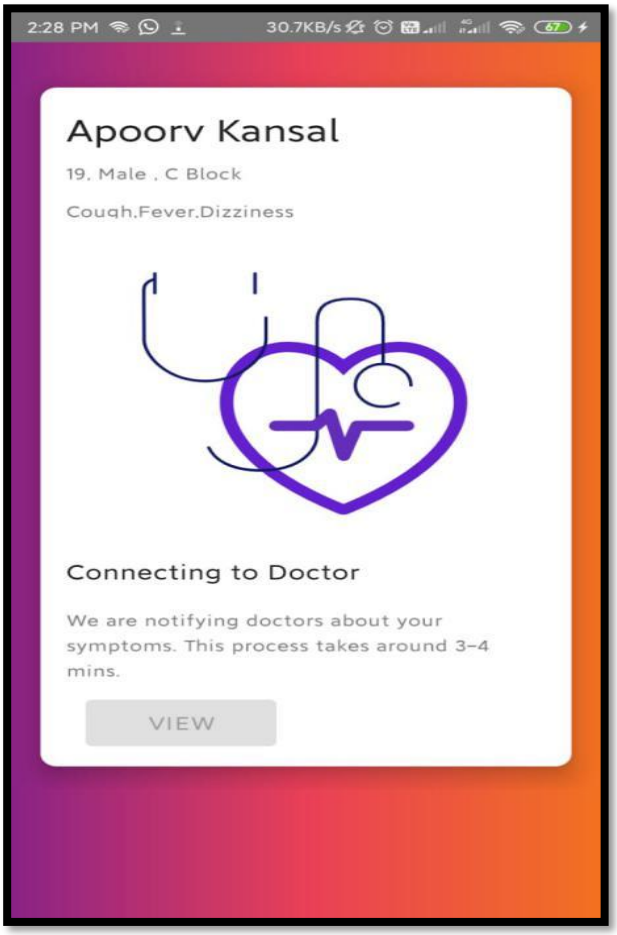


FIGURE 2: GETTING CONNECTED TO THE DOCTOR

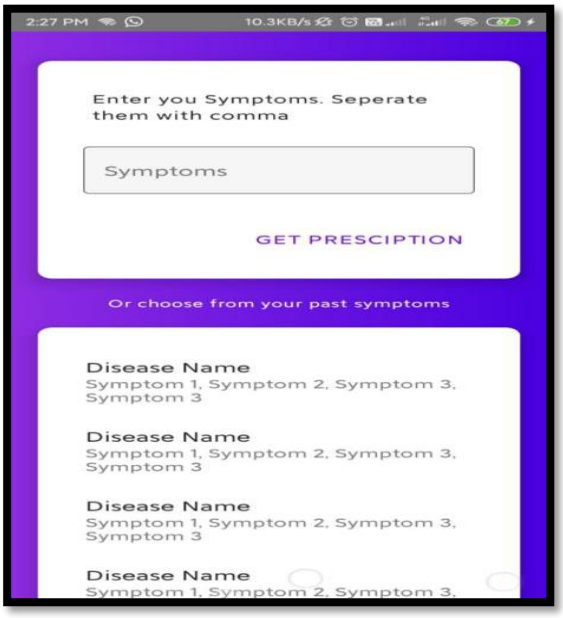


FIGURE 3: PATIENT CAN ENTER THE SYMPTOMS EXPERIENCED

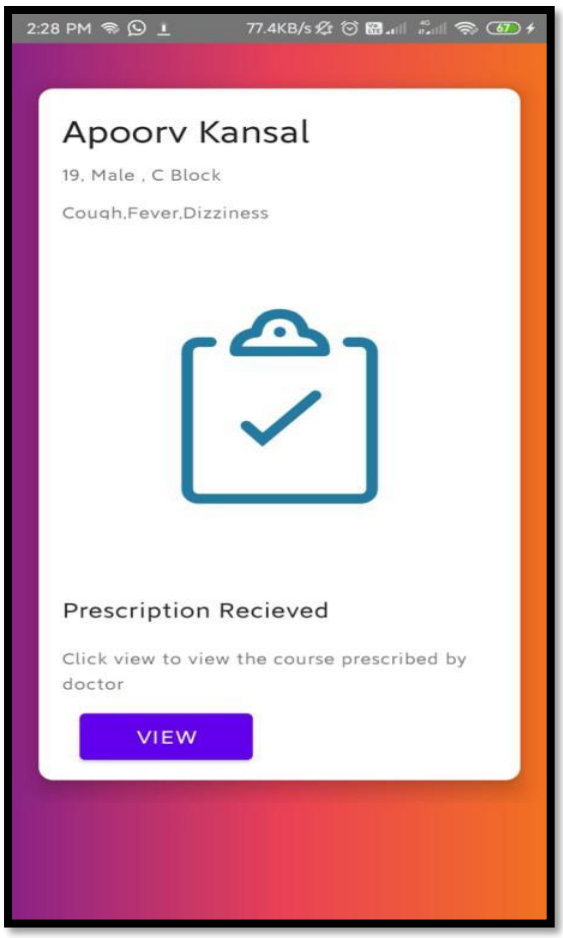


FIGURE 4: ONCE THE DOCTOR HAS SENT THE PRESCRIPTION

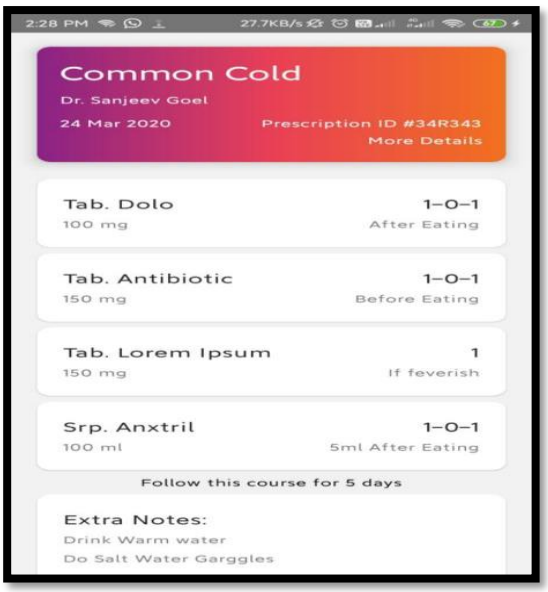


FIGURE 5: PRESCRIPTION RECEVIED

HELLO DOCTOR WEBSITE FOR THE DOCTOR

It is important for the doctor too have an user friendly platform to communicate with the patient and thus by keeping that in mind we made an easy to use website.

The images given below shows how the website looks like and the functions regarding the same.

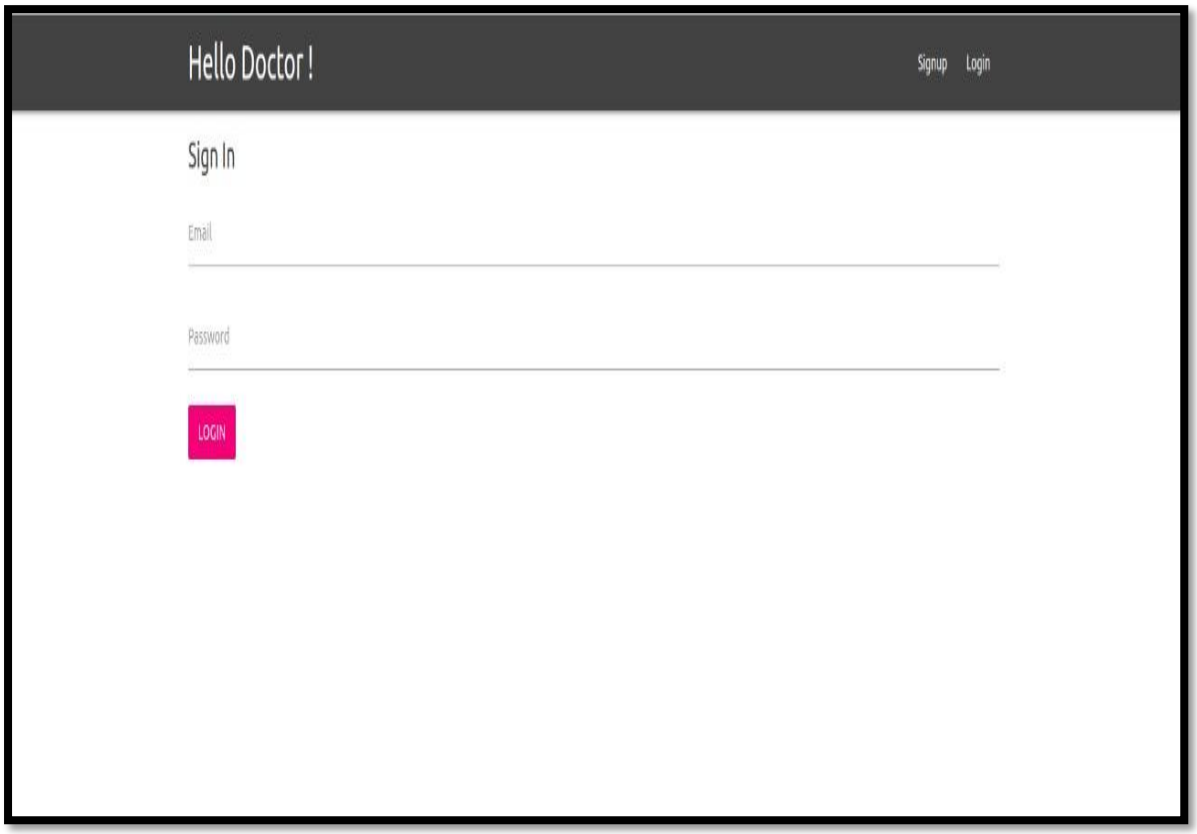


FIGURE 6: THE LOGIN PAGE FOR THE WEBSITE

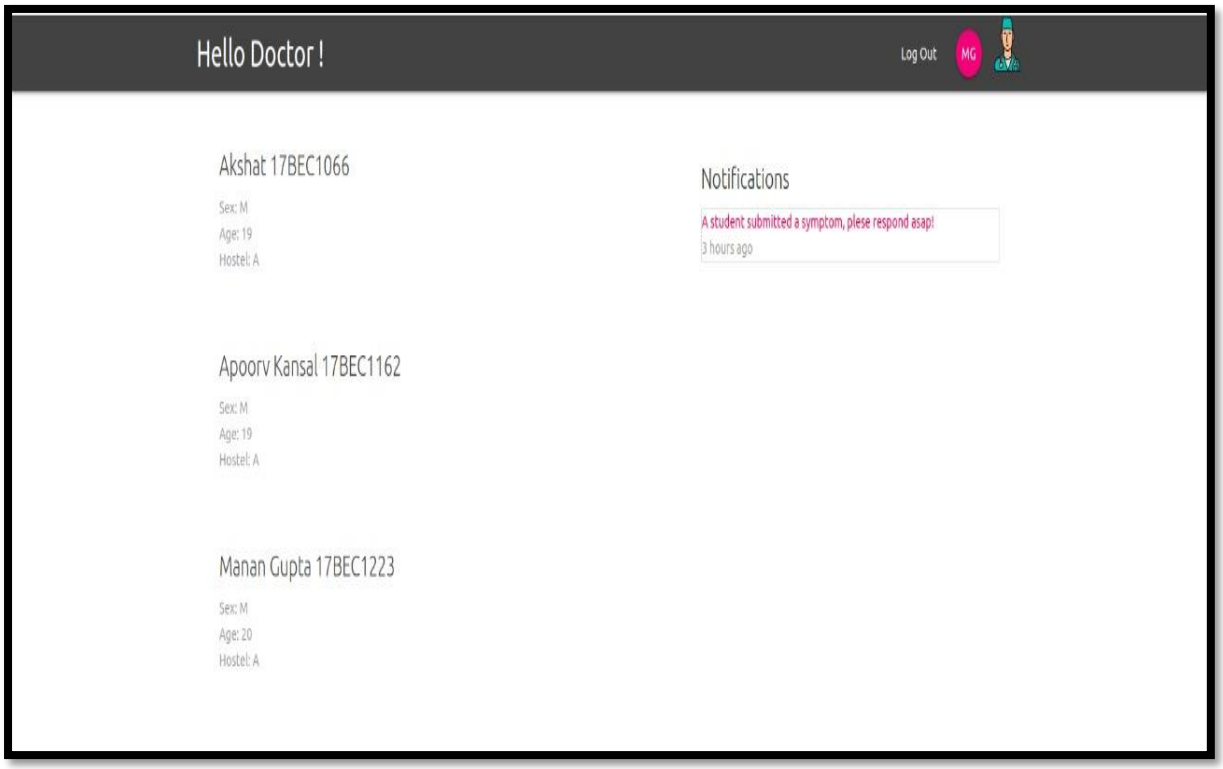


FIGURE 7: THE PATIENT'S DETAILS RECEIVED BY THE DOCTOR

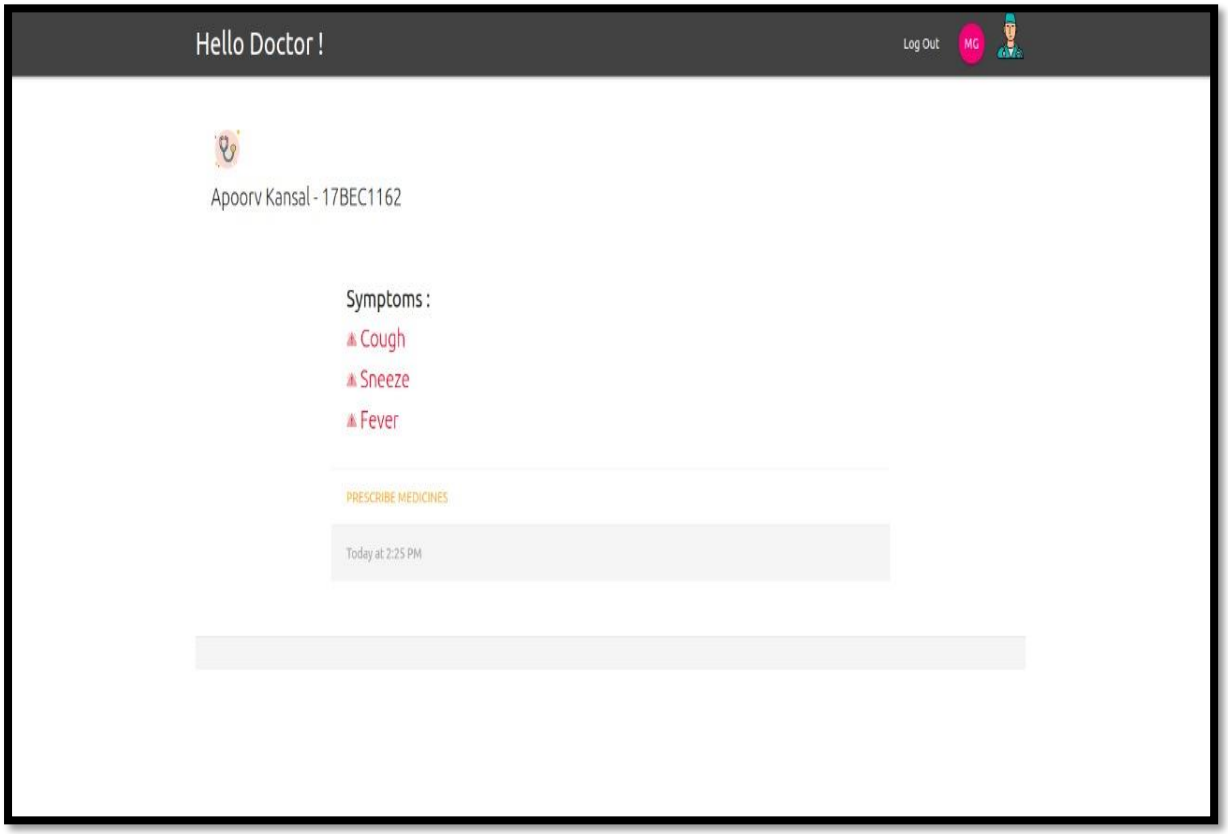


FIGURE 8: THE SYMTOMS OF THE PATIENT RECEIEVED BY THE DOCTOR

FIGURE 9 : CREATE PRESCRIPTION PAGE

V. CONCLUSION

We developed a simple application for college students to get prescriptions from the doctors present at the nearest Health Centres. In this age where we are engulfed with the presence of technology people are seeking easier and effective health management facilities.The field of health care is one of the most directed areas by the scientific communities and they are busy developing an user friendly and modern tool for the same.

This project demonstrates a mobile application based health care tool that can be the big thing in this progressing field of health management. Using the app a user can chat, tell symptoms and get medicines' names. It is also made from the point of view of the doctors. The Doctors can view patient's history and their medical records. Users can then collect medicine from the nearest dispensary/shop. The users can avail many conveniences that can change the way people react in emergency situations. Instead of being alarmed, people may find a quick and effective way to reach the solution with the help of this app.

In future, we are looking forward to work comprehensively on this to develop it to a new level for the sake of our society. This way, it is hoped that mobile based health care system will be a revolutionary achievement for the people.

FUTURE DISCUSSIONS

In the future, we are looking forward to working intensively for modifying the application and making it more advanced. We hope that we are able to reach out to more people, especially the poor and marginalized for making their lives better and safe. This way, it is hoped that a mobile-based health care system will be a revolutionary achievement for the people. We are planning to introduce artificial intelligence-based models and comprehensive regression analysis using machine learning to provide a better service to the users. This way, it is hoped that a mobile-based health care system will be a revolutionary achievement for the people.

ACKNOWLEDGMENT

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