# Smart Health Consulting Android System

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**ABSTRACT:** Consulting a doctor is a quite obvious thing in our day to day life, but the availability of the doctor during the time of our requirement is unpredictable. In order to overcome this issue a proposal of android application is made, this smart health application enables users to get instant report on their health issues through a intelligent health care application online. This E-health application enables user to express their symptoms and issues. It then processes user's issues and symptoms to check for various health issues that could be associated with the symptoms given by the user. If the application is unable to provide a particular solution then it urges the user to under-go tests like blood test, CITI scan accordingly.

**KEYWORDS:** Smart health, Android application, E-health, Intelligent health care application

## I. INTRODUCTION

Smart phone era is improving day by day because of the easy usage options, efficiency of the applications. Medical science and technology is no exception, but that they are almost beginning to overlap upon each other and in certain situations even combining with each other to help the end user. This paper presented here is the one that will be very useful and effective in helping the users to find out appropriate doctors for the diseases/symptoms. The purpose of this paper is to enable the user or the patient to get all the required details like availability, contact information about the doctors who are specialized in the issues given by the patient.

This application allows user to get instant supervision on their health issues through an smart health care application online. The application is feed with various symptoms and the diseases associated with those systems [7]. Patient can check their medical record Hence, this system provides Quality Health Care to everyone and error free and smooth communication to patients[3,4]. Mobile technology is also use in hospital management by serving with search hospitals; improve health outcomes and medical scheme efficiency measures.

In further sections of this paper we discussed the existing system, and a betterment of the existing system considering the convenience of the doctors and patients (users).

Due to the rapidly increase in the mobile devices attached to the internet, a lot of researchers had been developed to manage and maximize the benefit of each integration. The general consideration about mobile devices are user looking for various services offered by mobile device, but we are now interested to provide such applications that will look forward Health Care and provide the remote diagnosis to patient and patient monitoring. We proposed the idea that mobile devices take care of the daily life health care issues by talking various checkup either by patient or by assistance that can to take his medical checkup by using g medical peripherals and upload the report by its mobile phone to server where expert system could suggest precautionary steps or diagnosis along with patient status. We have a lot of medical peripherals devices available around us that individually dedicate to some specific work like weight scale, blood pressure meter, pulse sugar level meter, peak flow meter etc. The modern visionary of healthcare system to provide better health to prepare at anytime and anywhere in the world in a more economic and patient friendly manner Therefore for increasing g patient care efficiency, there arises a need to improve the patient monitoring system. Smart health consulting system that deals about the modern health issues which can be rectified using smart health consulting system. This application allows user to login and sign up screens. Then it proceeds to the search module where user can search related issues. If the database contains related issues it shows the prescription or else user not satisfied with it. They can make calls by clicking call option to consult the doctor. This application contains doctor as an admin and they maintain server. If there is no related result the user can send query to the doctor. Doctor can view all the queries from the user or patient's idea and update.

## II. EXISTING SYSTEM

In the present existing system, consulting any doctor is very tiresome task for the patient. There are many cases where the patient is unable to find out the required doctor for his disease, this become even worse if there is an emergency case especially when the patient is in an unknown area. This situation might harm the patient in the mean time. Even knowing the proper address, contact details of the doctor for required disease has become a very tough task. Also, sometimes doctor's schedule may get change during such cases patient's appointment might be cancelled. This might not be known by the patient due to lack of communication between the patients and the doctor. A doctor can have many patients in a day which becomes even more difficult for the doctor to intimate his schedule for each and every patient. Because of this time of patient get wasted and in the case of emergency it may cause harm to the patient.

We have seen that a patient is not able to select an appropriate hospital for his/her emergency in unknown area. Again, if patient wants to take an appointment of specific doctor then patient has to go to the hospital and patient has to stand in a queue to take an appointment. This is very time consuming process. Also, sometime doctor schedule may get change then at that time patients appointment may get cancelled. Even though the appointment has got cancelled, patient may not get aware of that cancellation. Because of this the time of patient gets wasted and in this case of
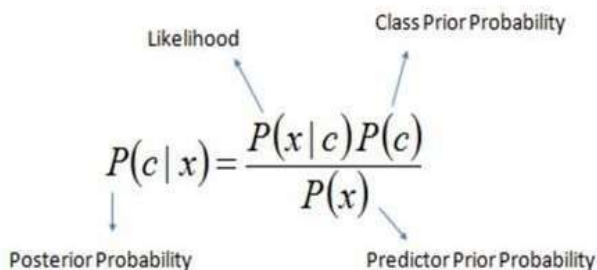
emergency it may cause harm to the patient. If doctor gives prescription to the patient sometimes patient may forget to take medicine. Every time patient has to in a hospital with combined test report. This increases the overload on the patient.

## III. PROPOSED SYSTEM

In this system the patients or the user has to register into the application. After registration patient will be given a unique ID and password. Patient can use this ID and password for logging into app to get the required information. Patient can search the doctors based on the categories listed in the application i.e. Orthopedic, General Physician etc. Patient has to select a particular doctor as per requirements from that list , Patient (user) can see doctor's profile. From that patient can search the specific doctor from any hospital. Also the patient can view doctor's schedule, contact details like address and phone number to look for an appointment according to his convenience.

**Naïve Bayes Classifier**
This is classification technique based on a assumption of independence between predictors or what's known as bayes theorem. In simple term, a naïve Bayes classifier assumes that the presence of a particular feature in a class is un related to the presence of any other feature. For Example, a fruit may be an apple if its red, round, and about 3 inches in diameter. Even if these features are depends on each other or upon the existence of the other features, a naïve bayes classifies would consider all of these properties to independently contribute to the probability that this fruit is an apple. To build the Bayesian model is simple, particularly functional in a case of enormous data sets. Along with simplicity, naïve bayes is known to outperform sophisticated classification methods as well. Bayes theorem provides a way of calculating posterior probability $P(c/x)$ from $P(c)$, $P(x)$ and $P(x/c)$. This expression for posterior probability is as follows:

$$P(c \mid x) = \frac{P(x \mid c)P(c)}{P(x)}$$

Likelihood · Class Prior Probability · Posterior Probability · Predictor Prior Probability

$$P(c \mid X) = P(x_1 \mid c) \times P(x_2 \mid c) \times \cdots \times P(x_n \mid c) \times P(c)$$

## SEARCH DOCTOR

This application enables the user to search for the doctors available depending upon the requirement i.e. the symptoms/disease the patient has. Various doctors for various specializations related to important parts of the body like heart, kidney, brain, liver etc can be found on this application with the doctor's availability, contact details.

## ONLINE APPOINTMENT

After undergoing the registration, login procedures the user can find the required doctor with his scheduled timings, contact details the user can get an appointment from the doctor easily by this application.

## ADD DOCTORS

An admin is the one who can view both the patients and the doctors with this application. The admin can add further more doctors depending upon the requirement and feedback given by the users. The details given by the user and the doctors can be edited or updated anytime.

## COLLECT FEEDBACK

Every user of the application can provide certain feedback of the doctor/application after logging in this helps to continuously monitor and improve the efficiency of the application and it can satisfy every user depending upon the requirements. Admin can check the feedbacks provided by the user and act accordingly.

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## REMIND PATIENTS

This Application will remind the patients to take their prescribed medicine by sending a notification to their Android device. The patients will need to select the time, enter the medicine name and then the patients will be reminded about medicines everyday at their selected time.

## DISEASE PREDICTOR

The Patient can use the disease predictor feature of our application. In this module the Patient needs to select the symptoms that they are experiencing and based on the symptoms selected by the user, our application will predict the disease the patient may be suffering from.

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## IV. SMART HEALTH CONSULTING ANDROID ARCHITECTURE

In this paper it is discussed majorly about the requirements, architecture, and usage of the proposed android mobile application. The application is used by the patients, doctors and the admin so the system can be viewed in three perspectives from various users (patients, doctors and the admin) The system architectures are depicted below.

### i). PATIENT'S PERSPECTIVE
Patients Perspective
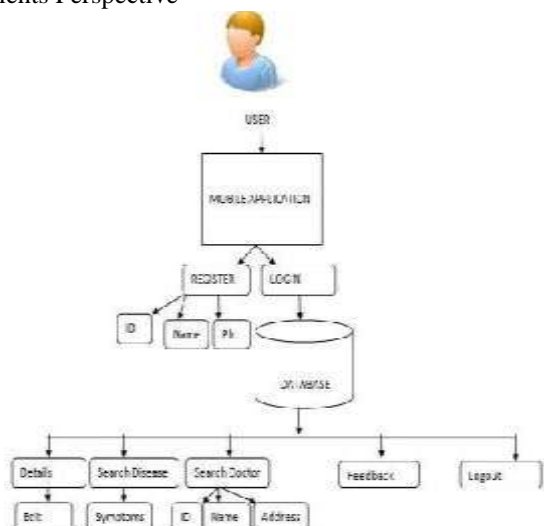


The user can access or use the various features integrated by installing the android application into the mobile, the home page of the application consists of the register and login options, where the new user needs to register by providing few details like name, phone number, e-mail id. And an registered user will be directed to the options page where various options like his/her details which can be edited, Diseases can be searched with the symptoms seen, Various doctors can be searched by doctor's ID or name or address. A user can give feedback after the usage and logging out from this page directs to the home page i.e. the page which is seen immediately after opening the application.

### ii). ADMIN PERSPECTIVE
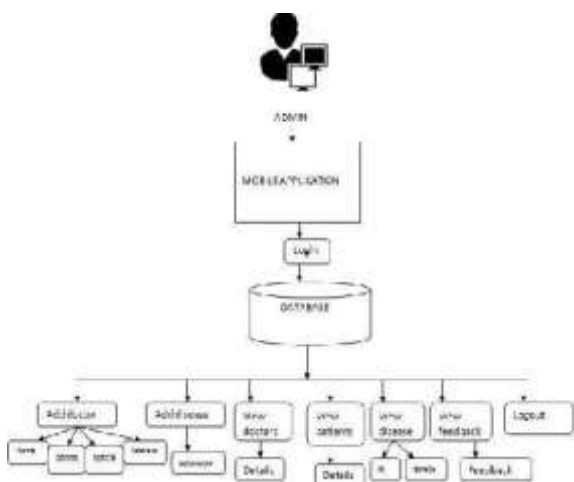


**b) Admin perspective**

An admin is the one who coordinates both the users and the doctors by providing necessary details for both of them. Admin can add the doctors to the application depending on the requirement and the feedback sent by the users, Admin is the only one who can add doctors to the application. The details of ID, name, phone number and address of the doctor must be entered while adding a doctor into the application. Further modules of the application are view various doctors, patients, diseases given in the form of symptoms by the user, a disease can be added into the application too that enables the user to find out the doctors specialized to treat that disease, Admin can check the details by using view feedback module in the application.

### iii). DOCTOR'S PERSPECTIVE
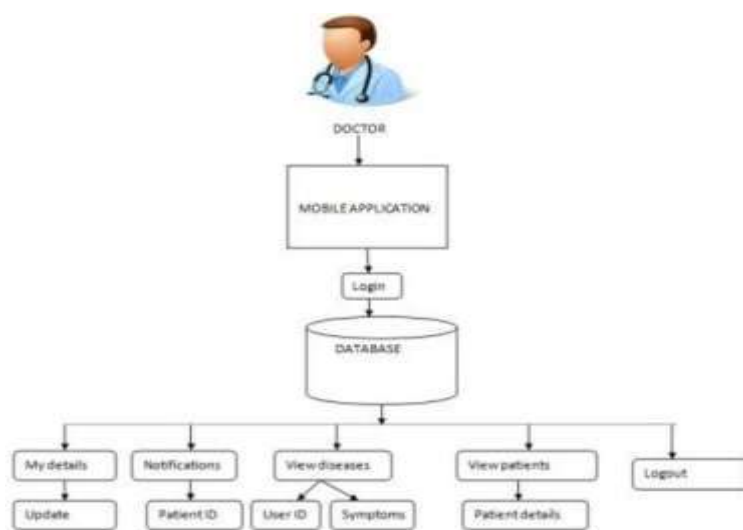


**c) Doctor's perspective**

Another user of the application is a doctor. A doctor module consists of doctors details which can be updated by the doctor in case any contact info/address of the doctor is changed. Notifications enable the doctor to check the id of the patients who need a doctor's help. View disease module enables the doctor to view the patient ID and the symptoms provided by the user, View patient module enables doctor to view various patient's details who have used the application including their details like ID, name, contact details etc. using the application.

## VI. METHODOLOGY

### i). SEARCH DOCTOR
In this paper we mainly focus on the how to find the doctors who are specialized to treat a particular disease that too in a shorter span. The doctors who are added to the application can be viewed by various patients including their contact information, availability of the doctor etc. this whole searching process is said to be carried out by the data which has been stored earlier by the admin which can be also be updated at any desired time.

### ii). IMPROVISE APPLICATION

The feedback module which is provided to the user or the patients enables to gather various feedbacks given by vivid users of the application. This module can be viewed by both the doctors and the admin. The doctors can improve their services. Whereas, an admin can further more add doctors as per the requirement of the users (patients).

### iii). SQLITE DATABASE

SQLite database is a Relational database management system (RDBMS) which is used to both add and retrieve the data from the database or the stored location (In our proposed application SD card acts as the storage location), SQLite database can be used both as both web and android application.

### iv). FIREBASE

Firebase is a Backend-as-a-Service-BaaS- that started as a YC11 startup and grew up into a next-generation app-development platform on Google Cloud Platform. In this application we have use Firebase to provide authentication for the user so that only authenticated user can use this application.

## VII. RESULTS

The android application is made with the installation of the application file generated from android studio (software used to create APK files), The APK files i.e. the end installation files are created in the following way.
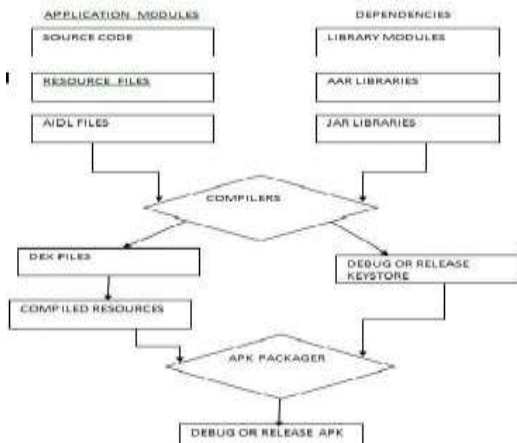


**a) Generation of APK**

### i) USER ACTIVITIES

The data of various users, doctors is saved in the application and it is retrieved from the database when required. Here, an SD card acts as a database to store, retrieve the data given by the users, doctors when required. This process is done as follows:

Some of the results obtained by using the application are as follows:



**a) User Activities**

User activities is the page displayed immediately after logging in by user where he can get details about various diseases and doctor, doctors can be searched based on id, name & address . Here feedback can be provided by the user

### ii) ADMIN ACTIVITIES



**b) Admin Activities**

Here, the admin can view various patients who used the application, Can view various doctors, Admin can also add doctors to the application depending on the requirement and feedback given by the users. Admin can access the details of both the doctors and the patients.
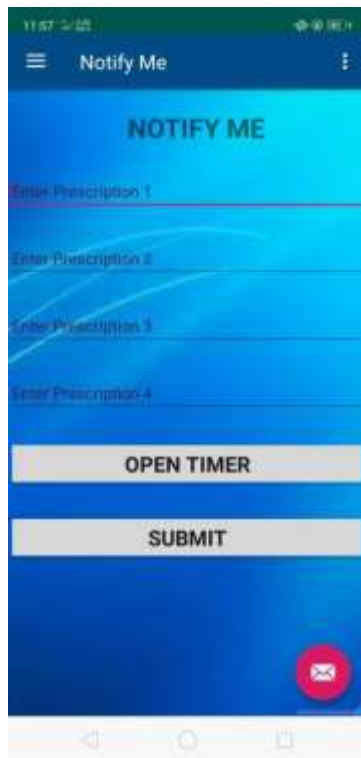
**iii) DOCTOR ACTIVITIES**



**c) Doctor Activities**

Here, the doctor can view various patients who used the application, The doctor can check the notifications to know about the disease of the patients. The details of the doctor can be updated/edited anytime to ensure the appointment of patients

**iv) NOTIFICATION SYSTEM**



**d) Notification System**

Here, the user needs to enter his/her prescription and then the user need to select a time on which he/she wants to receive notification. The application will send the notification regarding the prescribed medicine to the user on their device.
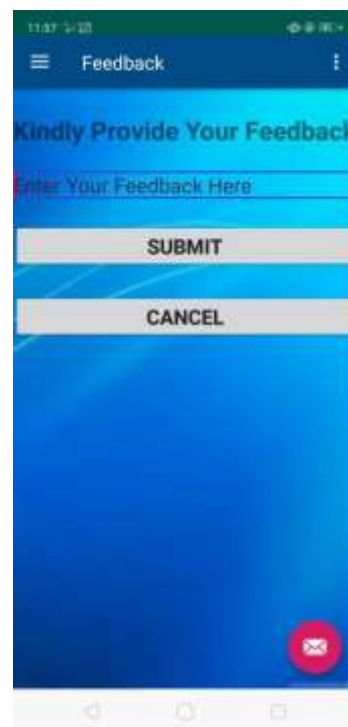
**v) SEARCH DOCTOR**



**e) Search Doctor**

The doctors who are added to the application can be viewed by various patients including their contact information, availability of the doctor etc. this whole searching process is said to be carried out by the data which has been stored earlier by the admin which can be also be updated at any desired time.
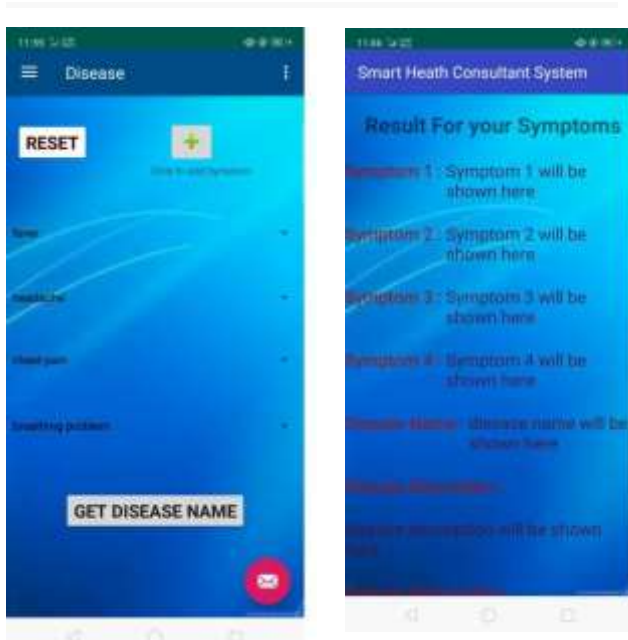
**vi) FEEDBACK**



**Feedback**

The Feedback is collected or gathered from various user of the application. The Feedbacks from various user can be viewed by both the doctors and the admin. The doctors can improve their services. Whereas, an admin can further more add doctors as per the requirement of the users (patients).

**vii) DISEASE PREDICTION**



**f) Getting Disease Name based on Symptoms Provided by the user**

In this, the user needs to select the symptoms from the list of all available symptoms to predict from which disease he/she may be suffering from. Based on the symptom selected by the user, the application will give the details like disease name, disease description, disease precaution and its prescription.

The details about the disease can be added by both admin and doctor but can be deleted by only admin. The disease details will only be added after the consultation of the senior-level doctors which will automatically increase the result accuracy.

## VIII. CONCLUSION

The "Smart health consulting" Android Application is helpful for patient to search the hospital based on specialist. This application is simplify the task of patient and doctor. This application facilitates the interaction between patient and doctor. It helps to optimize the work of patient and doctor. Installation of the app in the Smartphone is quite simple and more useful to patients who have normal idea of android mobile. Smart health consulting android system is an effortless, efficient and influential mobile application for the society.
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opinion, views, comments and thoughts have been really helped us.

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