

## **ABSTRACT:**

*The demand for doctors in our country is high and ever growing and this fact is crystal clear when one sees the statistics of 13 lakh doctors for 136 crores of population. And this gap is nowhere near to be filled with 1 lakh doctors being produced every year. This scarcity of doctors has increased apparently because of the covid-19 pandemic . where as treating patients also by maintaining social distance has become the primary concern. The best possible solution seems to be virtual consultations . So our main aim is to make it possible by developing a mobile app for patients to get treated by the certified physicians right from where they are . This may sound cool, but it's not always as efficient as meeting the doctor in person . so our app would be containing main features of a virtual meet with the doctor and also making appointments for consultation and reminders of the appointment and also reminders for prescribed timings of medicine. Also the keeping track of the health of an individual provides more insights for both the patient and the physician. Locating a nearby hospital and also getting the no.of vacant beds is the prime feature and it exploits the google API to make it possible . In case of accidents or emergencies ,close associates ,of the person can be alerted with messages that notify urgency and show the location of the user to them.*

## **1.Introduction:**

There are things that go wrong if not under constant care . and there are some other things that don't need chronic care but once gone wrong there should be appropriate steps taken to become normal. Health is such an issue. It can go wrong on many levels and also there are corresponding treatments. Ample of time is wasted in the process by just waiting to meet the doctor. And for a doctor some small and regular illnesses like cough ,headache ,cold etc can be prescribed just by talking to the patient . A patient with these kind of illnesses waiting at a hospital for such long time is really demotivating and make them feel "ain't there a better way". when prescribed with a course of drugs intake ,there are pretty good chances to forget them at any point of time because of the busy lifestyles of people now a days. When in a city or a new place getting to know where the nearby hospital is present is also an important task as generally people are prone to wander in the wrong streets even when there are some kind individuals present to direct ,which cannot be guaranteed always. Stating that, the above situations are proven to be more expensive in terms of time and remembering things could be more difficult in the middle of the hectic schedules. With the advancements of telecommunication and with the changed ways of interaction the aforementioned

issues can be handled better by implementing an app. people now a days with all those hectic schedules to keep up with and living under constant stress are leading to a lot more medical issues and illnesses than we are supposed to. With increased problems and not so increase in the number of physicians to treat patients, the queues in the clinics and the waiting time for a troubled individual to get treated are increasing. Although visiting a doctor when feeling ill is advisable but with lots of important things at stake the idle time that's in front of it is not recommendable. After examining these issues virtual meet with the doctor is more appealing that saves a person from both tiring commute to hospital and waiting there.

## **2.PROBLEM STATEMENT:**

We are implementing a project of creating an app that acts like a interface between doctors and patients .which helps a person in getting necessary advice from a doctor right from where they are and if not sufficient making appointment with doctor . Also getting the information of the nearby hospitals and the number of beds vacant in them is the prime feature which has proven to be more important information in this pandemic. Also to alert the close associates is also a concern that is going to be addressed in this project.

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### 3.IMPLEMENTATION:

Whilst there are many apps with the same motive. The one we developed is having a bunch of customized and useful set of features that makes it unique.

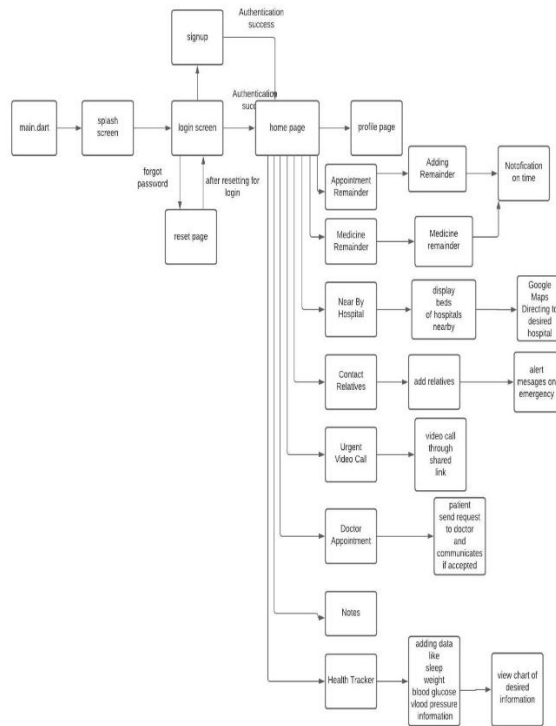


fig.3.1 shows the workflow of the overall app and the features are logically placed.

#### 3.A. Features in the app :-

##### 3.A.1. LOCATING NEARBY HOSPITALS :

Most of the people would be knowing the address of a hospital or two that are closer to our home. But in the events of unfortunate accidents or sudden emergencies chances are so less for us to be at sitting at our home. Most of the medical emergencies are when we are doing some no domestic activity. In any case getting the information of the nearby hospital is a life saver. It is so handy when we are at an unknown place.

This feature helps the person to find the nearby hospitals in the location and also shows the route to it. And this feature also helps in the navigation to that hospital. This is a dormant feature that would be just be a normal feature as in any other digital apps. But the differentiating advantage is this feature that we implement in our app also

shows the number of vacant beds that are available. This is done with the help of Tomtom API. It is useful in locating , routing and navigation.

This would save a lot of commuting time in going to a place where we can't be treated. This was the mostly faced issue in the recent times as because of covid, beds were filled and the oxygen was short and mostly people didn't know where there was availability of resources. So this feature would be great to implement as it becomes handy by showing nearby hospitals and also the routes along with the information of how many beds are available.



Fig 3.2 screenshot of the activity locating nearby hospitals.

##### 3.A.2. ALERT EMERGENCY CONTACTS WITH LOCATION:

Most of the times when a person is met with an accident or is in need of medical assistance he or she might be alone and communicating this to the close associates family members and friends is also an important issue. So to address this we implemented this feature. Opencage API is used in to convert the latitudinal and longitudinal coordinates into text and it's reverse. One can send the location of the person in the form of a text message to all those contacts that are previously added by the user. It contains three fields one for the name of the person and one for the phone number and another for the email id of the person. The contacts which are not present in

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the regular phone book can also be stored here. When clicked on the contact relatives button it shows a dialogue box of all the contacts in the list if yes is clicked then the messages would be sent in the form of text and they would be notified and be alerted.

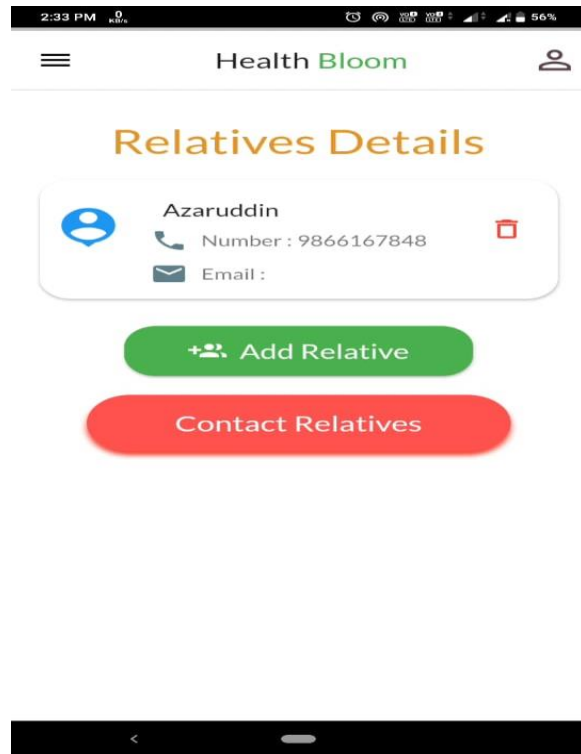


Fig 3.3 showing activity of Alerting close associates

### 3.A.3 URGENT VIDEO CALL:

Remote communication is the main the feature of not only a medical app but for any app in general. In recent times as social distance term transitioned from manners to mandatory rule to be followed the necessity of remote communication only increased. And everyfield is undergoing with the experimentation phase of virtual meets. For example online education. Well this might be new to other sectors but medical professionals are already not new to the video conferences. However in past it was only with professionals.

This feature is used conduct virtual meets. The link to the meet can be shared to the appropriate individuals through other medium like whatsapp,email,Instagram,facebook, etc. It could be used in arranging the videoconference or the

virtual meet with the professional doctors. And doctors can chat with the patients and get to know their plight and based on the symptoms they can prescribe the medicines similar to the process of meeting in person. This feature could be really important when patient is at the remote area and primitive steps of caution and care can be instructed by doctor during the time of commuting.

### 3.A.4 DOCTOR APPOINTMENT:

It's not always possible to assess the ailment of a person just by looking or hearing out the ailments. Some times the person is wanted to be present physically. It could be for making the blood tests,or to do x-ray etc. So adding this feature is mandatory in any medical app. Making an appointment consists of two sides. From the patient perspective and from doctor perspective. In doctor side , he would be mentioning the date and the interval of time he would be available . and this information would be loaded and updated in our database. From the patient point of view when looking for a doctor based on their speciality or their names the results would be shown along with the available time mentioned. A patient would make the appointment which should be accepted by the doctor. A patient can submit the previous reports in prior so that the doctor can also see the medical history of the patient.



Fig 3.4 showing activity of appointment

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### 3.A.5 APPOINTMENT REMAINDER:

After making appointments there are pretty good chances that one might miss an appointment because of the critical schedules that people are maintaining these days. This feature reminds the person of appointment with the doctor on specified time with a notification to alert the person and also it will inform the point of contact giving the details of appointment. Even if there are cancellation of the appointment or rescheduling they could be notified. One can also maintain the history of past appointments taken.

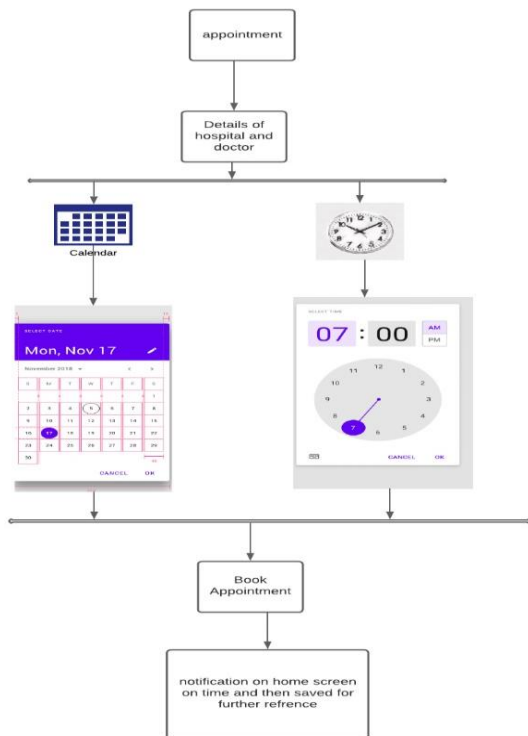


Fig 3.5 appointment reminder

### 3.A.6 MEDICINE REMAINDER:

After the consultation and getting the prescription of the medicine sometimes we miss the time. So to help with that and maintain the course of prescription properly we use this feature.

This feature notifies the person the timing to take medicine with a notification. The patient should mention the number of times the medicine should be taken and mention the time for it. One can add the medicine name and number of times it should be taken and when it should be taken. The reminder hits an alarm and requests the person

to take the medicine on time as mentioned previously by the patient.

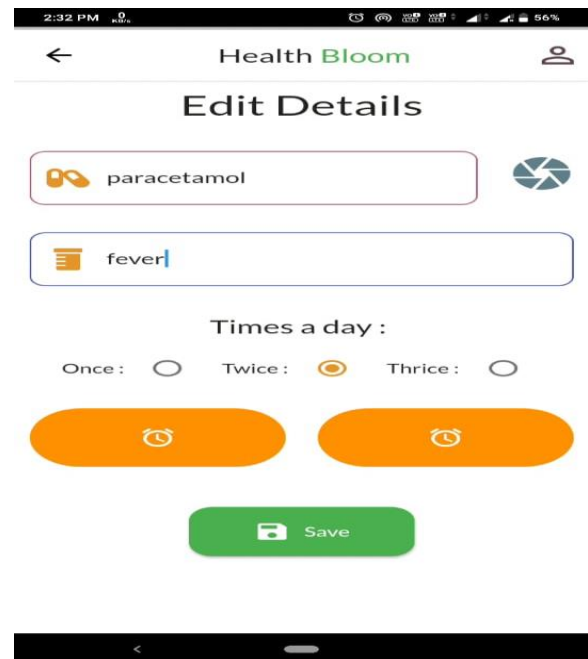


Fig 3.6 medicine reminder

### 3.A.7 NOTES :

This feature is helpful for the patient to note all in the important points necessary in the app itself. There are lots of instructions given to the patient under medication of all the precautions that should be taken. It will be handy in maintaining the diet plans etc. All these data would be stored in the local storage of the patient so accessing it would not be an issue. Users can access it whenever they seem it to be necessary. The notes can also be prioritized as per the choice of user.

### 3.A.8 HEALTH TRACKER:

As important as it is to get treated when fallen ill, it is also important to check the status of one's health from time to time. It helps the doctors to understand more about the cause or leading reasons for the ailment. Out of metrics that could be given this feature consists of the weight tracking, sleep tracking and also the levels of glucose in blood and blood pressure. These are the important vitals that can provide more information and insights of the body. A graphical representation would be provided based on the regular data. Updating data from time to time would be necessary. It would be more beneficial in case of people like diabetes as they have to

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keep check of it regularly they can add the data regularly and check how its varying and how it is affecting. While adding data they can also tag along some notes with it could be mentioning the date ,time,place or situation when they are taking the data or however they please.

#### 4.SOFTWARE COMPONENTS:

Technologies used in making this app reality are,firstly the ubiquitous mobile phones for the hardware implementation.

For implementing software components the following technologies were used

##### **1.Firebase :**

Firebase is a platform developed by google for creating mobile and web applications. It provides backend as a service with variety of tools. It is categorized as NoSql database program which stores JSON-like documents. It is used for the authentication of the user and access firestore that contain the native SDKs . data taken from the user is stored in this NoSql database in heirarchial structure of subcollections. Firebase REST APIs and tools make it simple to work on code and apps simple. Building a website or an app it made easy by using firebase.

In our app it is used in working with the login page and signing up. Also the doctor authentication while making an appointment

##### **2.Sqlite database:**

Sqlite is c-library that is implements a fast,small,self contained ,high reliable full featured sql database. Its not a client-server database engine, rather its embedded in the end program .Hence it is used for the offline storage of the data. To implement it in our project we add sqllite and add the path of the packages to the project. Now creating a db/lib file is enough to get it run along with the code.

##### **3.Shared preferences:**

Shared preferences allow you to store small amounts of primitive data as key/value pairs in a file on the device. To get a handle to a preference file, and to read, write, and manage preference data, use the SharedPre ferences class. Shared preferences can be read privately or publicly. Changes in the memory object are written and updated asynchronously. Data could also be written

synchronously but when using this calling it from the main thread would stop the UI rendering so we only used asynchronously updating disks.

##### **4.Jisti meet :**

This is used to implement the urgent video call feature. Meets can be created with by customising like audio only or both audio and video muted etc. The link can be sent to appropriate persons who are to be present at the meet. It can also be launched in web browser in a device when local app isn't present and mostly used by international professionals.

##### **5.Tomtom API :**

Tomtom API contains cross platform REST APIs that are useful to locate the nearby hospitals. Searching , routing ,mapping , traffic and navigation to those hospitals is also done by exploiting this API. It is used in our app to searching . search for an address, business or palce. Geocode to validate and structure addresses globally.

##### **6.Open cage API:**

Opencage geocoding API is used to send text messages of the latitude and longitude details to the emergency contacts . It works in both directions, that is, when clicked by the receiver it opens into maps and shows the location of the person who tried to notify. Alerting emergency contacts feature exploits this API. The message sent would have the address of the location and when clicked it would open in maps. If maps is not present in the device then it would also open in browser.

##### **7.FLUTTER:**

Flutter is an open-source UI software development toolkit developed by google .it can be used to craft beautiful, natively compiled applications for mobile, web and desktop from a single codebase. From the release of its first version 'sky' it's applications have cross platform and could be run on Android,Ios,Mac,Windows,Google Fushia from a single codebase. It has many built in widgets which makes developing an app so much easier and it working on different platforms doesn't mess with the UI design because it has the control of pixels over the screen and they could be customized as of will with built-in widgets or



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by creating new customized widgets. It is powered with the DART programming language.

## 8.DART:

Dart is an open-source, scalable programming language, with robust libraries and runtimes, for building web, server, and mobile apps. It is a client optimized language for fast apps on any platform. It is optimized for UI around the needs of user interface creation. We used dart native as our app is for mobile devices. It includes dart VM for just-in-time compilation and Ahead of time compiler for machine code.

## 5.conclusion:

As it is clear of the demand for the online consultation has increased and from the app we have created with the features mentioned above would be more useful. Because the features included are mainly implemented considering the situations mostly the use case scenarios that would be happening. The doctors that are made to reach are certified professionals having clinical practice and are authenticated personally before authorizing them in the app. The goal of the application is the beneficial service of decreasing the non resourceful expense of time and not worry about missing an appointment or a prescription . and also aiming to provide help in getting assistance in times of emergency by locating nearby hospitals and notifying close contacts.

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