



सत्यमेव जयते

my
GOV Innovation

मेरी सरकार



IT,S NOT ABOUT IDEAS.
ITS ABOUT MAKING IDEAS HAPPEN



Ministry Category : Ministry of Health and Family Welfare
Problem Statement : Improving appointment scheduling in the hospitals
Problem Code : #MHF7
College Code : 1-3328511839

PROBLEMS IN CURRENT SYSTEM



Difficulty in getting appointments in large tertiary care hospitals



No mechanism present to inform patient if the same provider is available or not in the hospital on the scheduled date.



Absence of process of rescheduling appointment with any other provider and for follow-ups the appointment scheduling system does not generate any reminders to the patients



If patient discovers late about the follow-up visit he has to do the entire process of appointment scheduling again to get the appointments done.



Lack of interface to link the current appointment system with the duty roster of the doctors



This app aims to address the unmet need for a well functioning appointment management system with provision for follow-up and rescheduling.



It also includes a provision for emergency requests wherein the user can bypass the system and avail services in critical situations.



Moreover it features an intuitive UI that makes the access to public healthcare easy for the common people who may be literate, illiterate or semi-literate.



This helps in building more trust among patients about the hospital and would also encourage patients to get timely follow-up visits done to improve their health status.

SOLUTION



As a solution to this huge problem we plan to develop a site as well as an android app with provision for SMS and app notifications and a central database where all the information is stored and centrally managed.



A major part of India's population now has access to a secure internet connection, credit for which goes to our Honorable Prime Minister's digital India policy. Therefore such an app/ website provides an easy way for the users to book and confirm appointments which currently is a tiresome process.



For those without an internet connection, SMS notifications are provided, thus catering to the needs of the entire population (with or without internet connection) enabling offline support.



The app will have a reminder system wherein the patients and the doctors will be reminded of their appointments in advance so that the chances of appointment being missed are minimized.

SOLUTION



Also , it will allow rescheduling of appointment for people who are unable to make it to the appointment due to inevitable reasons and for patients that require periodic diagnostics.



The main feature of our initiative will be the presence of a system to book emergency appointments in case of critical conditions.



In case of emergency the patient/user will be given provision to bypass this booking procedure and make an emergency booking which will then automatically schedule an appointment at the nearest hospital for the patient and arrange for a suitable doctor.

SOLUTION

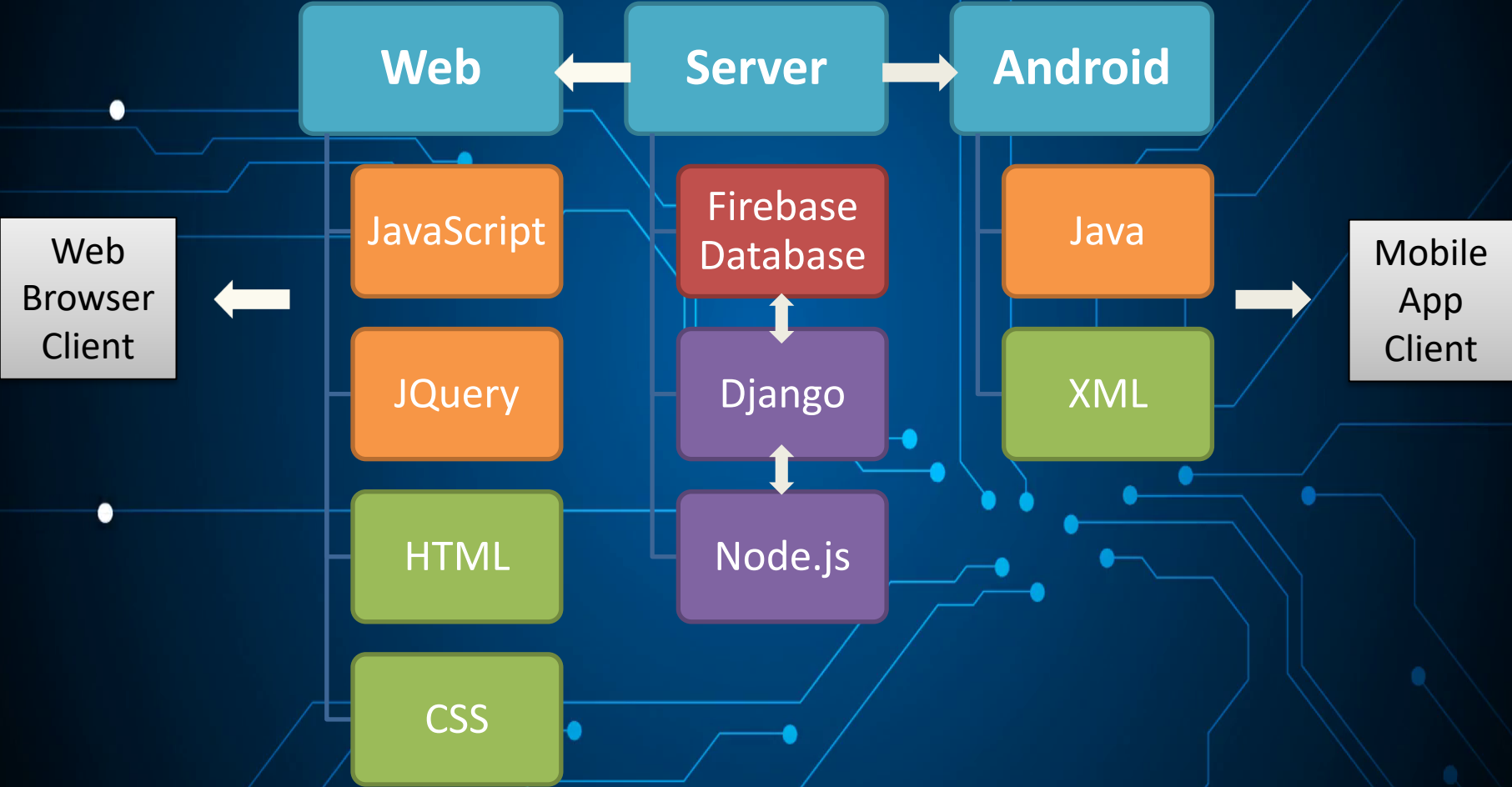
UPCHAAR

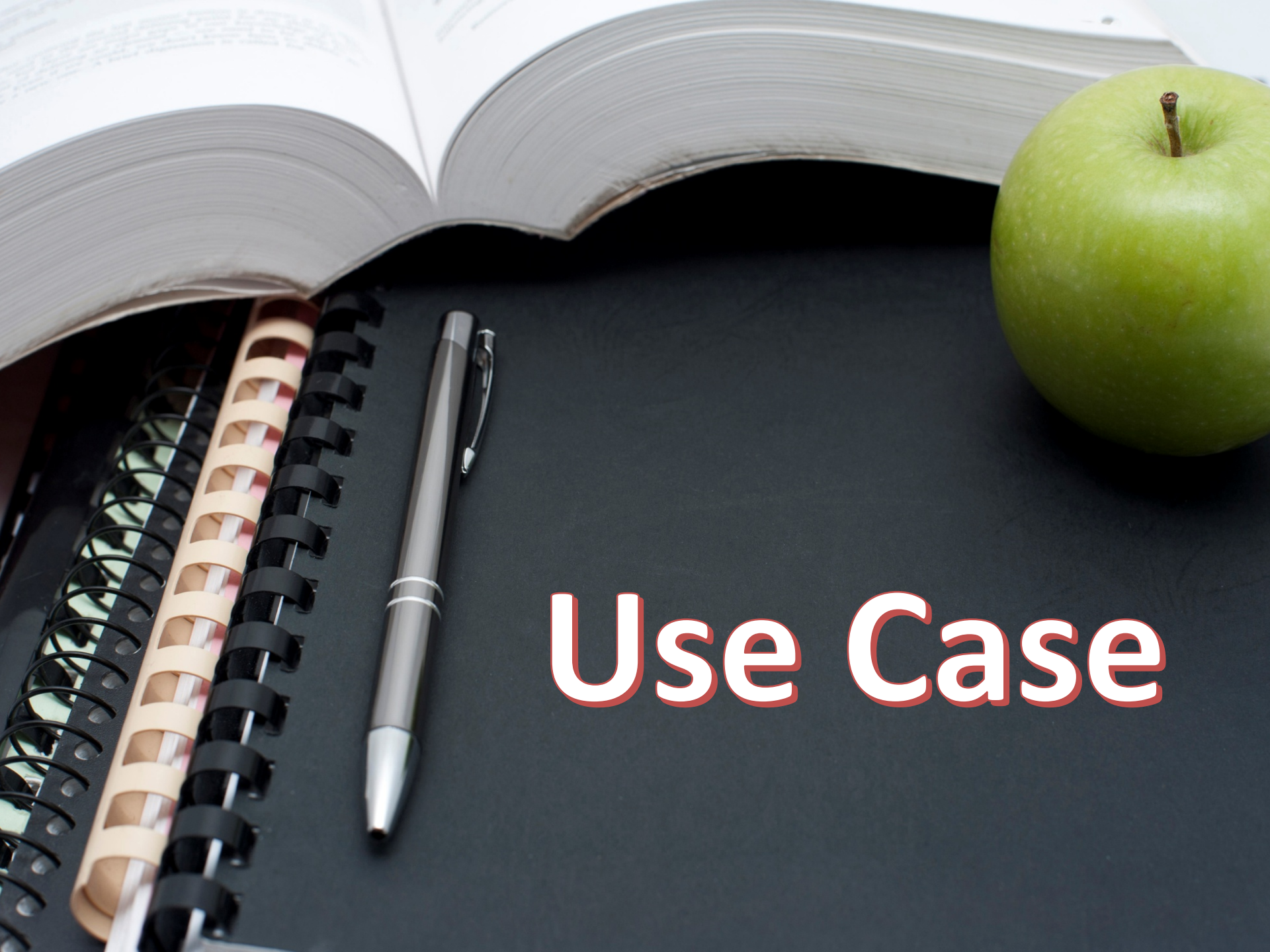
*Unified Portal for Centrally Handled Application for
Appointment Requisition*

“ A one stop solution
for efficient healthcare
appointment system ”

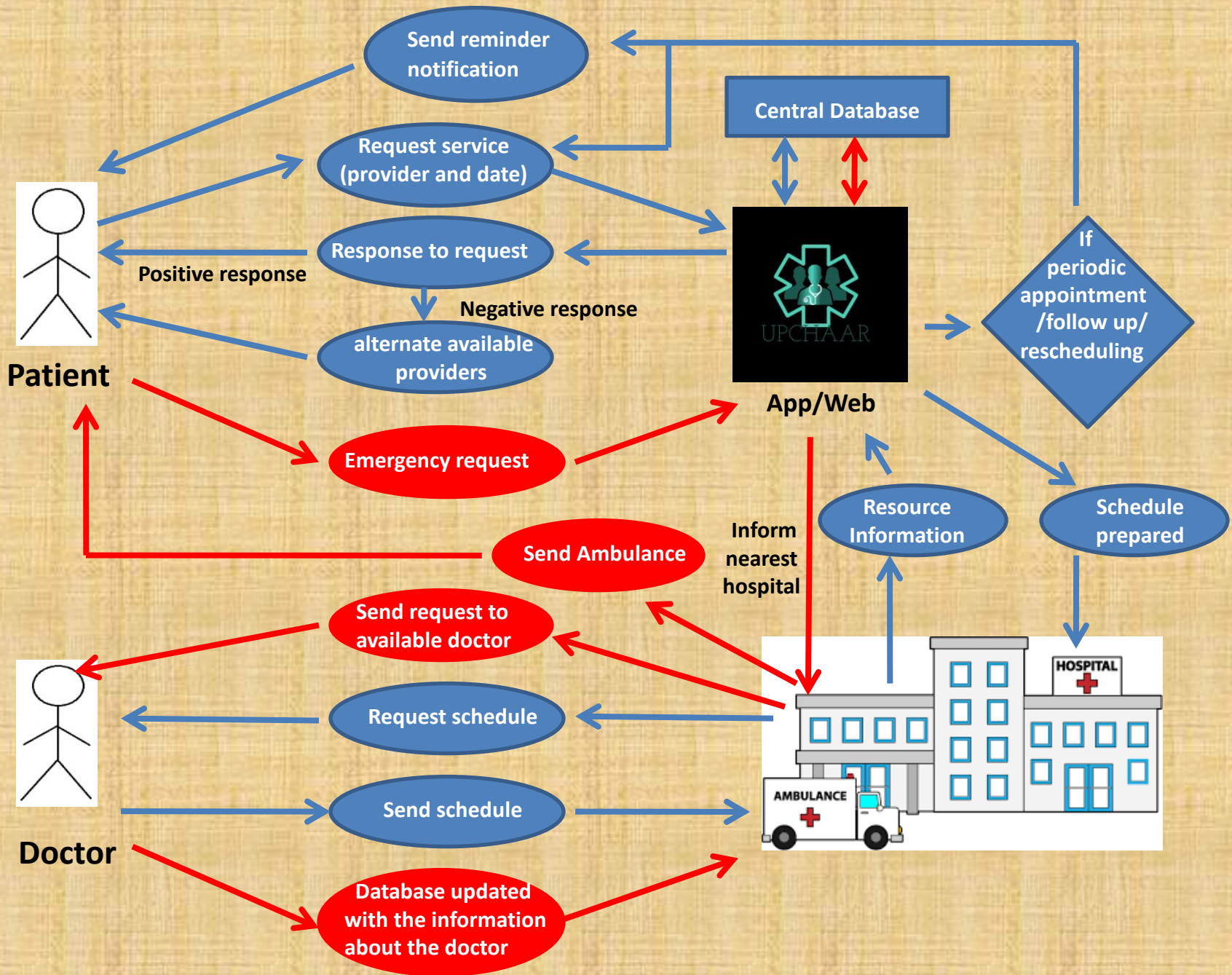


TECHNOLOGY STACK





Use Case



The flowchart given in the previous slide explains the use case and functioning of our app. The various components used are –



Patient :

The patient requests for the service by choosing a particular provider and time. This data is entered in the app which then matches it with the given database to see whether the provider is available or not for the given slot.

- In case there is a match, a positive response is send to the patient that his appointment has been confirmed (a notification will be sent to the patient / user on the day of appointment to make sure he doesn't miss it).
- In case match doesn't occur, alternate providers or alternate time slots for the same provider are sent to the patient. Thus depending upon the choice of the patient, request is sent to the app and appointment is confirmed.
- In case of periodic appointments/ follow –ups / rescheduling, the app automatically sends request to itself for another appointment and informs the patient and the provider about it through an app or SMS notification, thus bypassing the cumbersome process of re-entering data.

Provider :

The provider or any hospital the provider is affiliated to, gives information about his/her schedule. In the second case mentioned above the hospital asks for schedule of the provider to manage his appointments. Once the provider gives this data, the app manages the appointment of the provider and patient using the job scheduling algorithm and matching the skill of the provider and demand of the patient. All this information is stored in a central database to avoid cases of multiple appointments at the same time for a particular provider.

Hospital :

Hospital acts as an interface between the provider and the app. It gathers information about the provider and links it to central database using the app. Apart from this, different hospitals also send information related to resources available, for example number of beds available, doctors available, speciality machines available(MRI scanner) etc , thus facilitating the treatment process. Moreover the app sends the schedule prepared to various hospital to ensure its smooth conduct.

Emergency:

- This important feature has been added to the scope of this app to make it more practical. We understand that during emergency condition, the user / patient will not have enough time to go through this entire process of booking an appointment.
- Therefore, for emergency cases, a path has been designed to bypass the time taking processes, which can prove to be crucial during critical cases.
- By clicking just a button, an emergency request will be sent to the app which will forward it to the nearest hospital based on the location of the patient. The app will then send this emergency request to the above mentioned hospital which will then respond by sending an ambulance to patient (if required) and arranging for the doctor. Due to presence of a central database, the appointments scheduled for the doctor at that particular time, will be rescheduled to avoid inconvenience for other patient.
- To ensure no misuse of this feature, we will set some basic parameters for a case to qualify as an emergency case. For example severe bleeding qualifies as an emergency case, but simple cold doesn't. Thus, this app will not only simplify processes involved at user end but will also save valuable time, which we lose currently, that will be vital in life and death situations.

DEPENDENCIES

API

- Google Firebase
- Google Maps
- Cisco DevNet API

Django

- Python3
- Django REST Framework
- Django Crispy Forms

Node.js

- Express Framework

Server Host

- pythonanywhere.com

Android

- Java8

SHOW STOPPER

- ❑ **Appointment scheduling system**
 - **Optimised job scheduling** : Cater to the needs of maximum number of patients possible within given schedules
 - **Rescheduling of missed/periodic appointments** : Provide for convenience of patients, to avoid repeating the booking procedure
 - **Alerts and reminders** : SMS and App notifications for due appointments
- ❑ **Emergency appointments**
 - **Nearest hospitals with availability** : Find hospitals in proximity based on location
 - **Ambulance service** : Avail ambulance services from the booked hospital