PROOF OF CONCEPT

HomeDoc

SUBMITTED BY EPIC SOLUTIONS Ltd.

Team Information

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(GROUP – 10)

1-INTRODUCTION

The given application is designed for the Home Health Care portion of The General Hospital. This application helps in automation of the home health care portion.

Features of this application:

- **Hybrid Application:** Will be developed once, and deployed as iOS, Android, Windows and Blackberry application.
- **Scalability:** With a simple configuration updates traffic can be handles from 100 to 100 Million connections per day.
- **No Code Customization:** All components are re-configurable and referenced to common development data, so any change in application can be done by just editing the data file.
- Single-Sing-On (SSO): No need to create new credentials, register once and use everywhere.
- Compatible with existing client's application suite.
- The given proof of concept document has two important aspects

1.Designing the Application

2.Code used

1.1-DESIGN OF THE APPLICATION

The application is designed on a JavaScript framework called IONIC.

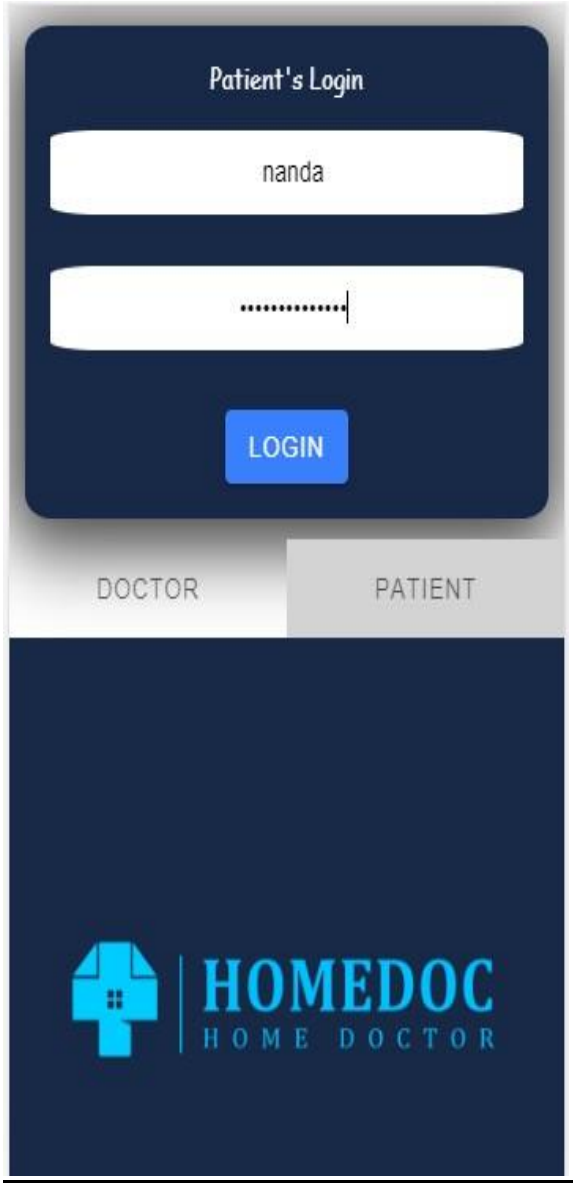
We have chosen IONIC as it creates application for all platforms including Android and IOS.

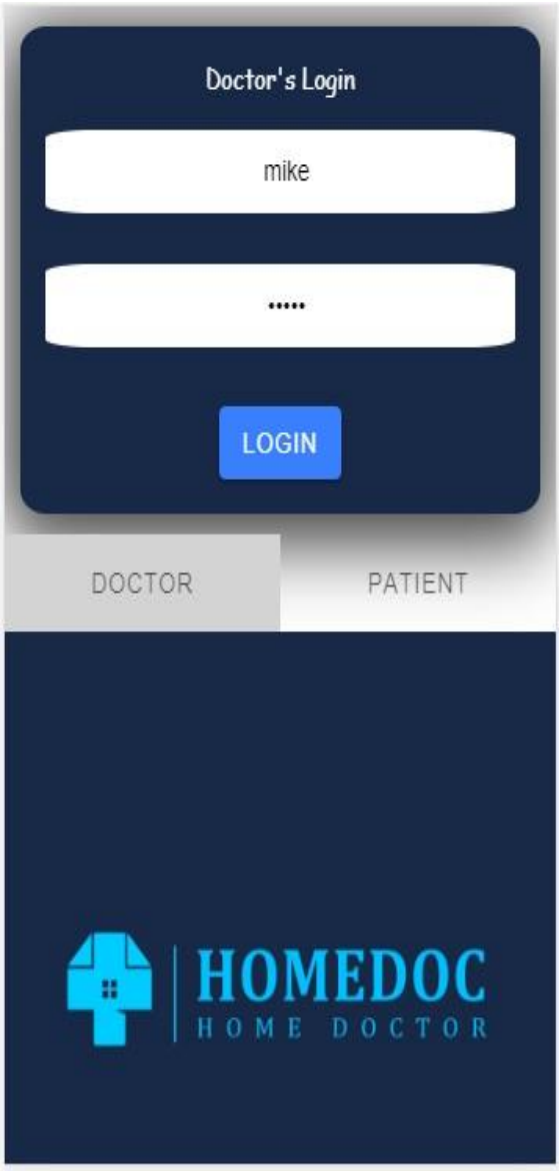
Our given design aims at providing the users with a better way to keep tab on his medicine-intake. This application also increases the accessibility of the medical records to the user

1.2 UI CONCEPTS

1.2.1 LOGIN SCREEN-Patient and Doctor Login

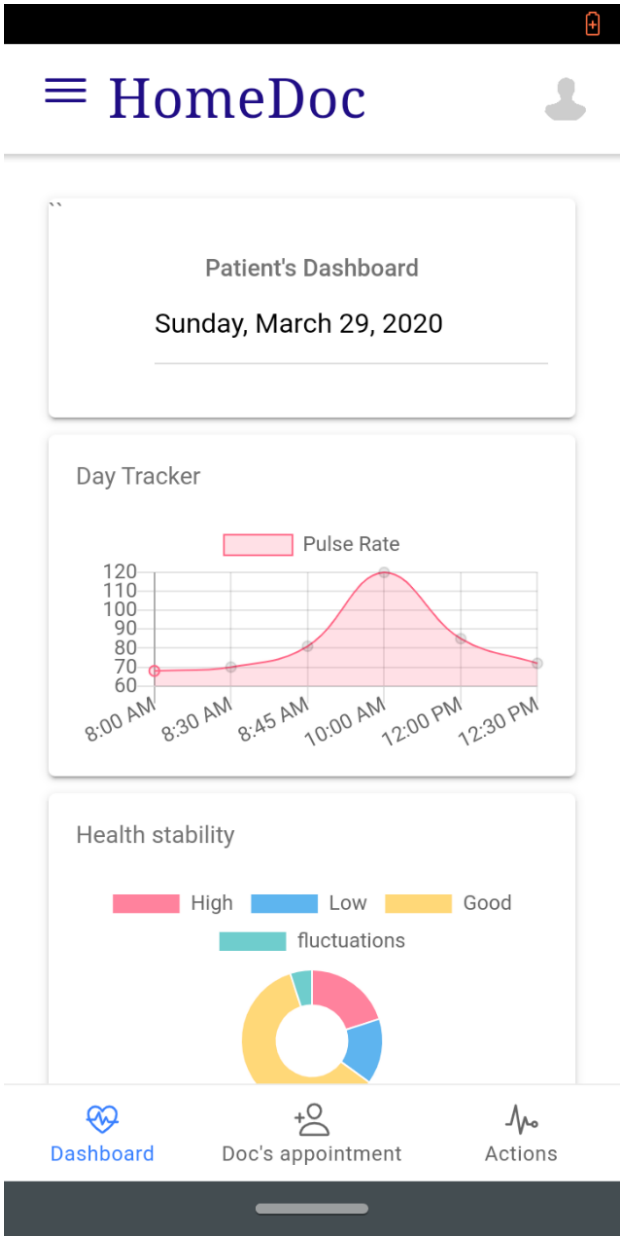
This is first page when you open the app. It contains two screens which is accessed by a simple toggle button which contains patient's login screen and doctor's login screen. After providing your credentials i.e your username and password in patient's login, if you are a patient and in doctor's login if you are a doctor, you will gain access after verification.



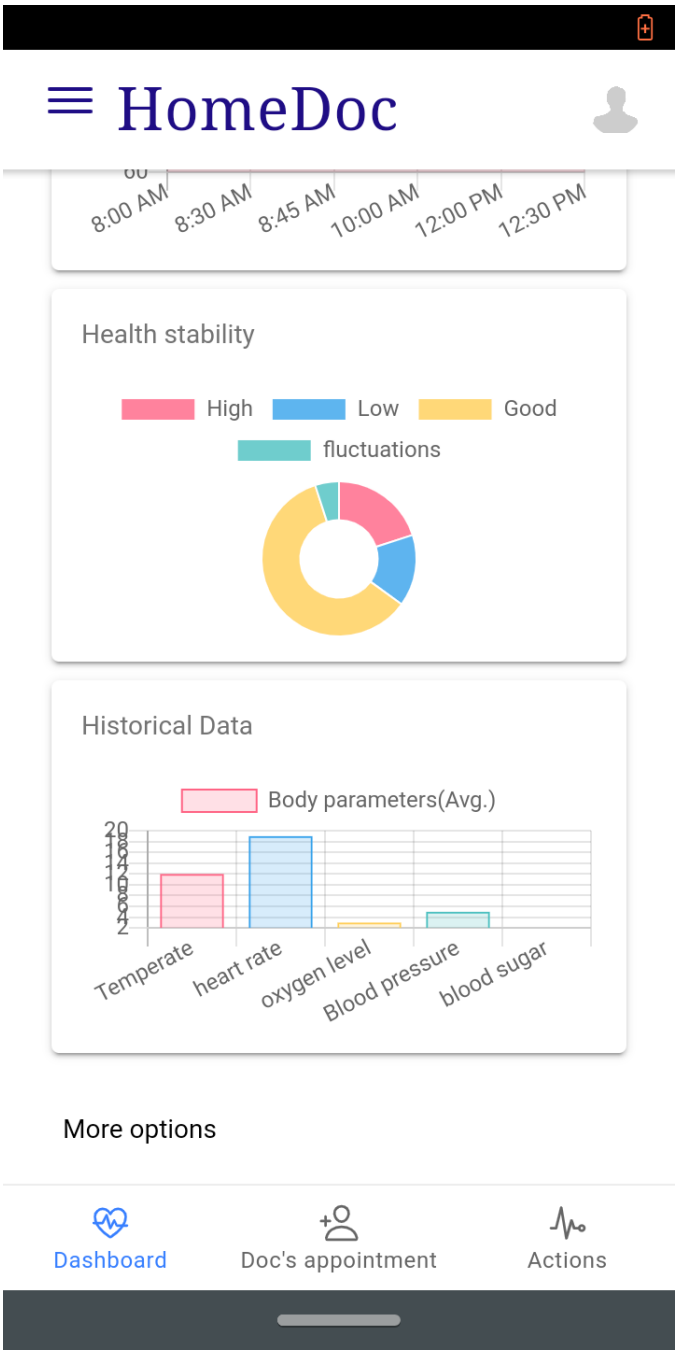


1.3 Dashboard

a. This is the patient's Dashboard. Starting from top, it shows the date and day. Then the "Day Tracker" field shows you real time data of your health vitals. Here we implemented Pulse Rate/Heart rate, but can be used for temperature, oxygen level, blood pressure etc. It shows how your vital is varying on fixed or varying intervals of time.



b. The “Health Stability” field shows how a patient’s health have been on daily basis. This ring style chart shows the percentage when patient’s health conditions were low, high, fluctuating or good. The next field “Historical Data” shows all the body parameters like temperature, heart rate, oxygen level, blood pressure or blood sugar in terms of what shows the most variations so that that can be noted by the patient and their doctors as well.

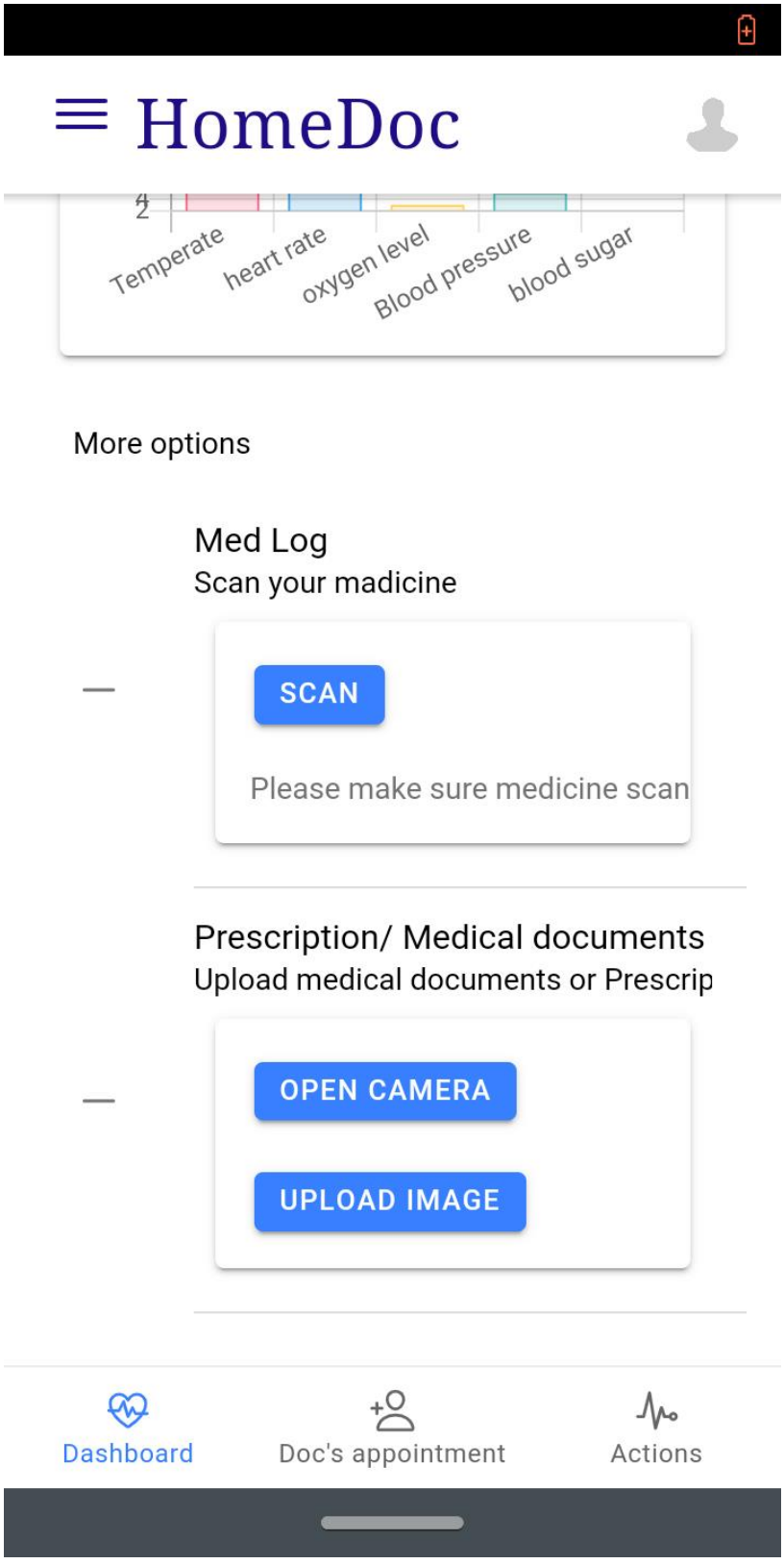


c. In the “More Options” field we have two options:

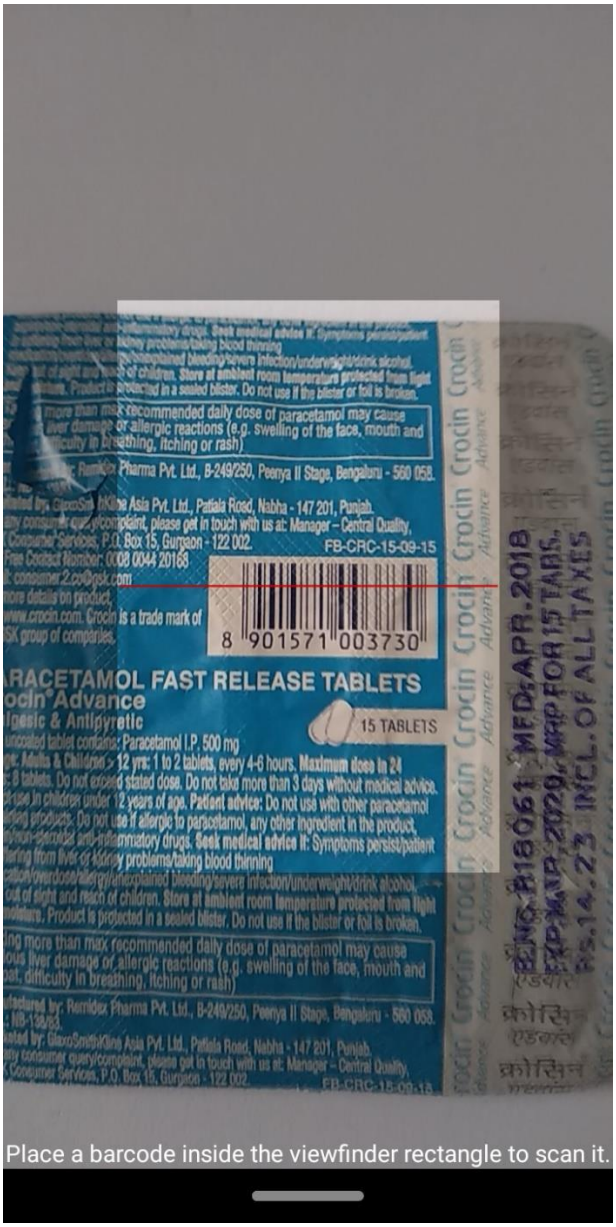
1. “Med Log”
   The “Med Log” gives patient’s power to scan every medicine they take. Using this simple bar code scan function our system will log in the medicine details which will be recorded in our database and will be accessible by the doctors. In case, patient forgets to take their medicine on scheduled time, our system generates push notifications after a certain time. If this is done more frequently, doctors get missing dosage notification in their system too.

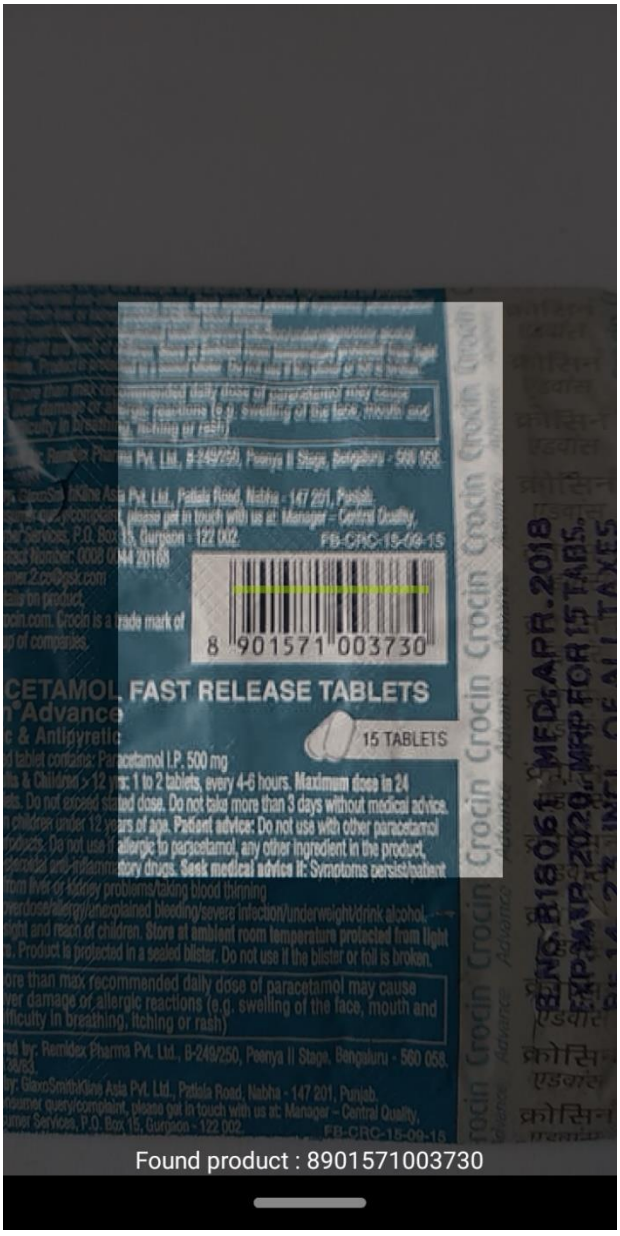
2. “Prescription/Medical documents”
   The “Prescription/Medical documents” field can be used to upload any health-related documents patients wish to upload for doctor’s review. Patients can either use “Open Camera” button to click an image of their document or prescription, or they can use the “Upload Image” button to upload an already clicked image of the document. These documents are also stored in the database so that doctors can review it any time they want.

   *The screenshot for its implementation is shown in next page.


HomeDoc
2
Temperate
heart rate
oxygen level
Blood pressure
blood sugar
More options
Med Log
Scan your madicine
SCAN
Please make sure medicine scan
Prescription/ Medical documents
Upload medical documents or Prescrip
OPEN CAMERA
UPLOAD IMAGE
Dashboard
Doc's appointment
Actions

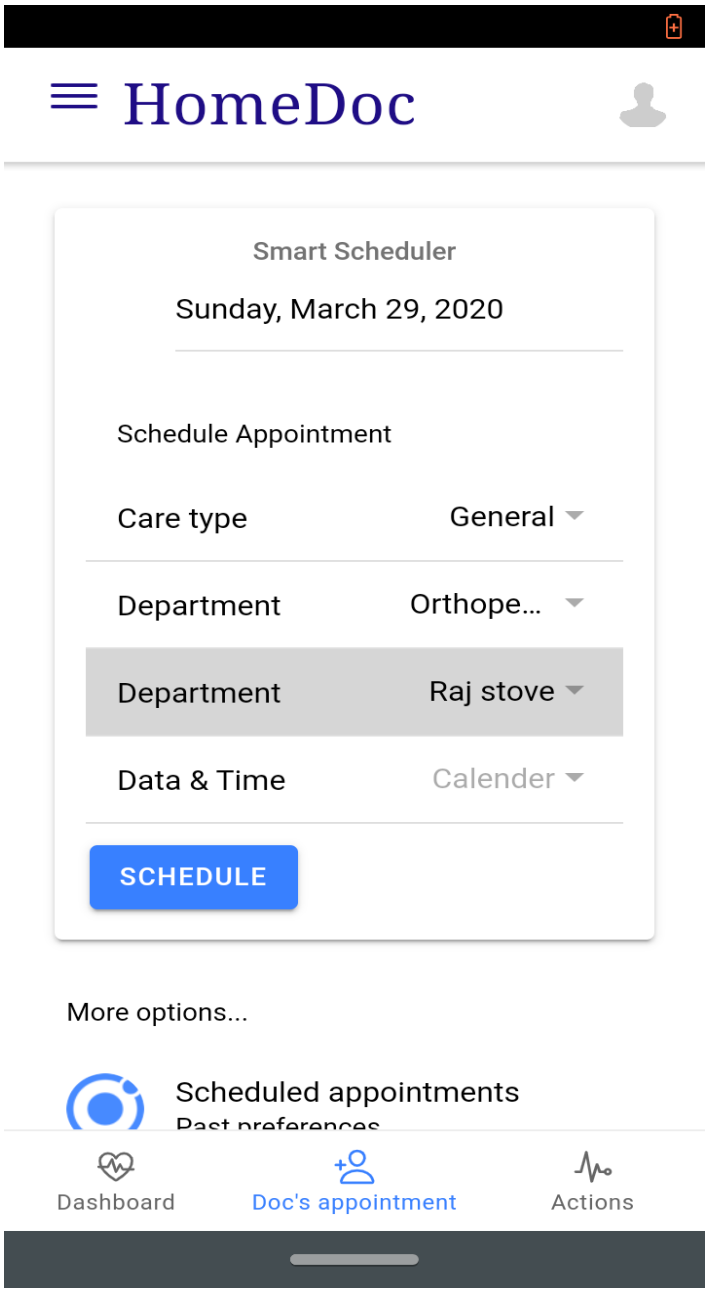
d. This is the barcode scanner screen, which shows the process of scan. The image on left shows, the scan process begins where the system is asking the user to place a barcode inside the viewfinder rectangle to scan it. The image on right shows, the scenario when scanning is done and found product with its number is shown on the bottom of the screen. This is now automatically logged into the database.





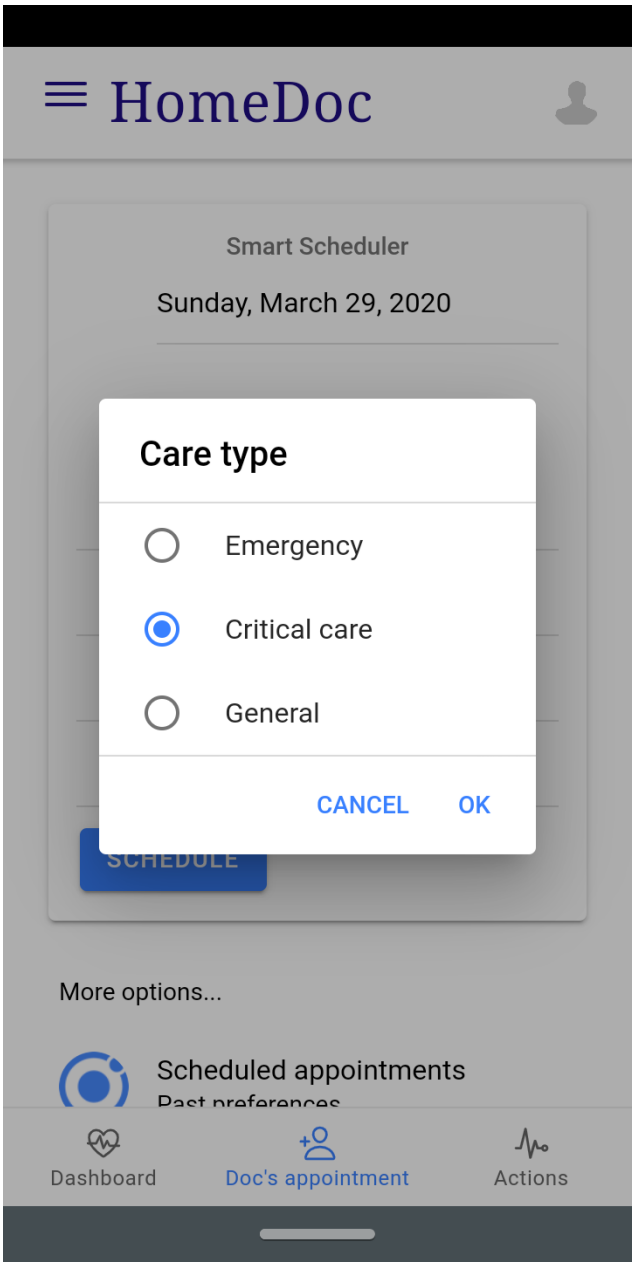
1.4 Doctor's Appointment

This is the doctor's appointment tab. Starting from top, it shows the date and day. Then the "Schedule Appointment" field enables patient to book an appointment with the doctor. Here we implemented further four sections in this tab which must be filled while booking an appointment.

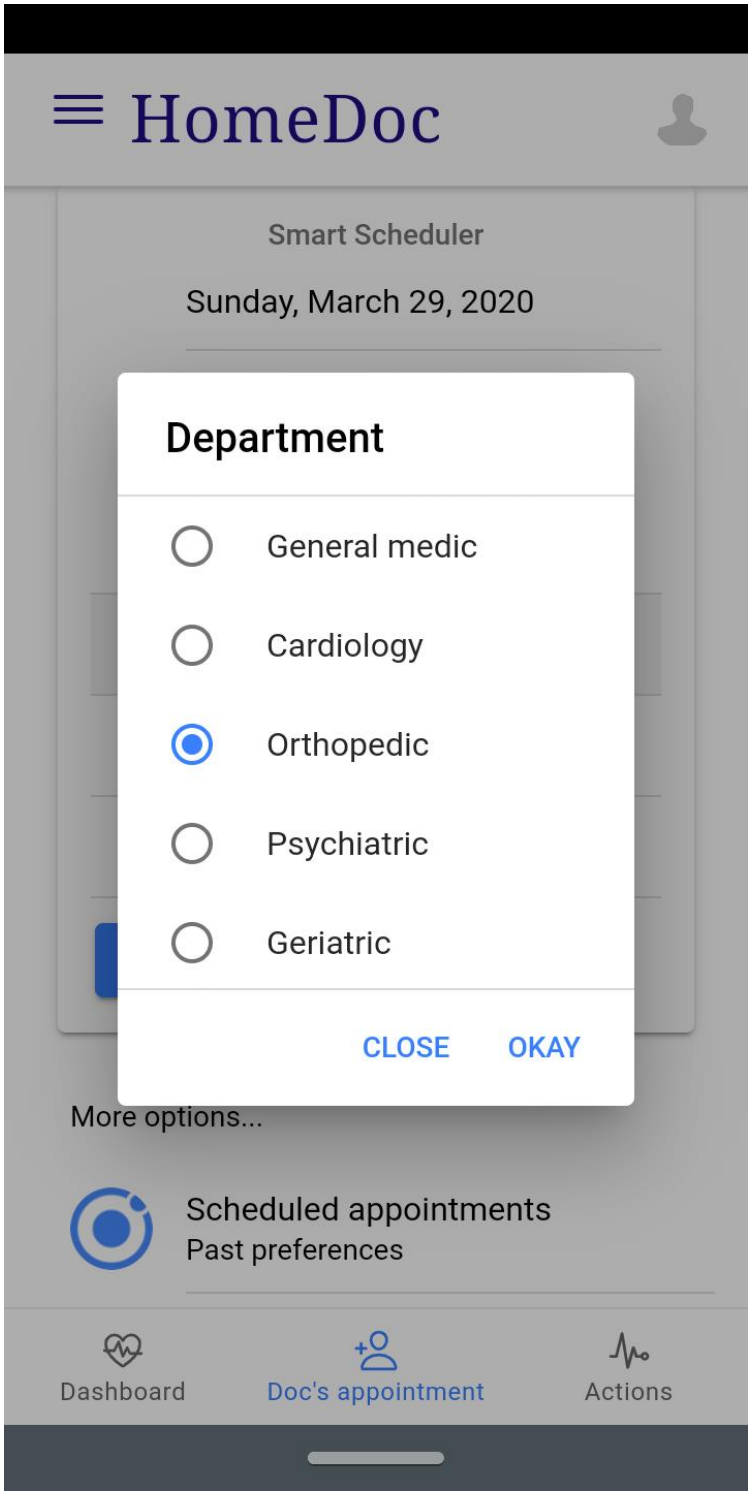


The four sections are:

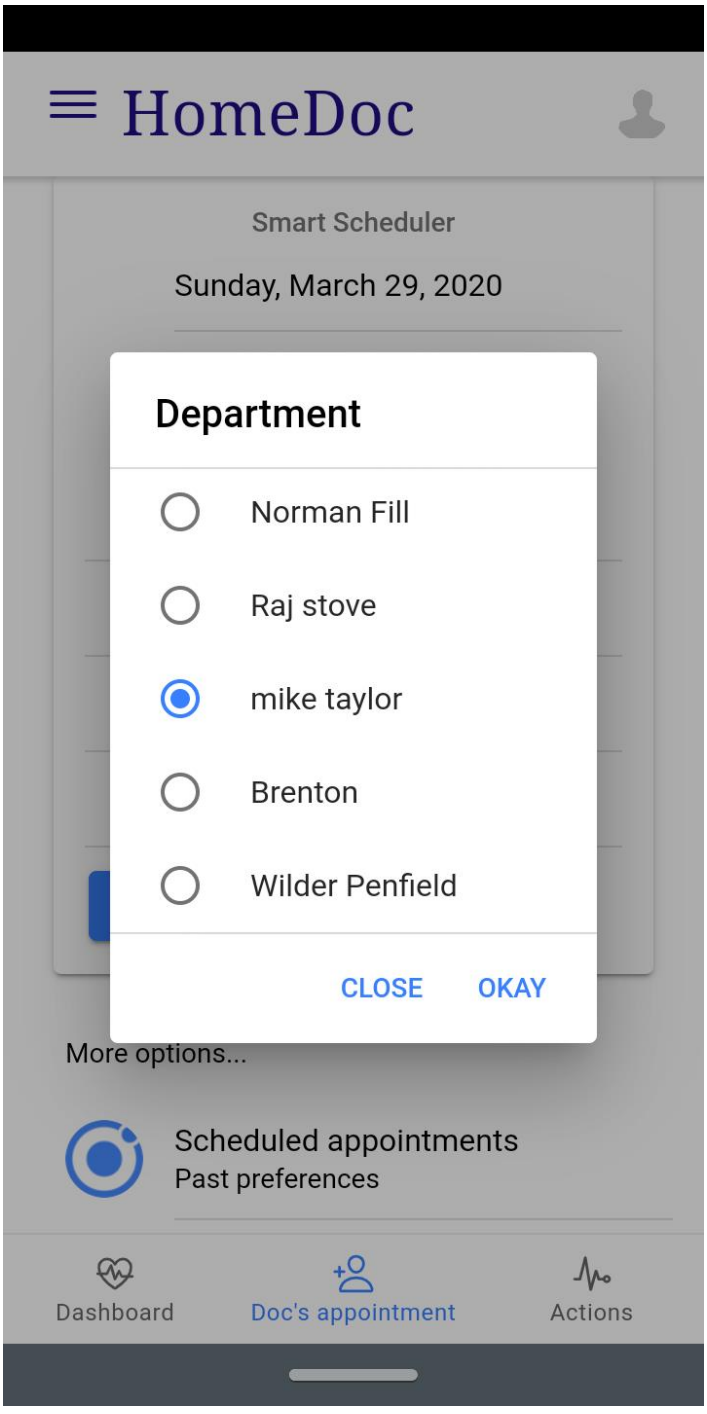
1. **Care Type**: In this section while booking an appointment option for which type of care is required will be asked. For general care general option will be selected and similar for critical and emergency care. The type of care will decide the further actions to be taken.



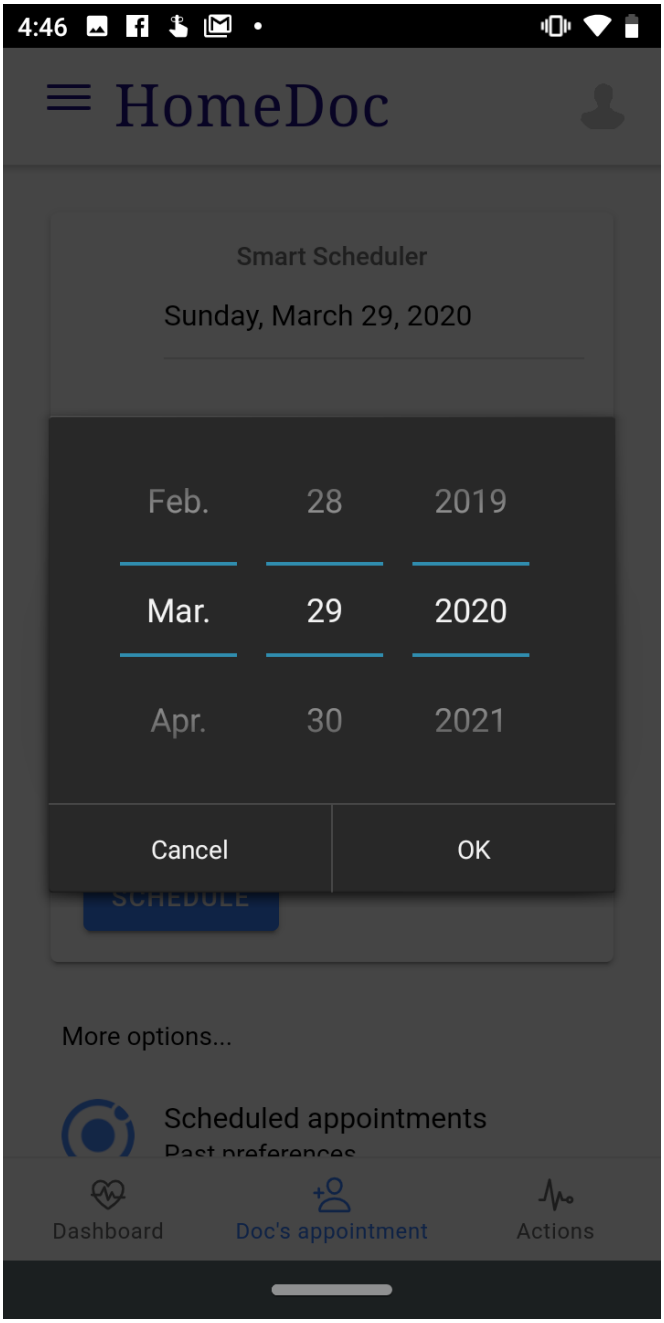
2. **Department**: Patients will get option to select the certain department whose doctor they want to visit for instance psychiatric, radiology etc.



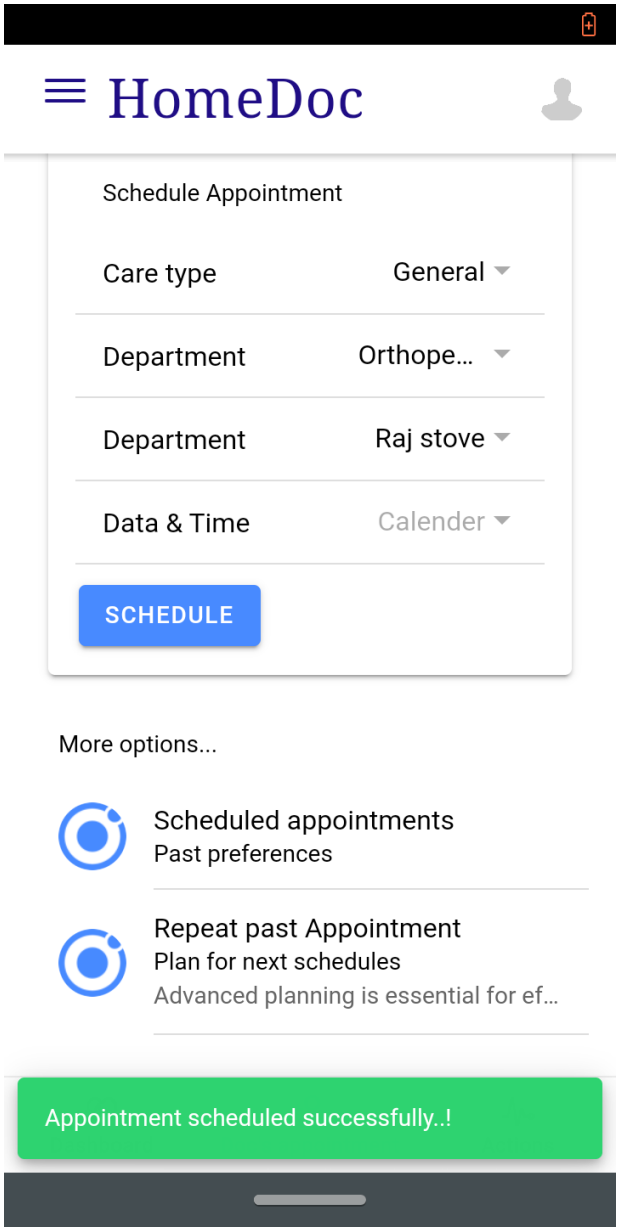
3. **Doctor's List:** This is the optional part to select but recommended this will contain the list of doctors of the selected department, it is used to filter out doctors which may come under same department but irrelevant to the patient's need also regular patients may use this section as they want to consult specific doctor only.



4. **Date & Time**: In this section patients will get to select the available Dates when the required department's doctor will be available for consultation. The information in this section vary according to the type of care selected, In case of critical and emergency care selection the time and date availability will be from the time slots which will be kept aside for emergency case only.



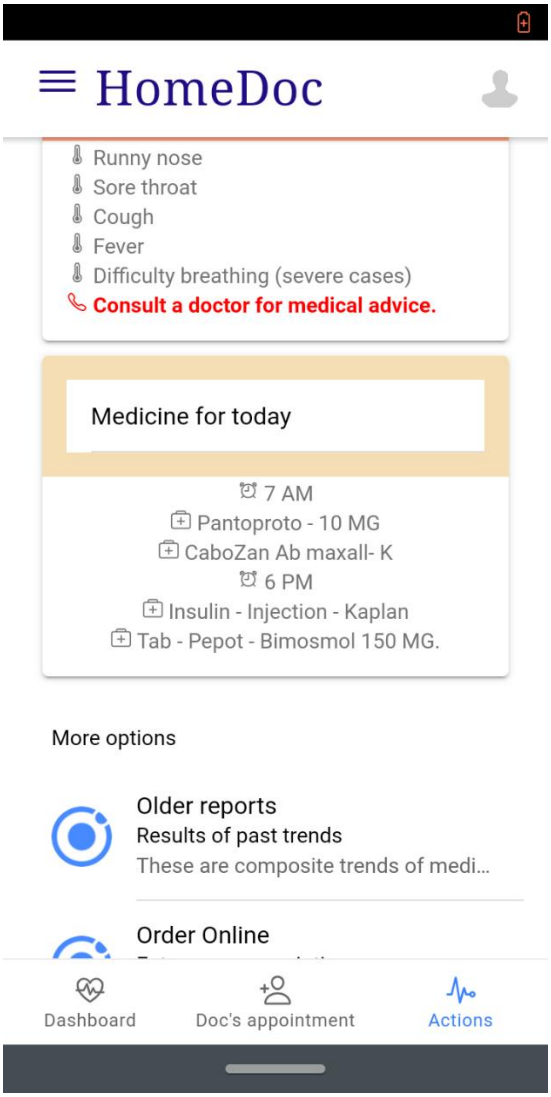
Successful Appointment Scheduling - The patient will get pop-up stating about the successful scheduling of the appointment.
Furthermore, the tab also contains the appointment history of the patients to let them know when they last consulted any doctor from 'The General Hospital' and all the details about the past appointments.
Patients will also get the option to repeat any of the past appointment, in that case they just need to fill the date & time again and rest of the fields will be filled automatically.



1.5 Actions

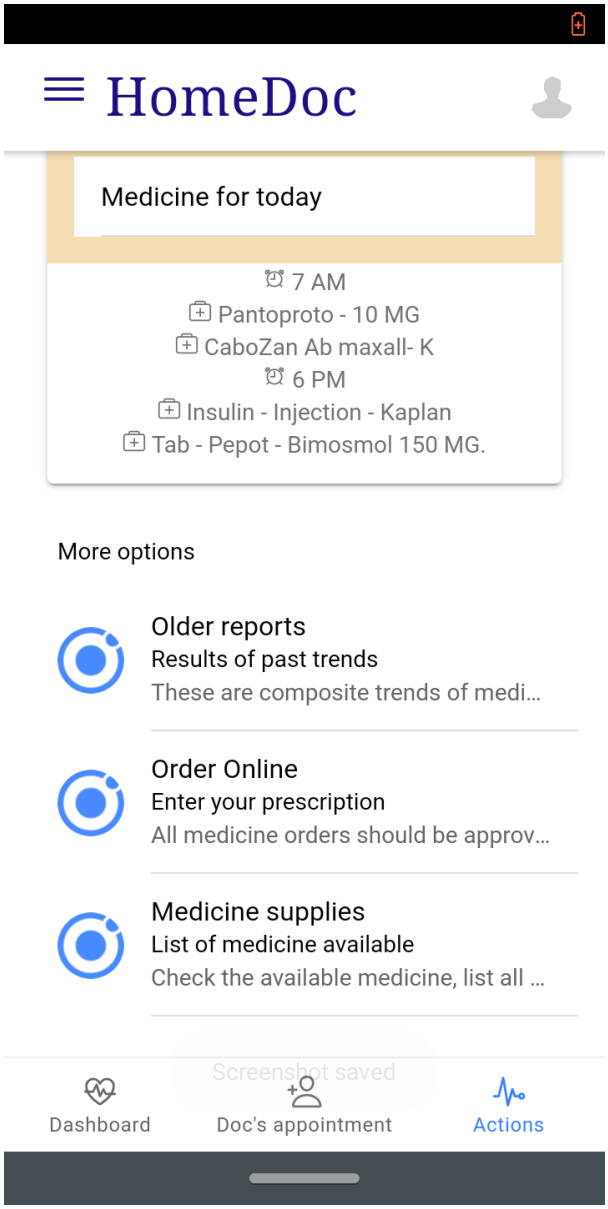
Daily dosage and more options –

This tab includes a schedule as per the doctor's prescription for patients' medicine intake. There is also an alarm that is set in order to remind the patient that it's time for their medicine. This schedule also displays the quantity of medicine for each intake. If the patient ignores the alarm then we gently notify the doctor about the patient's ignorance and he will make a decision to whether contact the patient or not based on the level of emergency.



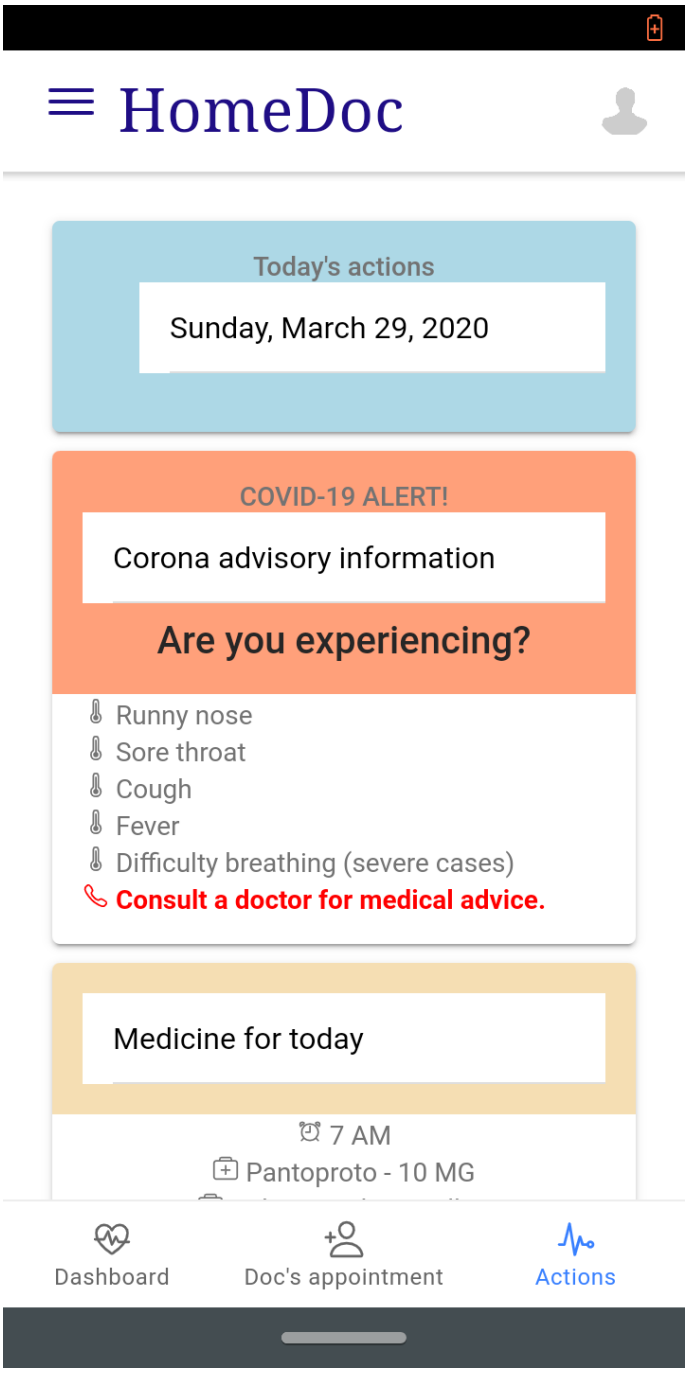
Here more options include –

1. **Older reports –**This option allows the patient to download his/her historical medical records.
2. **Order online –**This option allows the patient to order medicines online. But the patient will be asked to enter the doctor's prescription before making the order.
3. **Medicine Supplies** – This lets user see the available medicines for order and if ordered, check the status of the order.



Medical Alerts –

This tab provides latest medical alerts or trending medical news!. If any new diseases or viruses exist, then the symptoms for these diseases are listed here. If any patient finds himself with any of these symptoms then he can immediately contact respective medical services through the contact information provided in this field.

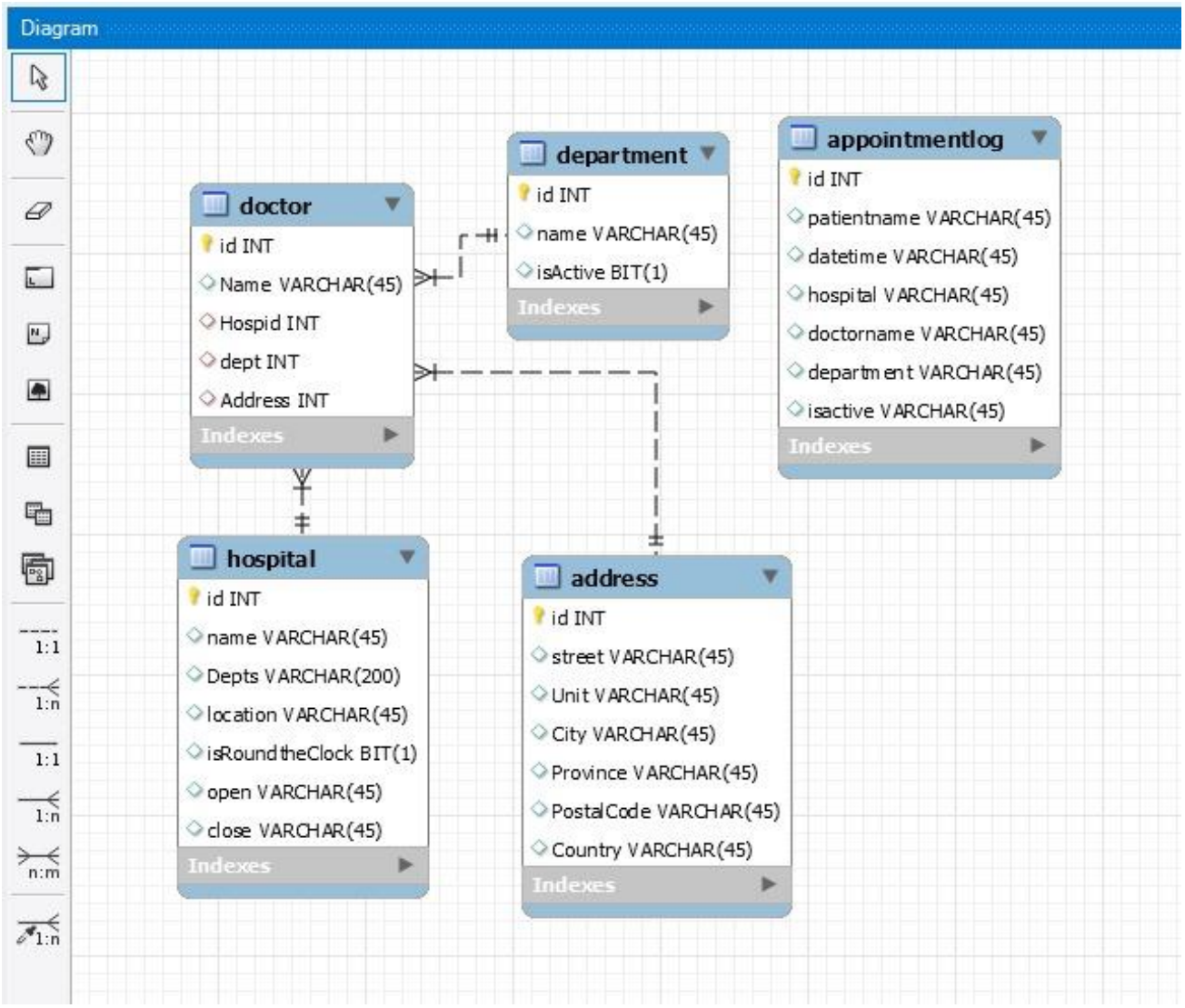


1.6 Database

As we had to improve our POC, we have included a SQL database. This database stores all the information and data exchanged between the patient and the doctor.

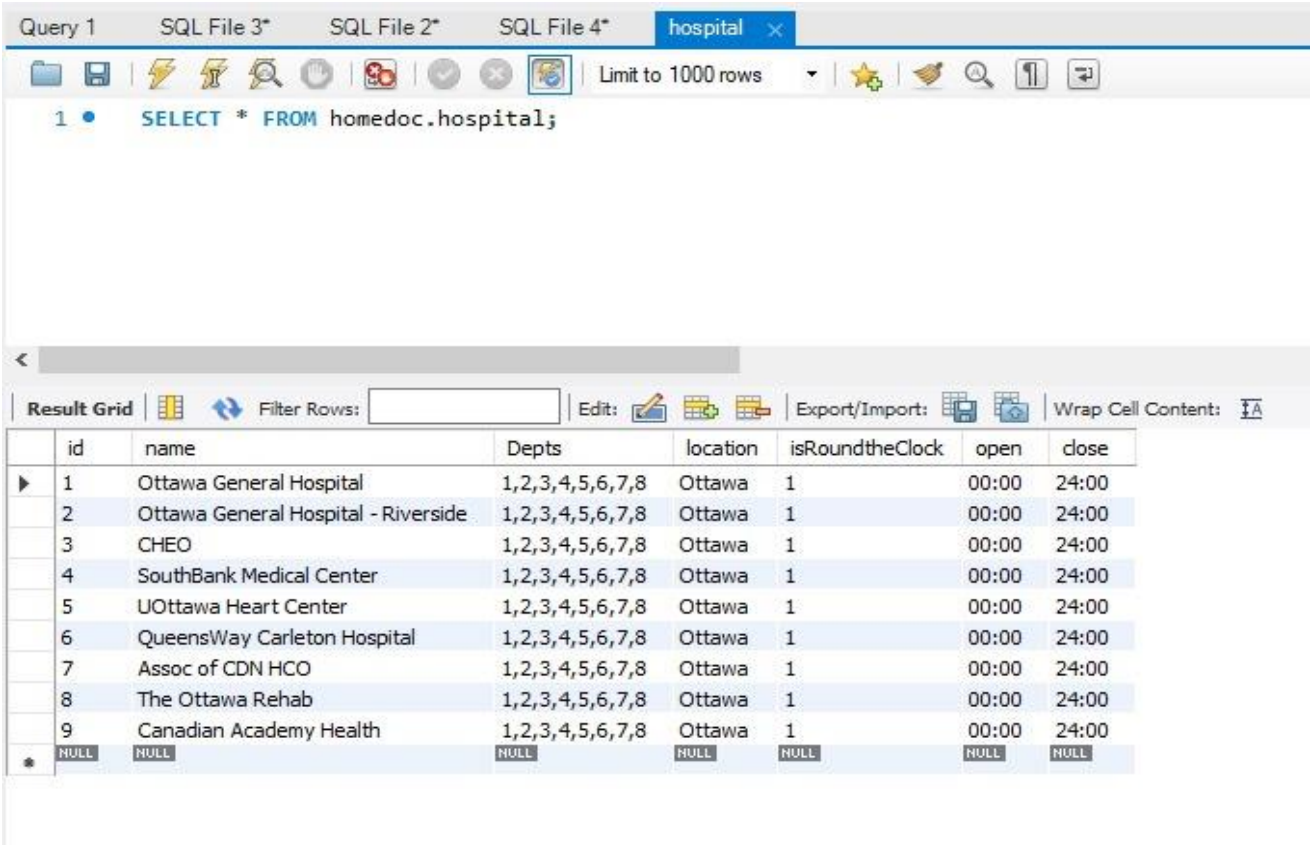
Database Schematic Diagram

The first snapshot showcases our database implementation with the help of a schematic diagram. It Shows the different departments present in the hospital and how the database is implemented 3with respect to it.



Hospital Data (Table)

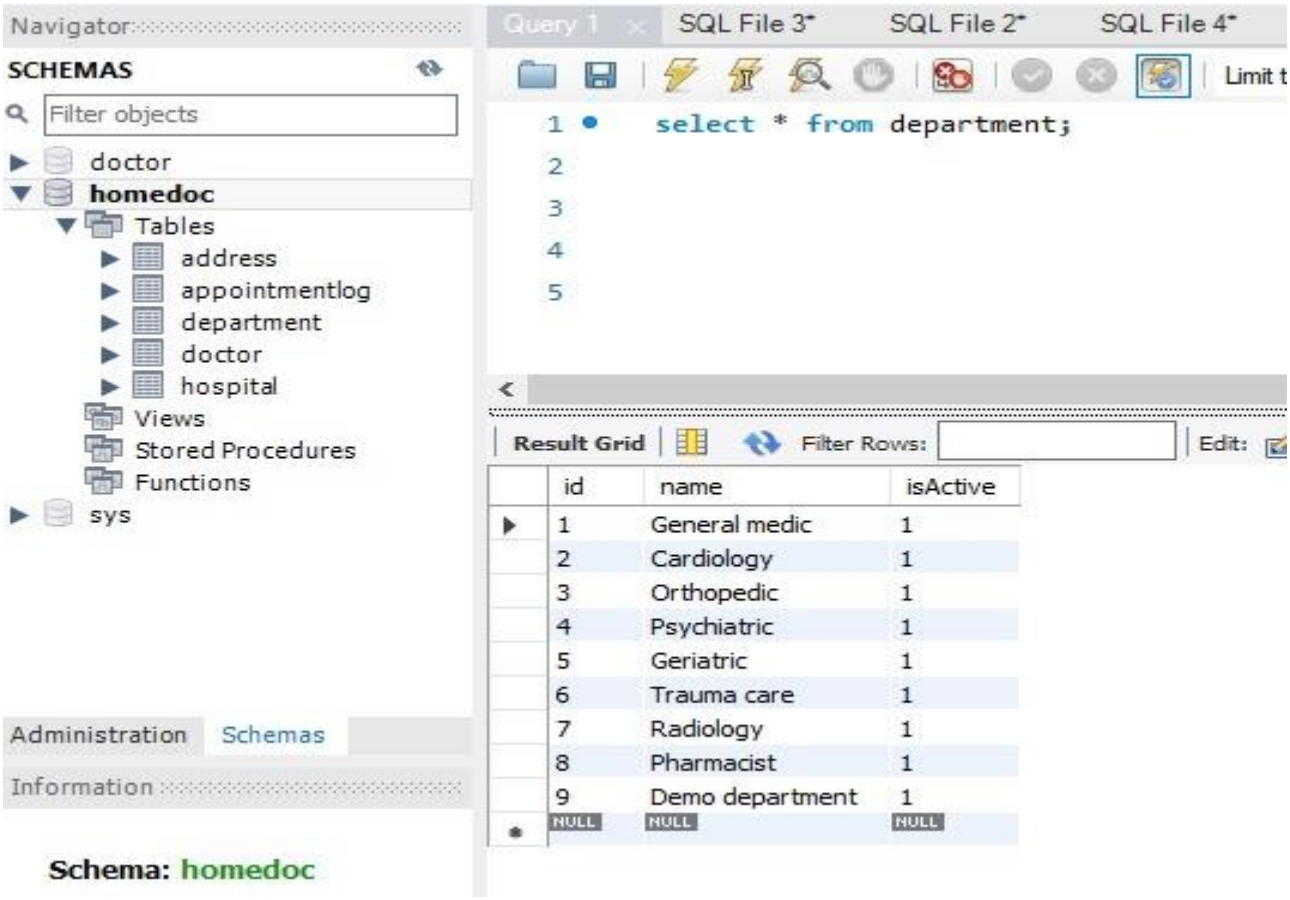
This Snapshot represents all the medical centres, there location and the departments present in them.



id	name	Depts	location	isRoundtheClock	open	close
1	Ottawa General Hospital	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
2	Ottawa General Hospital - Riverside	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
3	CHEO	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
4	SouthBank Medical Center	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
5	UOttawa Heart Center	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
6	QueensWay Carleton Hospital	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
7	Assoc of CDN HCO	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
8	The Ottawa Rehab	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
9	Canadian Academy Health	1,2,3,4,5,6,7,8	Ottawa	1	00:00	24:00
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Schema in MySQL Workbench

This screenshot explains the workbench used and how data is segregated with respect to every hospital department like General Medic, Cardiology, Orthopaedic, Geriatric etc.



2.1-CODE

We are using JavaScript as our programming language. As mentioned above we are using a JS framework called IONIC.

a. Code Configuration for Android and IOS

homeDoc 〉 config.xml

```
<allow-intent href="tel:*" />
<allow-intent href="sms:*" />
<allow-intent href="mailto:*" />
<allow-intent href="geo:*" />
<preference name="ScrollEnabled" value="false" />
<preference name="android-minSdkVersion" value="19" />
<preference name="BackupWebStorage" value="none" />
<preference name="SplashMaintainAspectRatio" value="true" />
<preference name="FadeSplashScreenDuration" value="300" />
<preference name="SplashShowOnlyFirstTime" value="false" />
<preference name="SplashScreen" value="screen" />
<preference name="SplashScreenDelay" value="3000" />
<platform name="android">
    <edit-config file="app/src/main/AndroidManifest.xml" mode="merge" target="/manifest/application" xm
    </edit-config>
    <resource-file src="resources/android/xml/network_security_config.xml" target="app/src/main/res/xml
    <allow-intent href="market:*" />
    <splash density="port-xxhdpi" src="resources/android/splash/drawable-port-xxhdpi-screen.png" />
    <splash density="port-xxxhdpi" src="resources/android/splash/drawable-port-xxxhdpi-screen.png" />
</platform>
<platform name="ios">
    <allow-intent href="itms:*" />
    <allow-intent href="itms-apps:*" />
    <icon height="57" src="resources/ios/icon/icon.png" width="57" />
    <icon height="114" src="resources/ios/icon/icon@2x.png" width="114" />
    <icon height="29" src="resources/ios/icon/icon-small.png" width="29" />
    <icon height="58" src="resources/ios/icon/icon-small@2x.png" width="58" />
```

B. Basic Code

app.component.html | tabs.page.html | app.module.ts | tab1.page.ts | tab1.page.html | tab2.page.html

homeDoc > src > app > app.component.html > ion-app > ion-content.back_ground > div

```
<ion-app>
  <ion-content *ngIf='loginPage' class='back_ground'>
    <div [ngSwitch]="opt">
      <form (submit)="onLogin()" *ngSwitchCase="'signin'">
        <ion-card class="welcome-card">
          <ion-card-header>
            <ion-card-subtitle class='login_title_name'>Doctor's Login</ion-card-subtitle>
              </ion-card-header>
              <ion-card-content>
            <ion-input class="input_class" placeholder="Enter Username"></ion-input>
            <ion-input class="input_class" type="password" placeholder="Password"></ion-input>
            <ion-button (click)="onLogin(false)"> Login </ion-button>
          </ion-card-content>
        </ion-card>
      </form>
      <form (submit)="doLogin()" *ngSwitchCase="'signup'">
        <ion-card class="welcome-card">
          <ion-card-header>
            <ion-card-subtitle class='login_title_name'>Patient's Login</ion-card-subtitle>
              </ion-card-header>
              <ion-card-content>
            <ion-input class="input_class" placeholder="Enter Username"></ion-input>
            <ion-input class="input_class" type="password" placeholder="Password"></ion-input>
            <ion-button (click)="onLogin(false)"> Login </ion-button>
          </ion-card-content>
        </ion-card>
      </form>
    </div>
```

****Rest of the code can be found at our GitHub link.**

GitHub

https://github.com/Yadunanda/HomeDOC