iHealthCare

Project Plan and Third Increment

Spring 2017

Team # 22: SavvyHackers

Team members:

- Sindhu Mudireddy
- Navyasree Kumbam
- Kalyan Kilaru
- Chaitanya Kumar Peravalli

1.Introduction

iHealthCare

iHealthCare is a one stop solution for expensive medical diagnosis.

Using android based mobile application user can perform following operations:

- User can login using Facebook or google or he can register on our domain.
- User can start diagnosis providing minimal details, he/she will get a feel as if they are in conversation with doctor as every response of the user is followed by an adaptive and an intelligent question. I can be a multiple choice or yes/no type.
- On identifying the user condition at the end of diagnosis, we provide a detailed report of the health condition and necessary measures to be taken.
- App suggests nearby doctors, who are specialists in treating patients condition.
- Patient reviews for each practitioner will be displayed to the User.
- On the other hand, based on user condition severity, we monitor user health, posing notification questions and re-diagnosing.
- User will be provided with a graph of his condition severity.

2.Project Goal and Objectives(revised)

2.1 Overall goal

The core idea is to build an intelligent and adaptive symptom checker and to provide the patient with the potential diagnoses and recommend doctor accordingly.

2.2 Specific objectives (problem statement)

To create a unique platform where the application asks patient, possible set of questions on symptoms based on his previous responses and diagnose intelligently.

Provides patient with the possible health conditions along with severity and description of the same.

2.3 Specific features

Diagnose: This feature makes the patient to interact with a set of possible questions on the symptoms based on the responses given by the user previously.

Monitoring Health Condition: This helps the user to monitor his/her health condition based on the previous diagnosis.

Nearby Doctors: This feature gives the patient with the nearby doctors list and it will even show the path to the location of doctors within a specified distance.

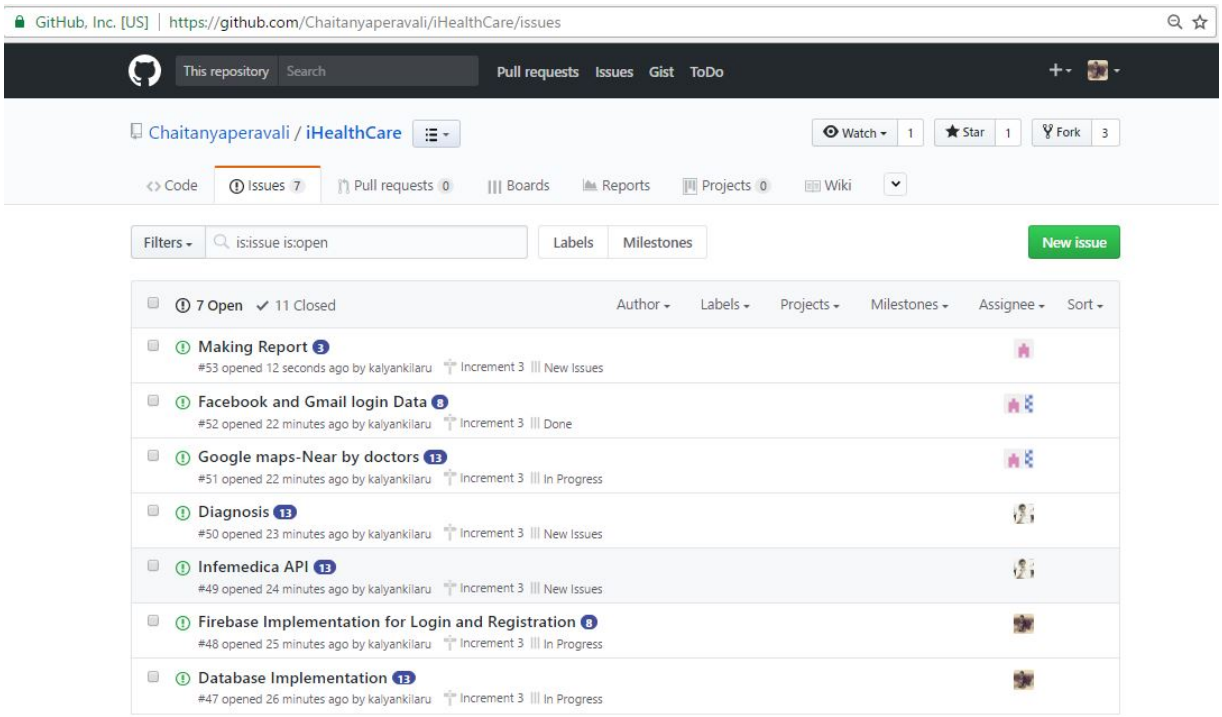
2.4 Significance This app provides the feel as if the patient is speaking to a doctor on a medical condition.

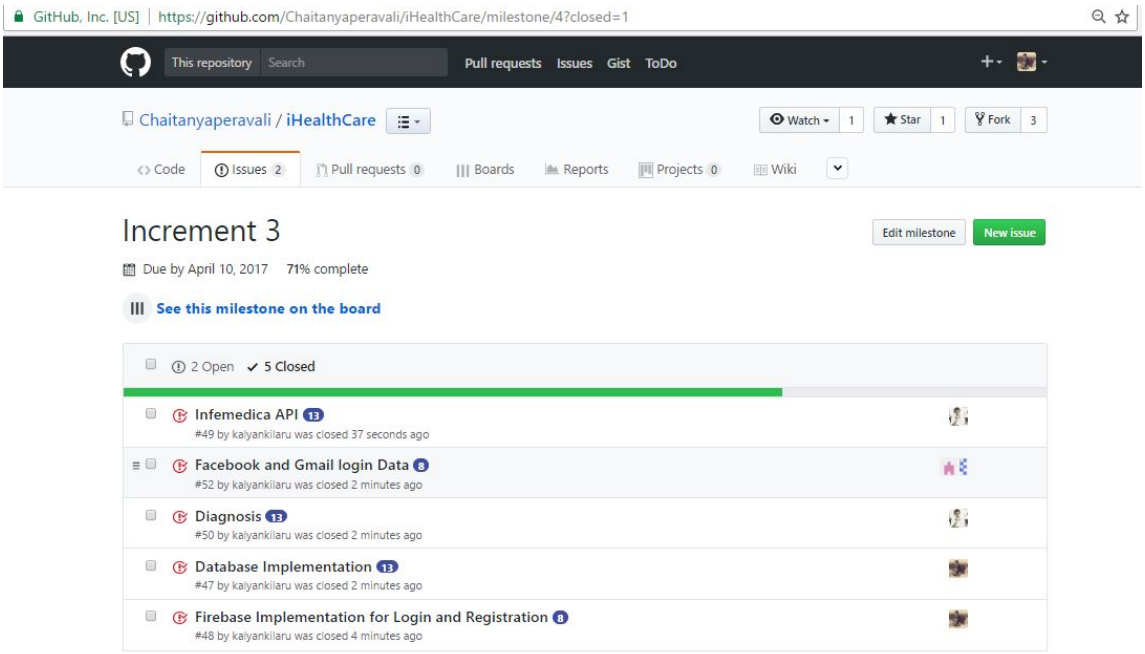
Apart from diagnosis, it also supports the patient by selecting a doctor and scheduling an appointment. This app is a single place where patient can get all these features.

3.Project Plan

1.Zen-Hub Screenshot

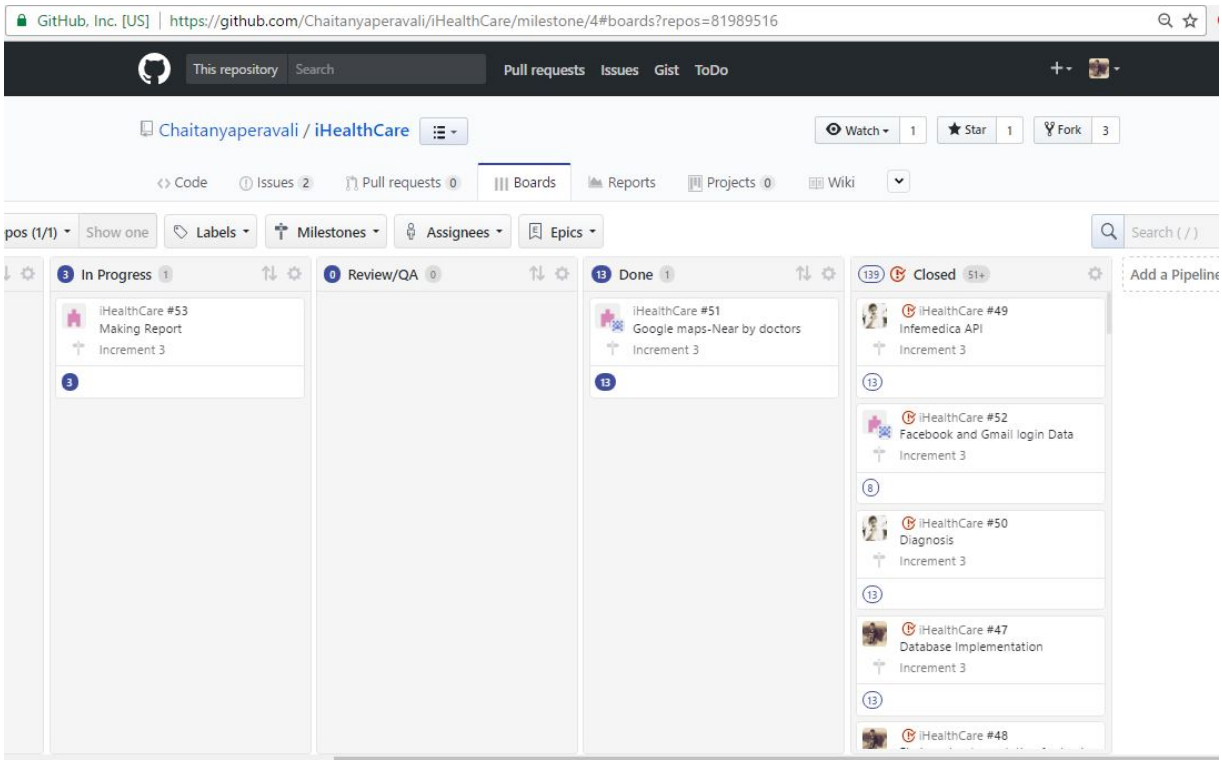
For the second increment, we had the following issues in Zen-Hub as shown in the screen shot, they are implementing Signup screens which fetch user details, implementing diagnosis, implementing Google oAuth and implementing Facebook oAuth. Apart from these, we had issues like updating the Class diagrams, creating test cases and integrating all the modules.





Project Timelines, Members, Task Responsibility

Below is the screen shot of the boards, which tracks the issues and the state of the issues like in open state, review, in progress and closed states etc. This also shows the milestone of each issue.



Burndown Chart

The burndown chart for the total issues of increment 2, which are in open and closed status.

4. Third Increment Report

4.1 Existing Services/REST API

The below mentioned API's are used in the second increment to make it a user-friendly application.

1. **Facebook Authentication API:**
   As Facebook is a social platform where many people are connected, the Facebook Authentication API will let users to create an account easily with their Facebook account.
2. **Google Authentication API:**
   In similar to that of Facebook, many users are connected to Google so by making Google Authentication to the users of our will make them easy to sign up to our application.

The following API's are used in the third increment to get the medical information,doctor's details and google maps.

3. **Infermedica API:**

This is an Artificial Intelligence API which is used for medical Diagnosis. This API is used to take the symptoms of patient, diagnose the condition of the patient and generates the report. At the end patient can get the suggestions of relevant symptoms.

4. **BetterDoctor API :**

BetterDoctor API is used to access the information of doctors such as Doctor's Name, location, phone number and specialty.

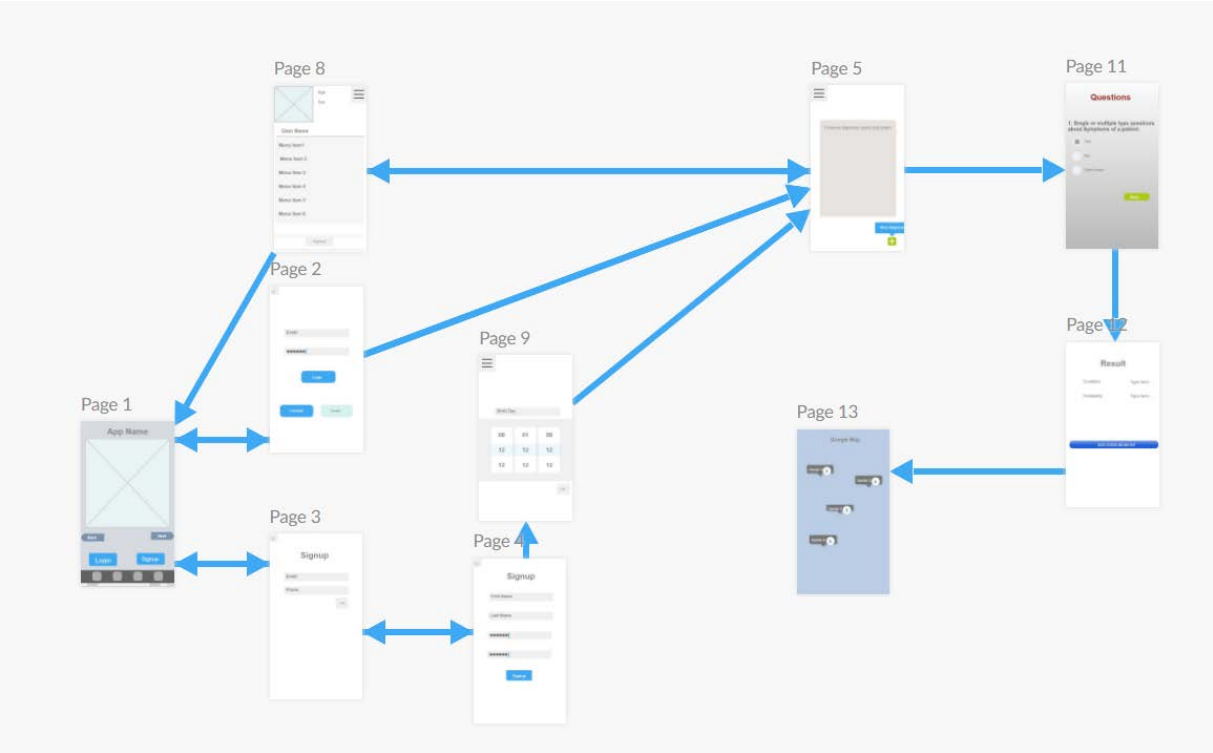
5. **Google Maps API :**

Google maps API is used to access the google maps into our application. In this Application google maps displays the information of Doctors for a particular condition.

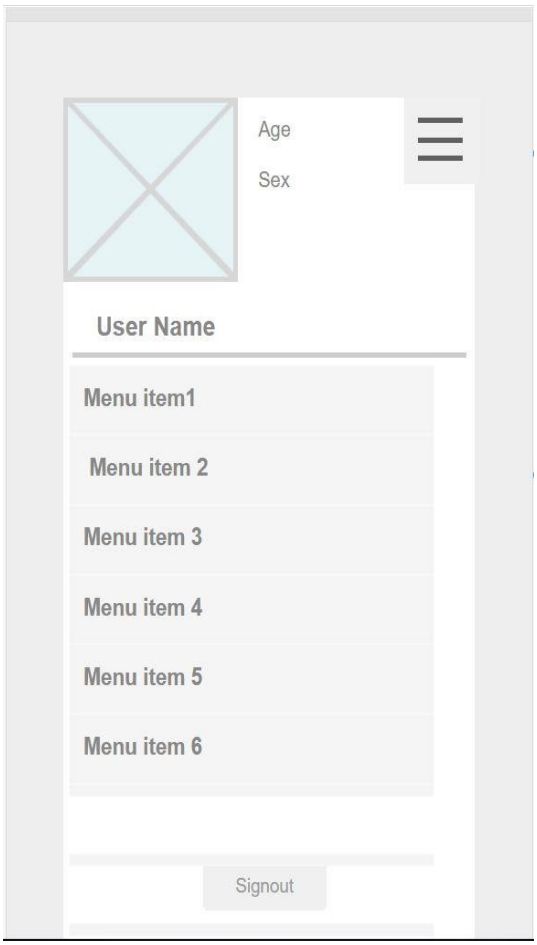
4.2 Detail Design of Features

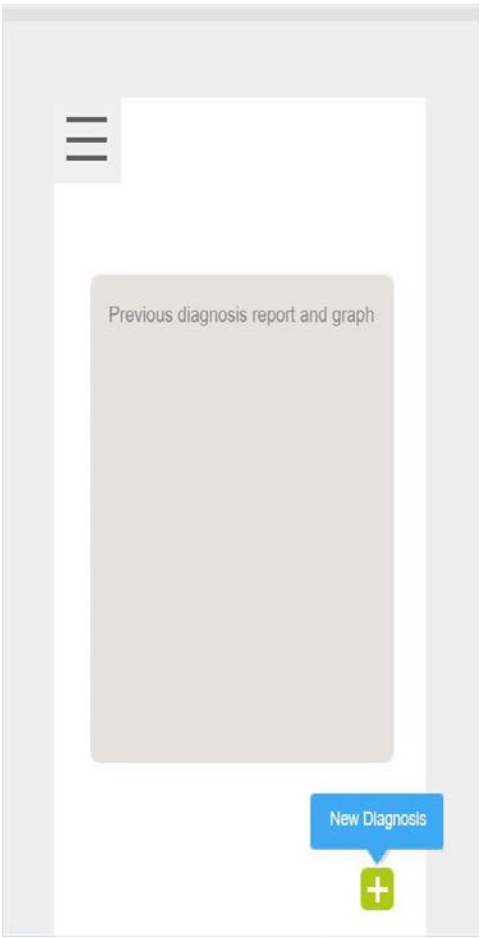
4.2.1. Wireframes:

Flow Chart:

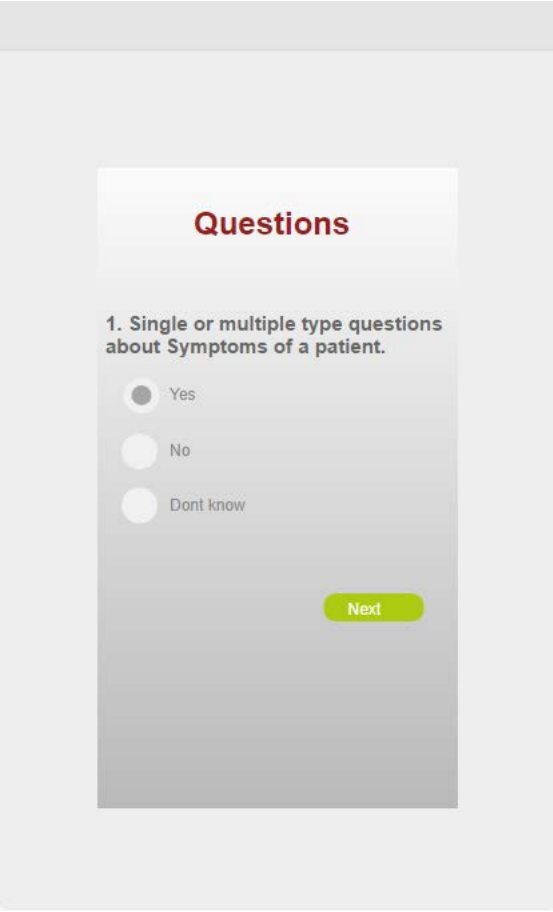


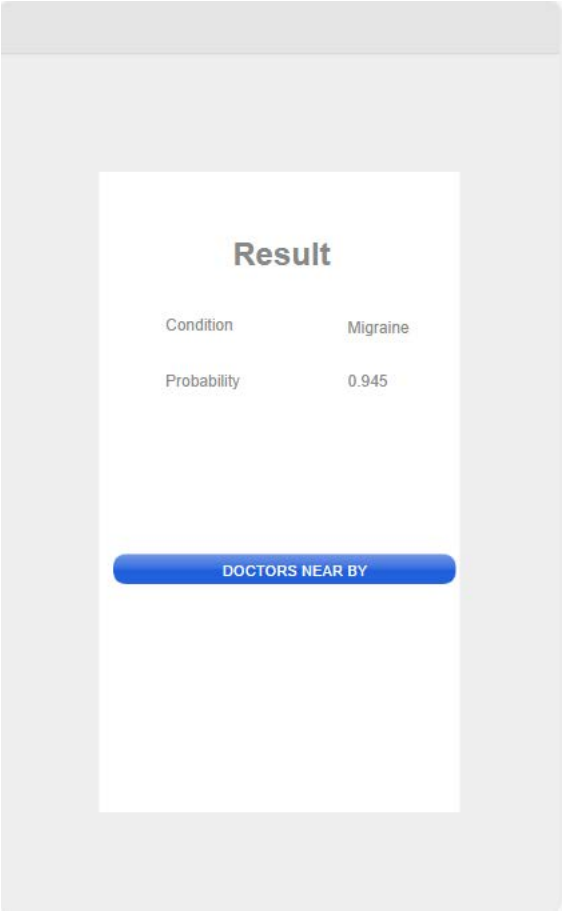
Home and Diagnosis Screen:



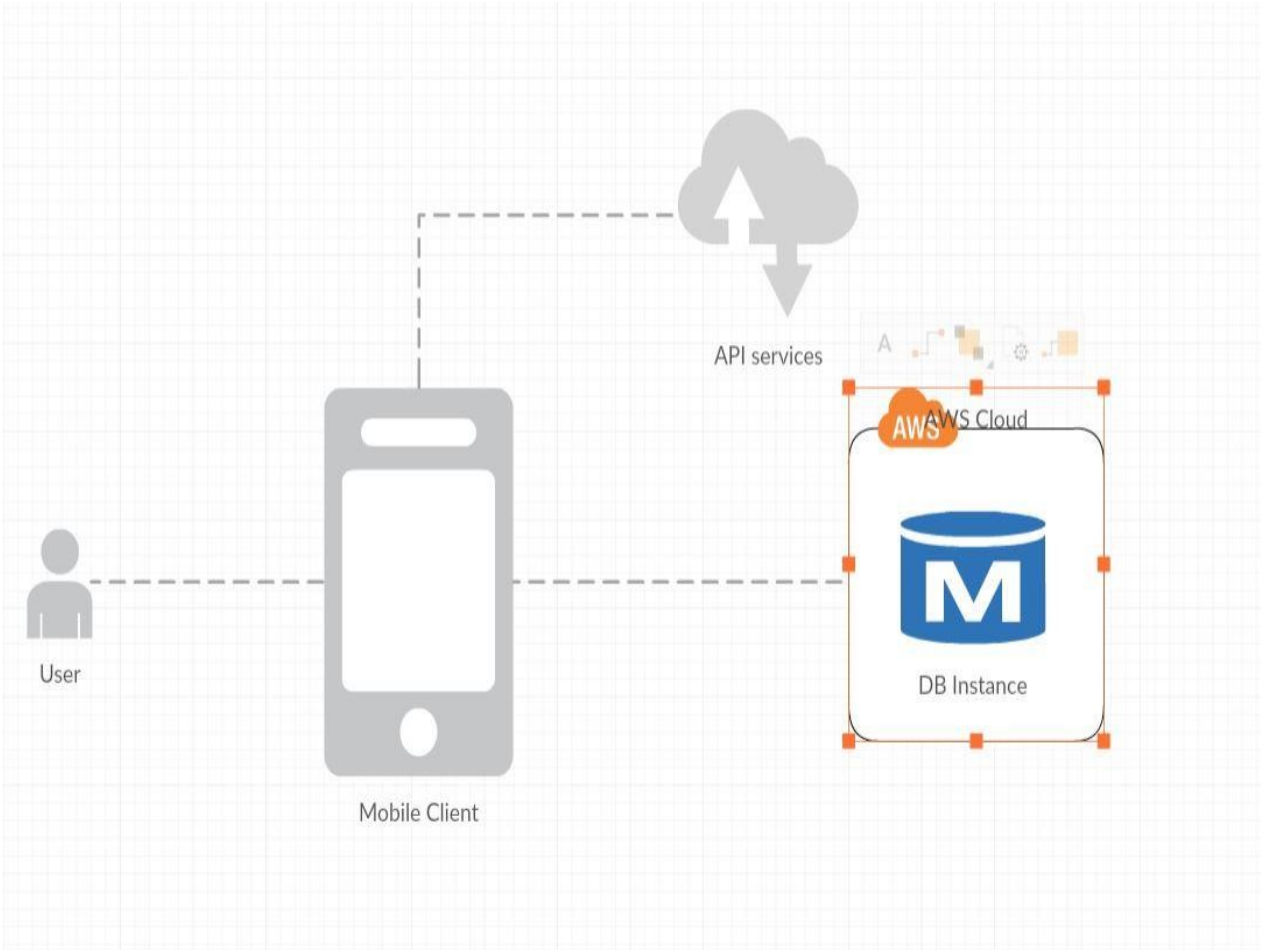


Questions and Condition Screen :

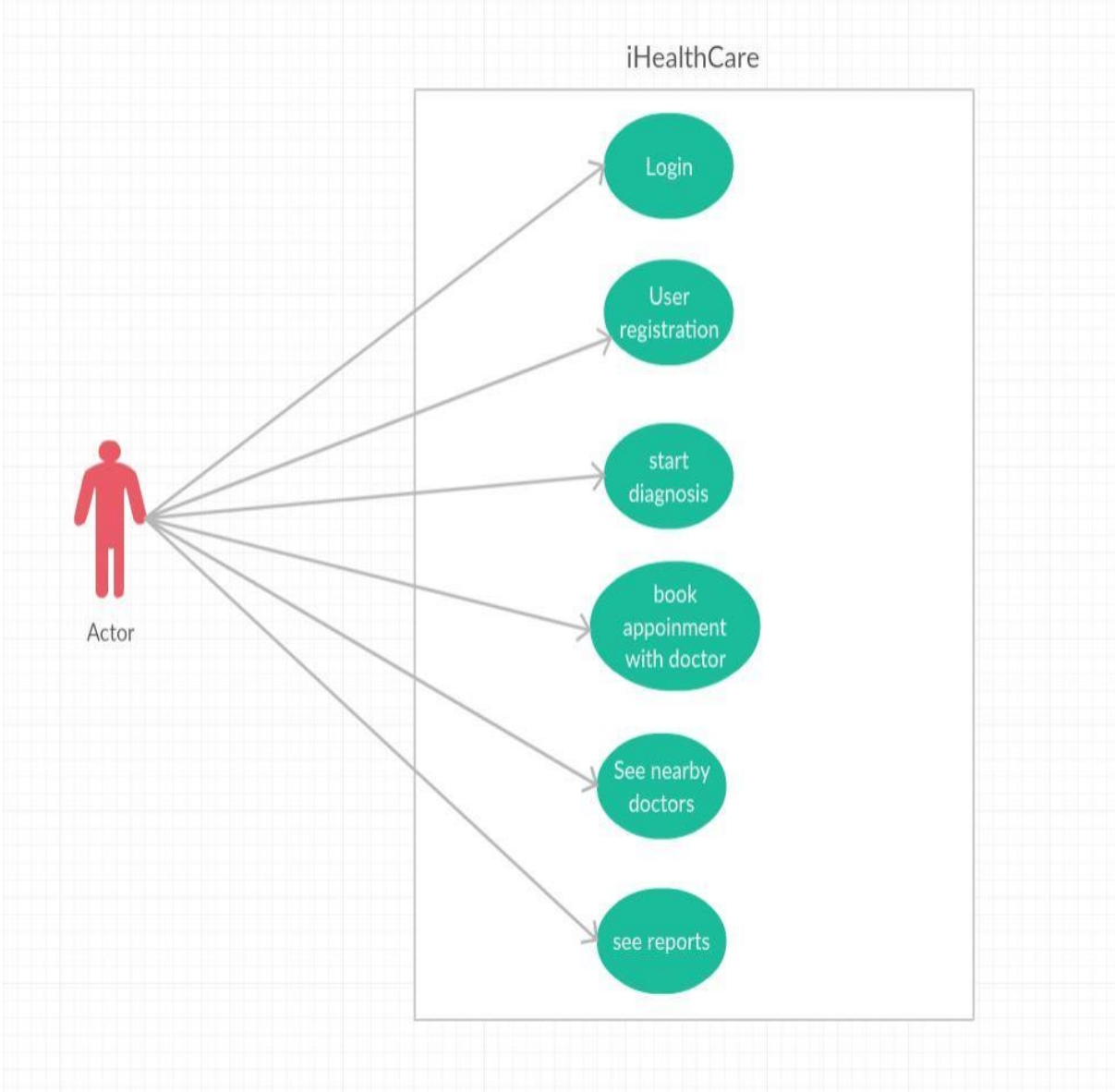




4.2.1 Architecture Diagram:



4.2.2 Use Case Diagram:



5.Testing

TEST CASE	DESCRIPTION	EXPECTED RESULT	ACTUAL RESULT
Login	Enter invalid username and password	Display error message showing that users credentials are valid	Pass
Login	Enter invalid username and valid password	Display error message showing that users credentials are valid	Pass
Login	Enter valid username and invalid password	Display error message showing that users credentials are valid	Pass
Login	Enter valid username and valid password	Redirected to Home Page	Pass
Login	Login using Google, Enter invalid gmail	Display that given gmail is invalid	Pass
Login	Login using facebook Enter invalid details	Display that given facebook details are invalid	Pass
Login	Login using Google/Facebook	Redirected to home page	Pass

	Enter valid details		
Signup	The email should be in format of @ex.com, give different format	Display invalid email	Pass
Signup	Password should contain 8 characters, Enter characters less than 8	Display password is too short	Pass
Signup	Gender not selected	Displays please select gender	Pass
Signup	Date of Birth/Height/Weight One or more of the these are not entered	Displays please fill this field	Pass
Signup	Successful registration with all valid data.	Redirected to Home page	Pass
Home/Diagnosis	Select new diagnosis,	Symptoms and the adaptive questions with one answer and multiple answer type are asked.	Pass
Report	Given input for the questions asked	Displays a defined report with condition and the probability	Pass

Doctors nearby	Select doctors nearby button	Map with available doctors for the condition in nearby location are displayed along with doctor's details.	Pass

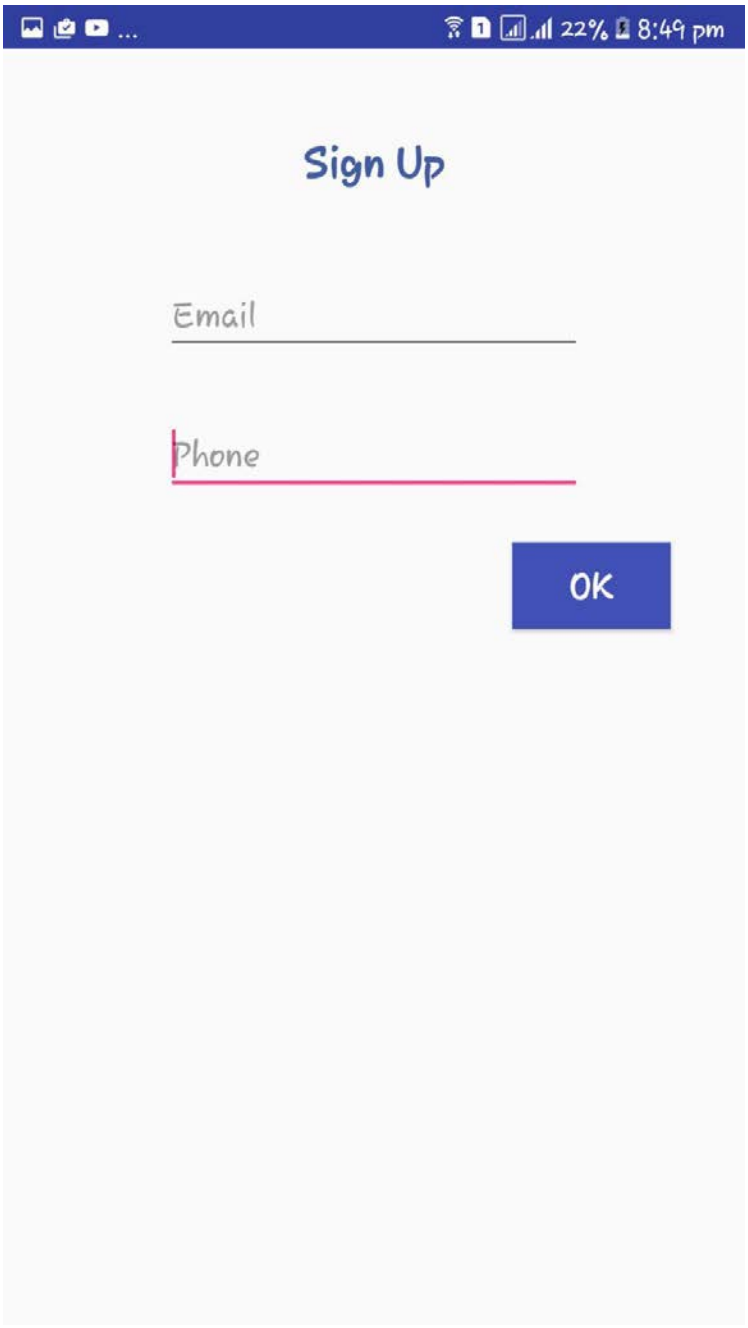
6. Implementation and Deployment

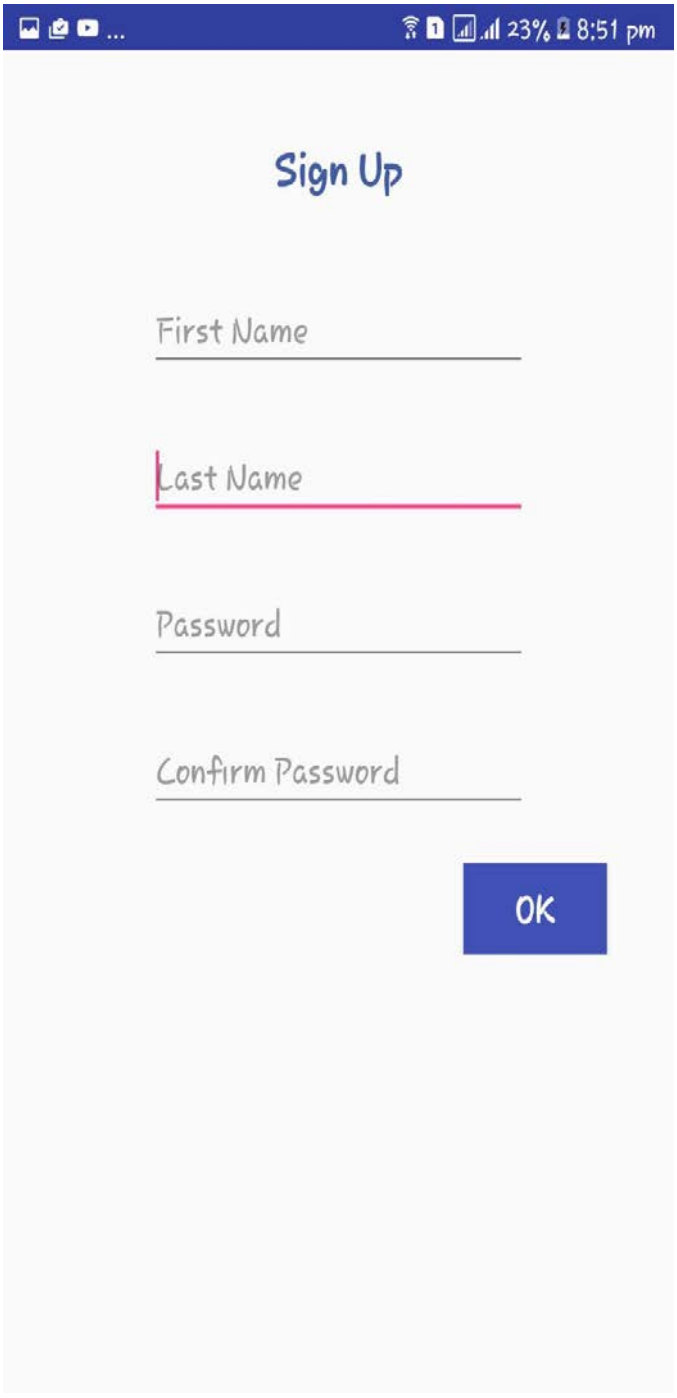
The application is developed in Android Studio and is deployed in the Emulator and Android Mobile.

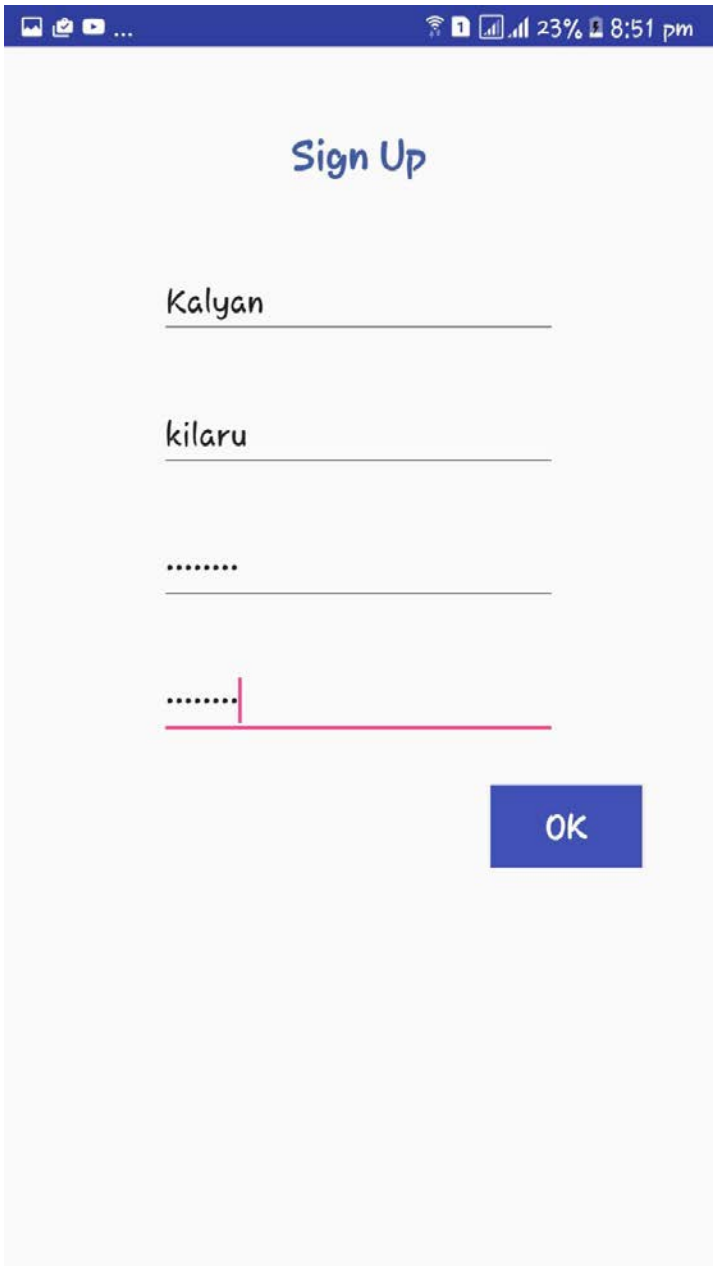
Screenshots:

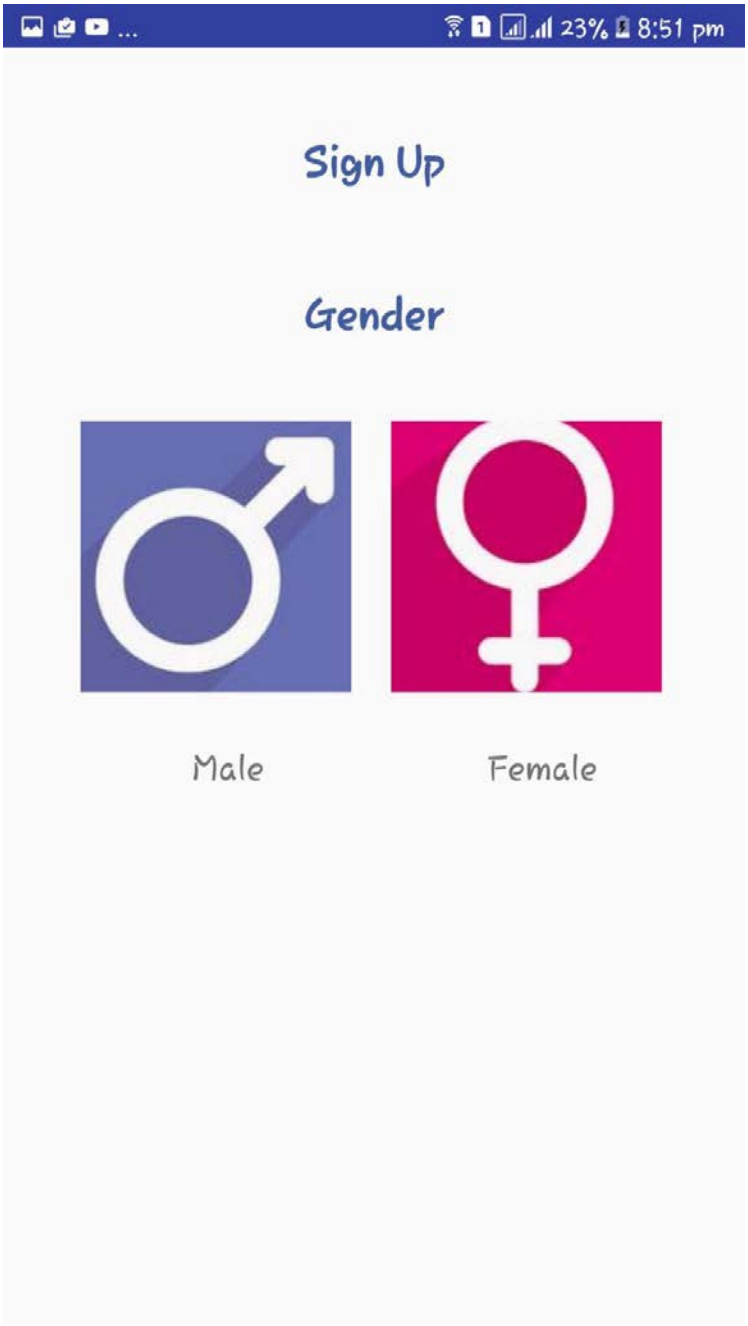
Below are the screen shots of the login and signup pages. In addition to that Home Screen and Diagnosis where Patient can start his diagnosis. Apart from that the symptoms screen where the patient can select multiple symptoms which are experienced by him. After that user interactive questions screen which contains single type and multiple type questions to get the condition of the patient and Displays the result. Next screen shows Doctors for that condition in the map if required. Maps screen displays the name, image, ratings and information about the doctor.

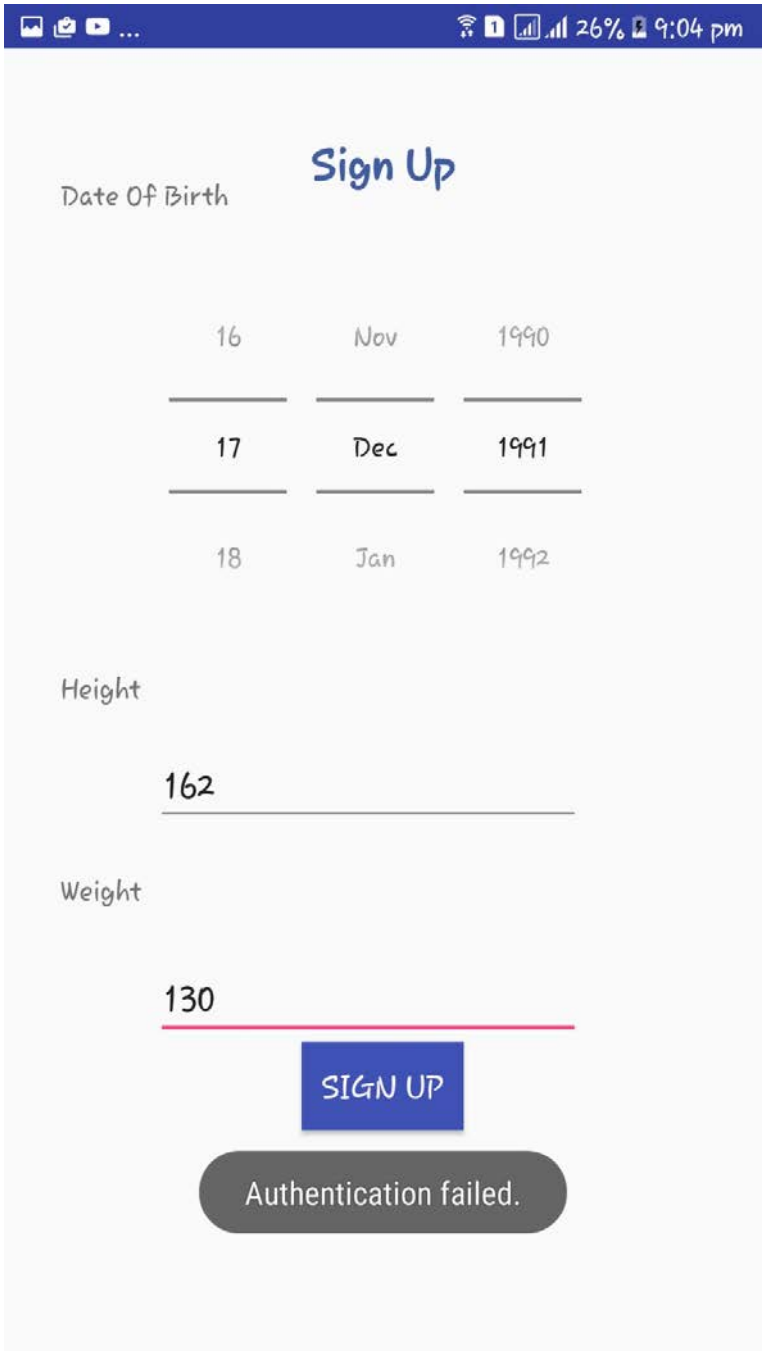
Signup page:

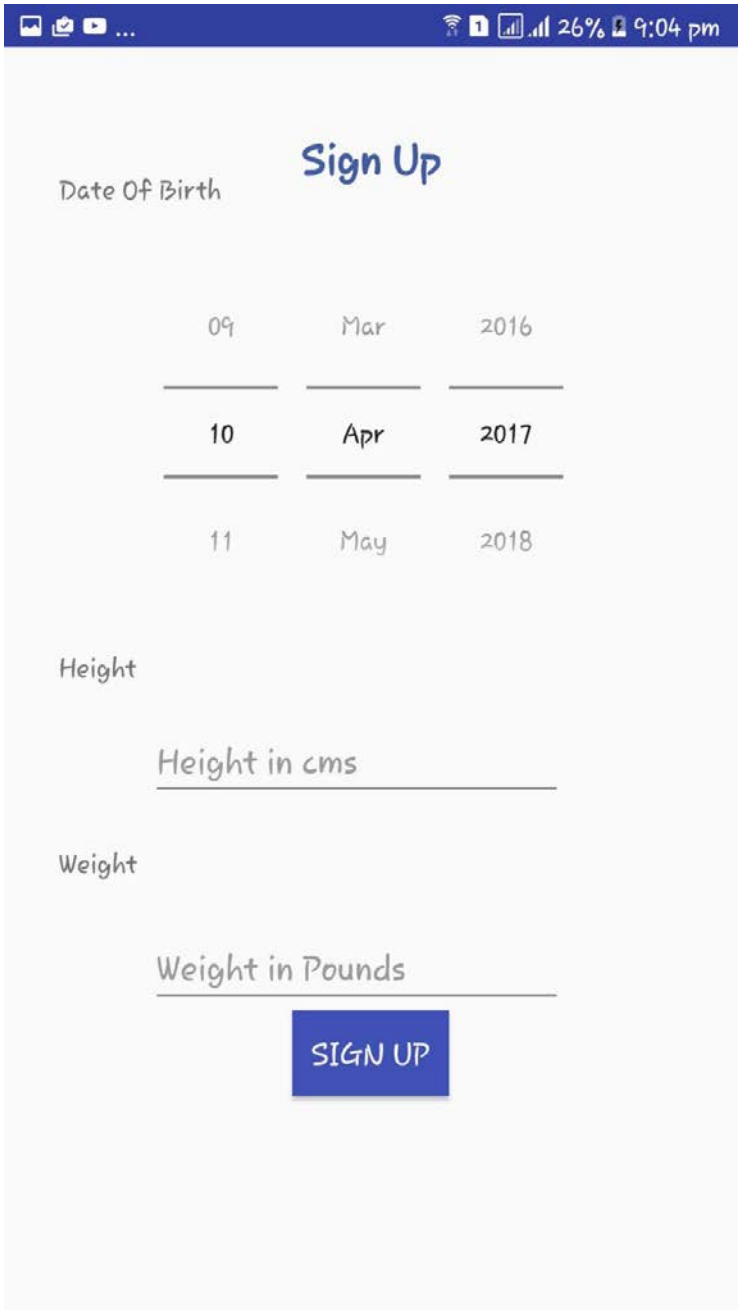


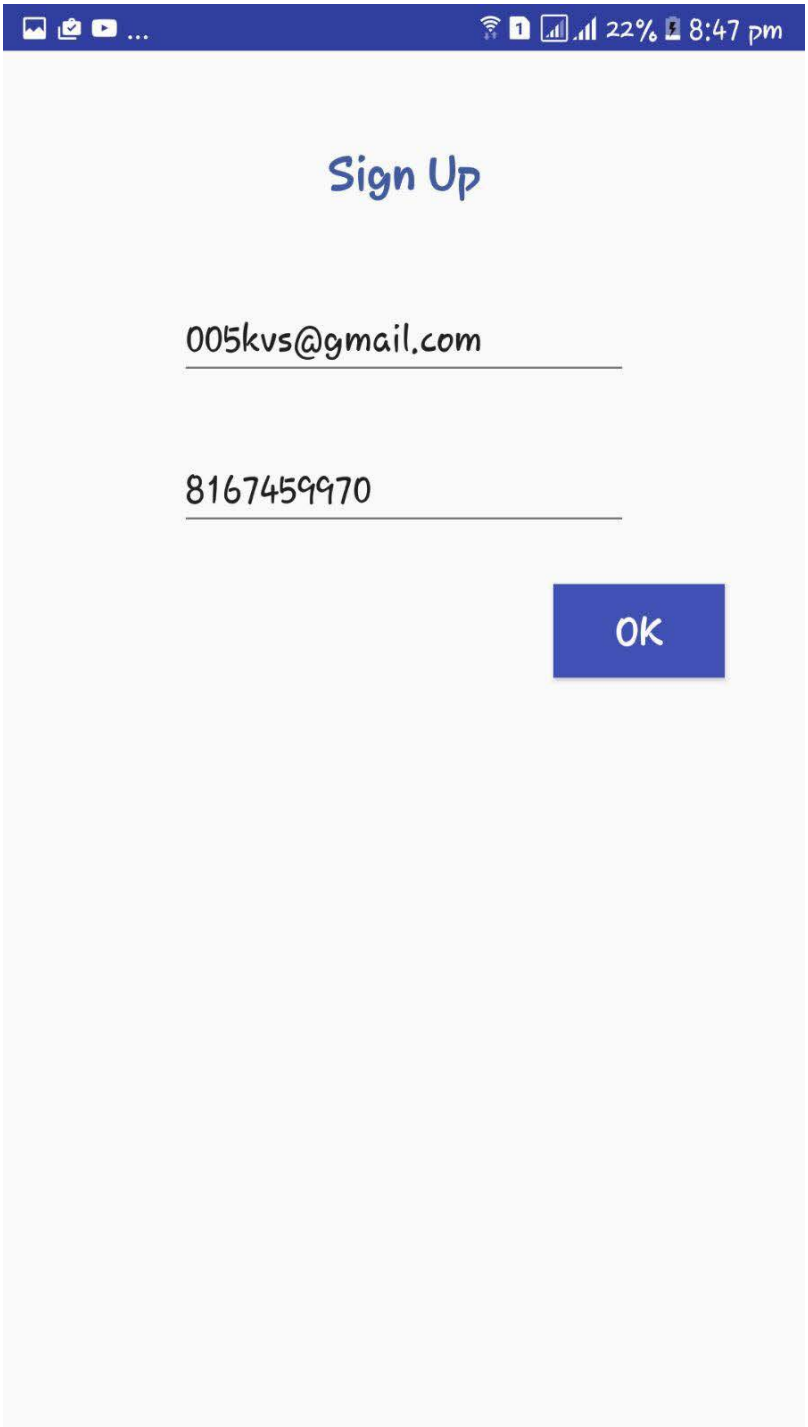

23% 8:51 pm
Sign Up
First Name
Last Name
Password
Confirm Password
OK


23% 8:51 pm
Sign Up
Kalyan
kilaru
OK

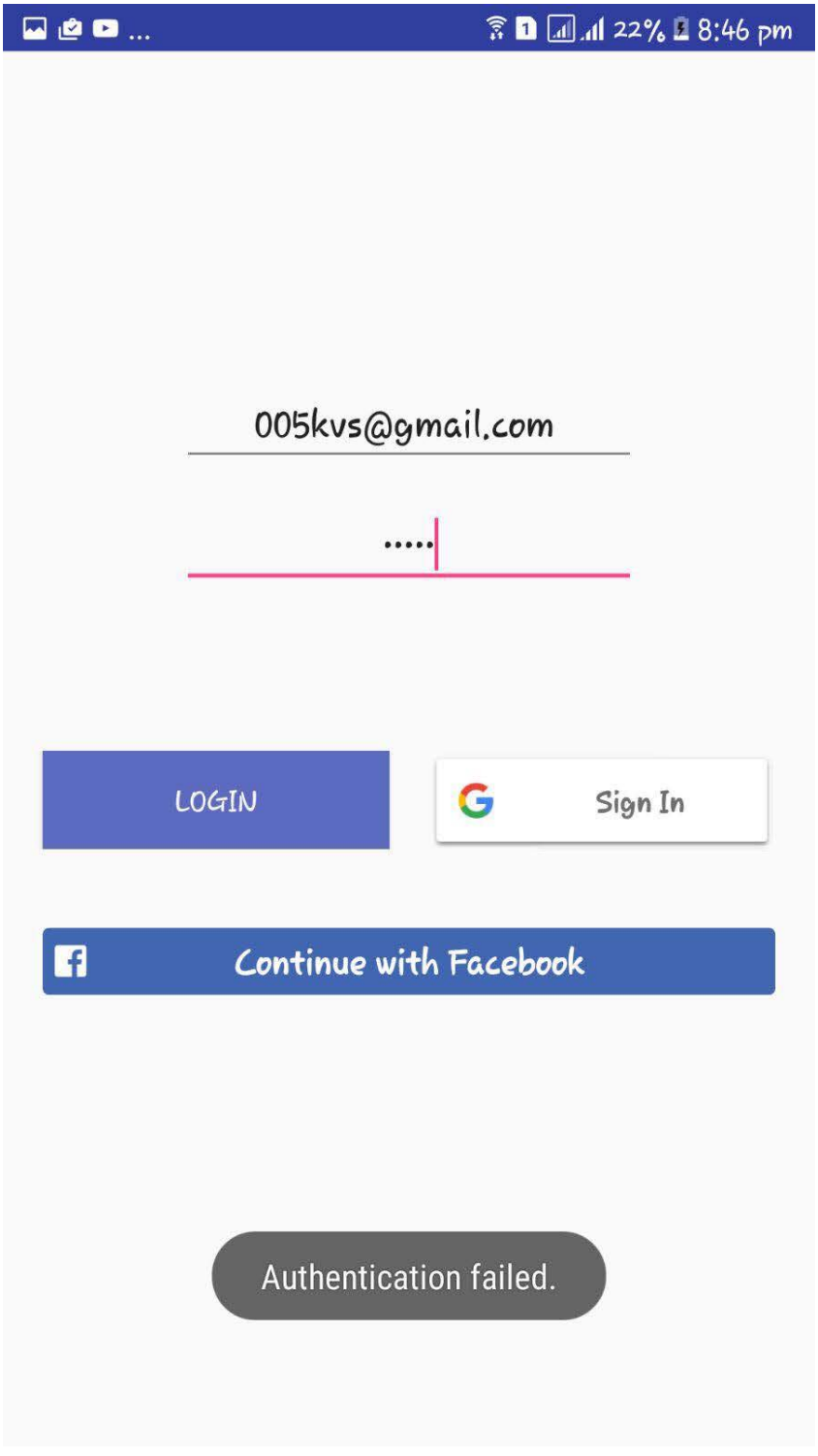

23% 8:51 pm
Sign Up
Gender
Male
Female


26% 9:04 pm
Sign Up
Date Of Birth
16 Nov 1990
17 Dec 1991
18 Jan 1992
Height
162
Weight
130
SIGN UP
Authentication failed.

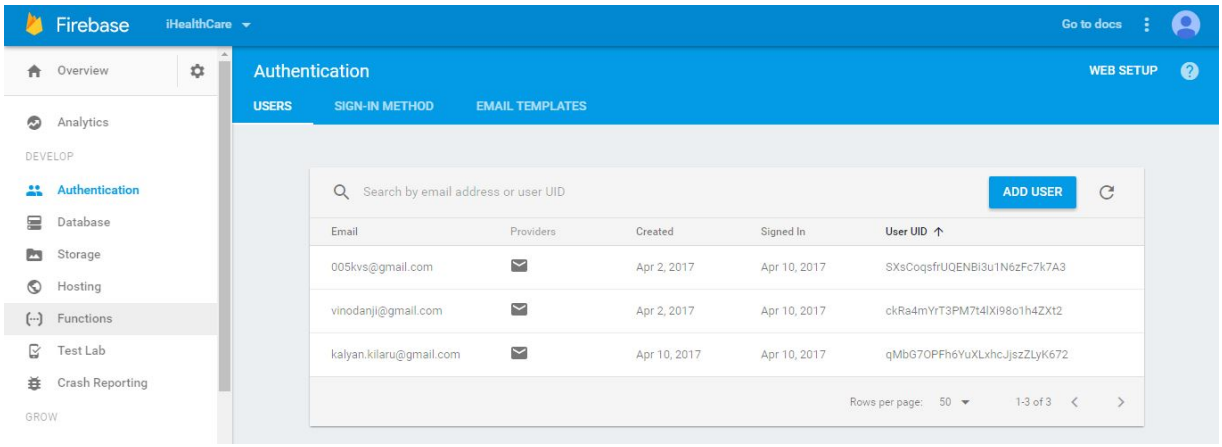

26% 9:04 pm
Sign Up
Date Of Birth
09 Mar 2016
10 Apr 2017
11 May 2018
Height
Height in cms
Weight
Weight in Pounds
SIGN UP

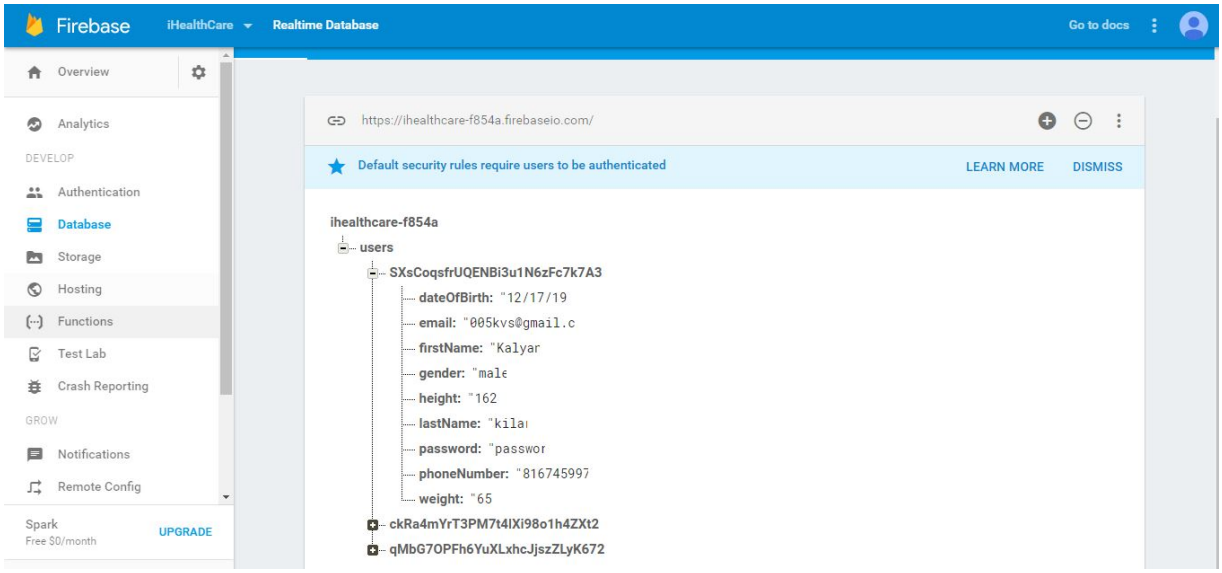

22% 8:47 pm
Sign Up
005kvs@gmail.com
8167459970
OK

Login Page:


22% 8:46 pm
005kvs@gmail.com
LOGIN
Sign In
Continue with Facebook
Authentication failed.

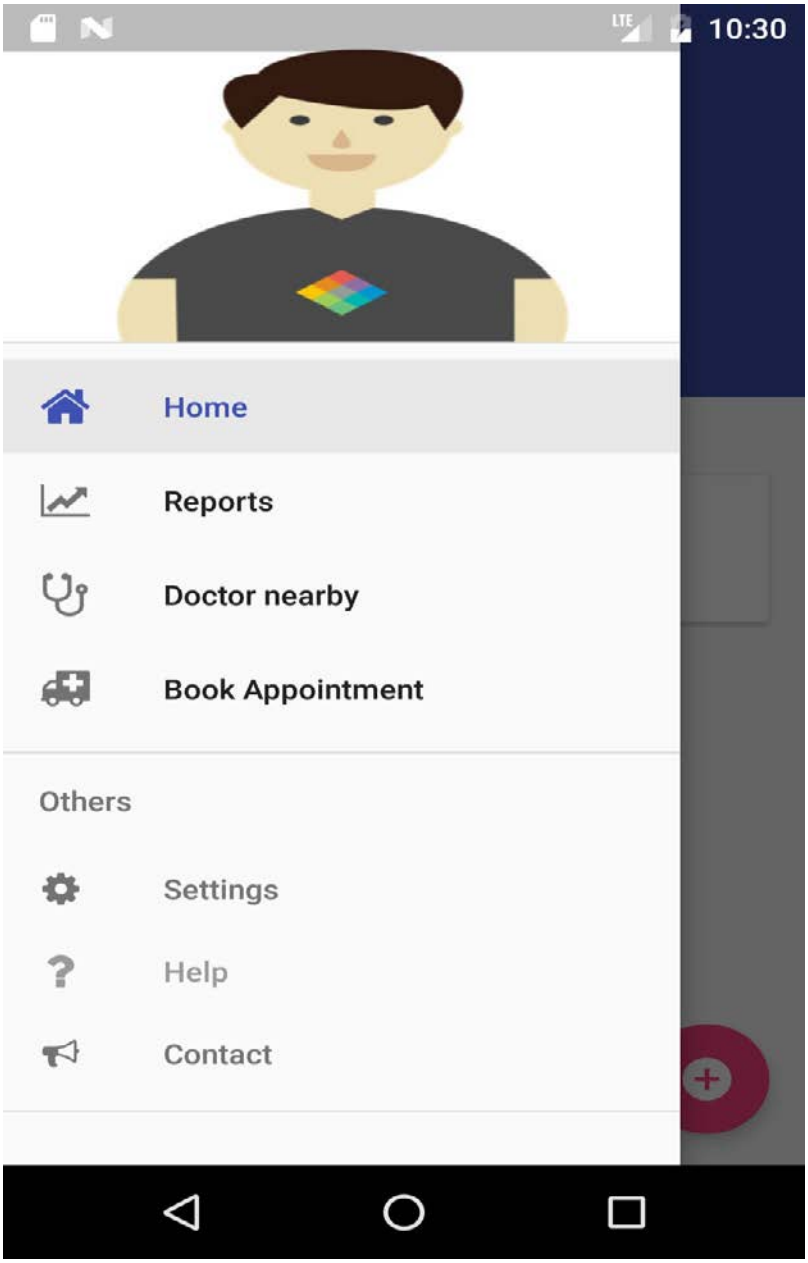
Firebase for authentication:



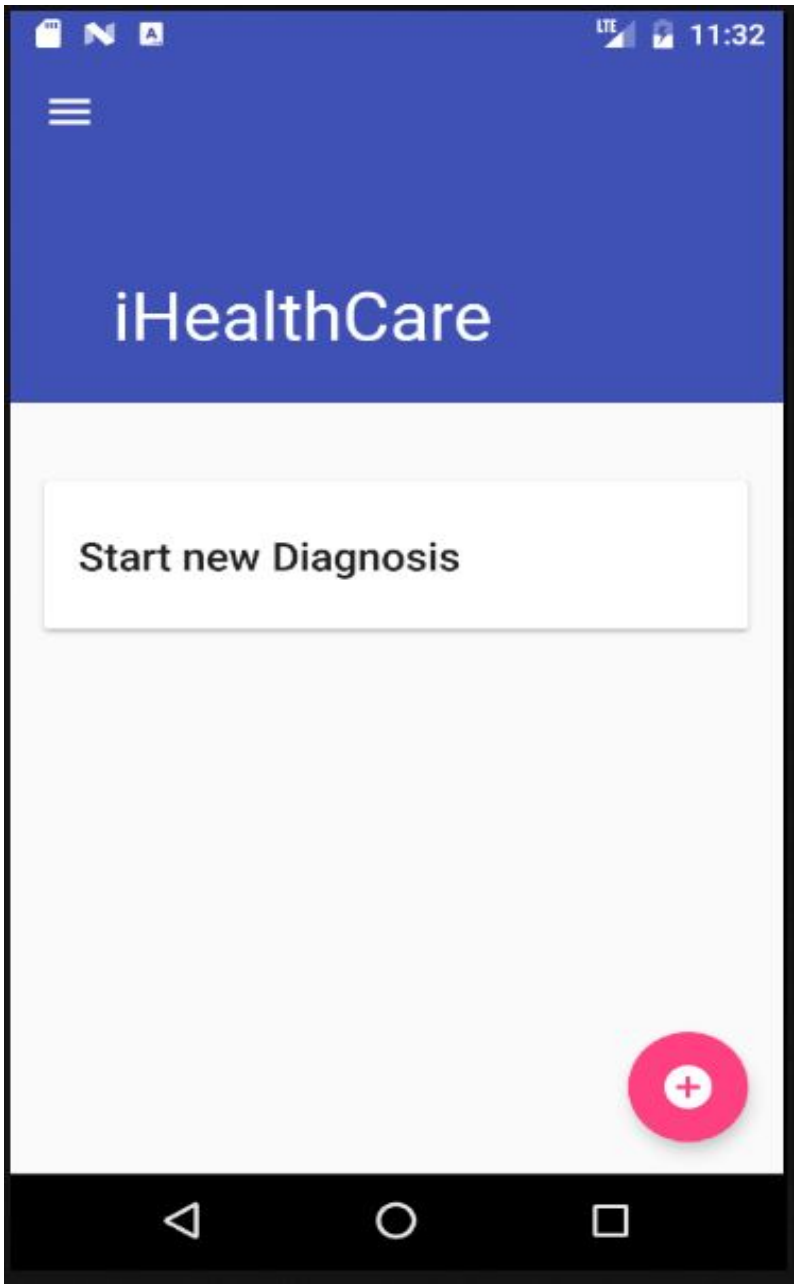


Home Screen:

The user can start the diagnosis here by responding to some questions that are posted in this screen and depending on the user's response to the previous question the next question will be posted. Apart from the diagnosis the user can check the previous reports here.

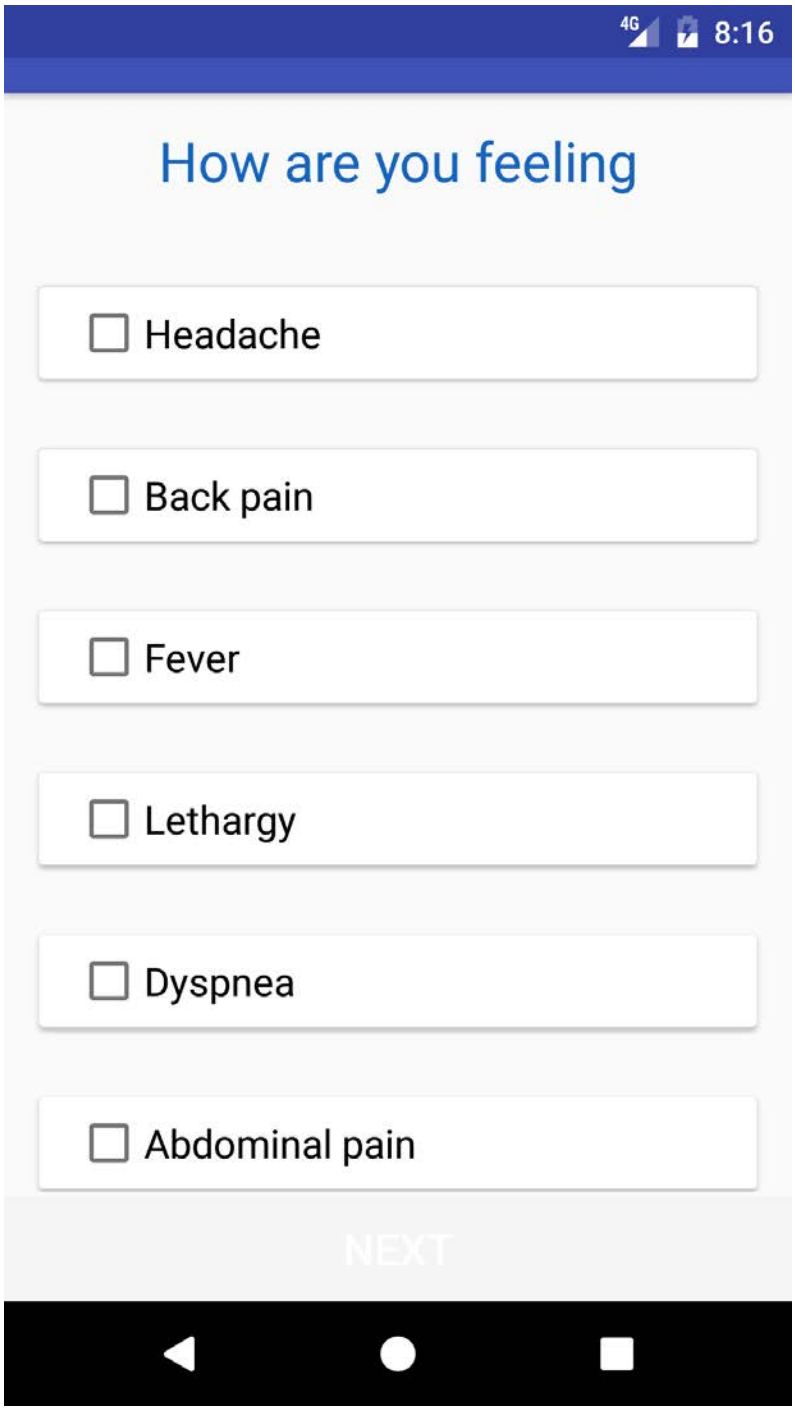


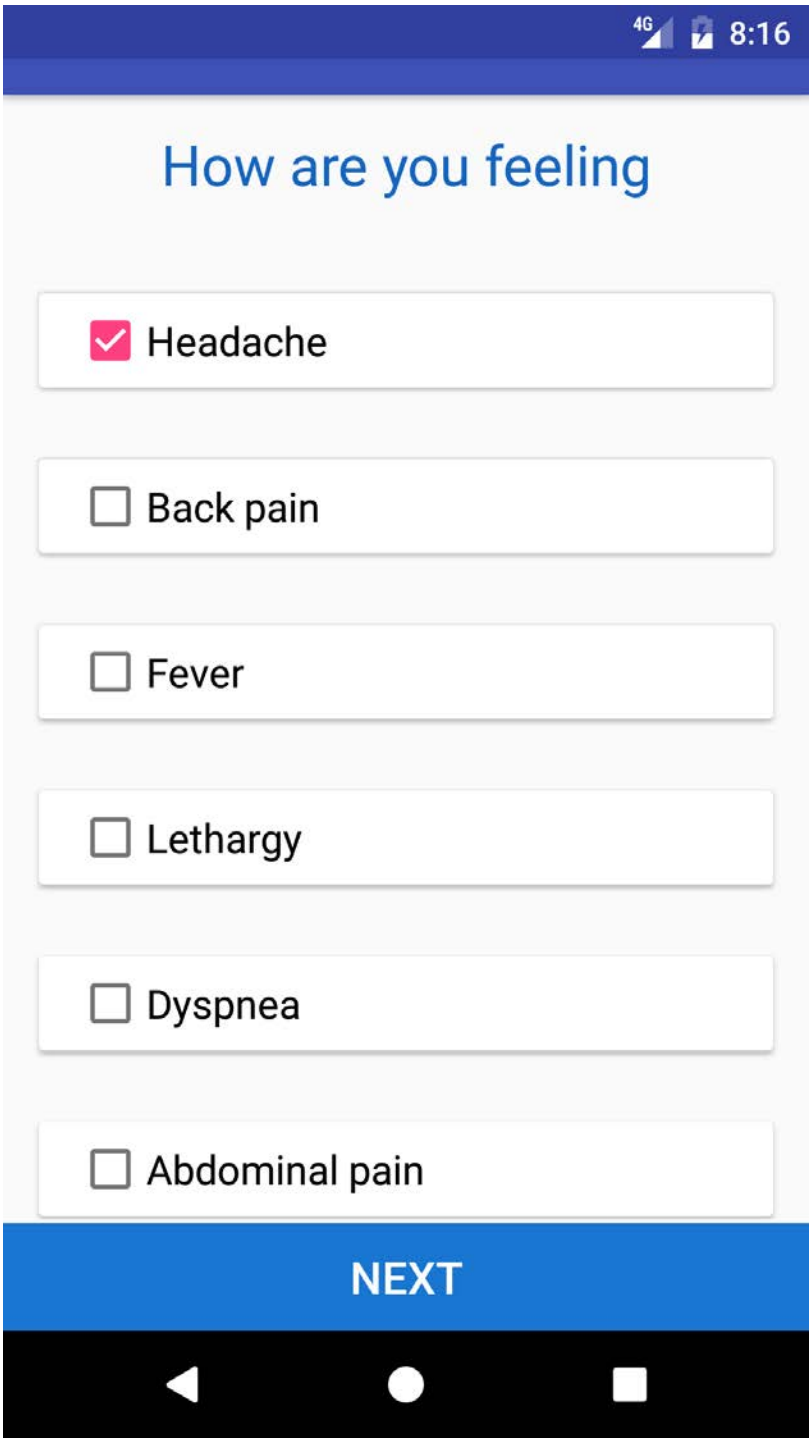
New Diagnosis:



Symptoms:

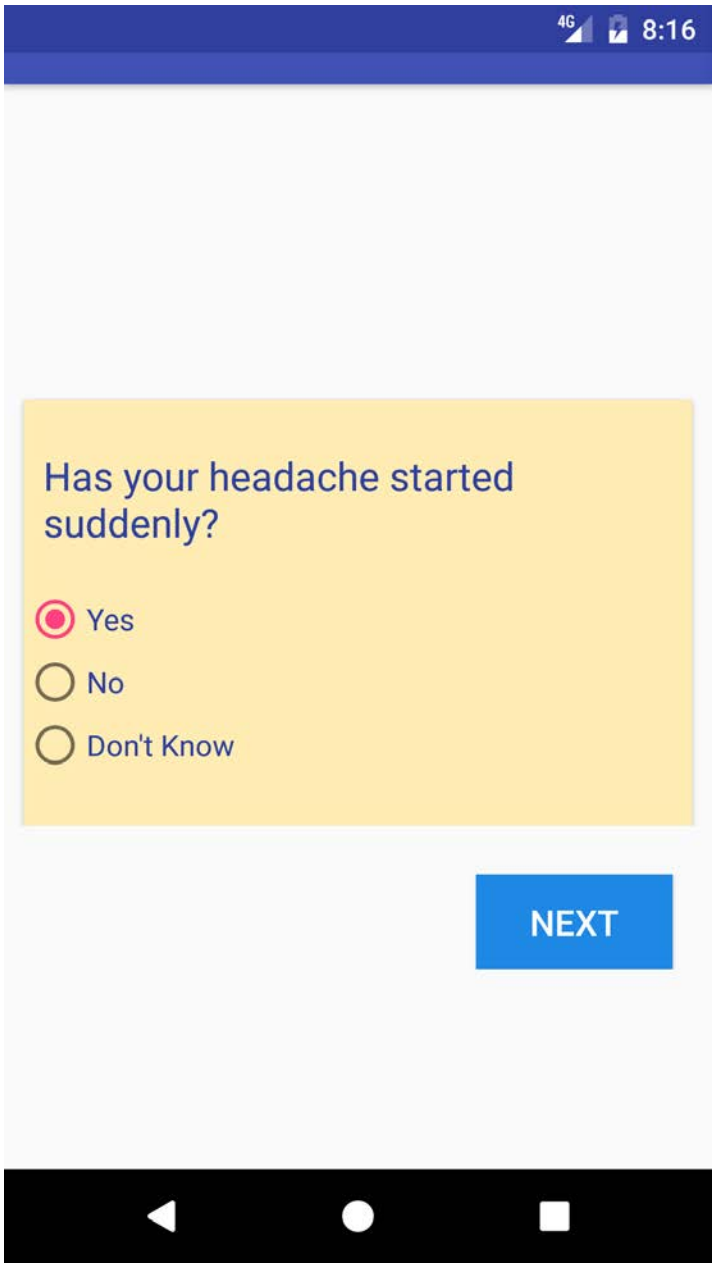
Here user can select the symptoms of a patient and then next button enables. If he clicks the next button then it takes to the questions screen.



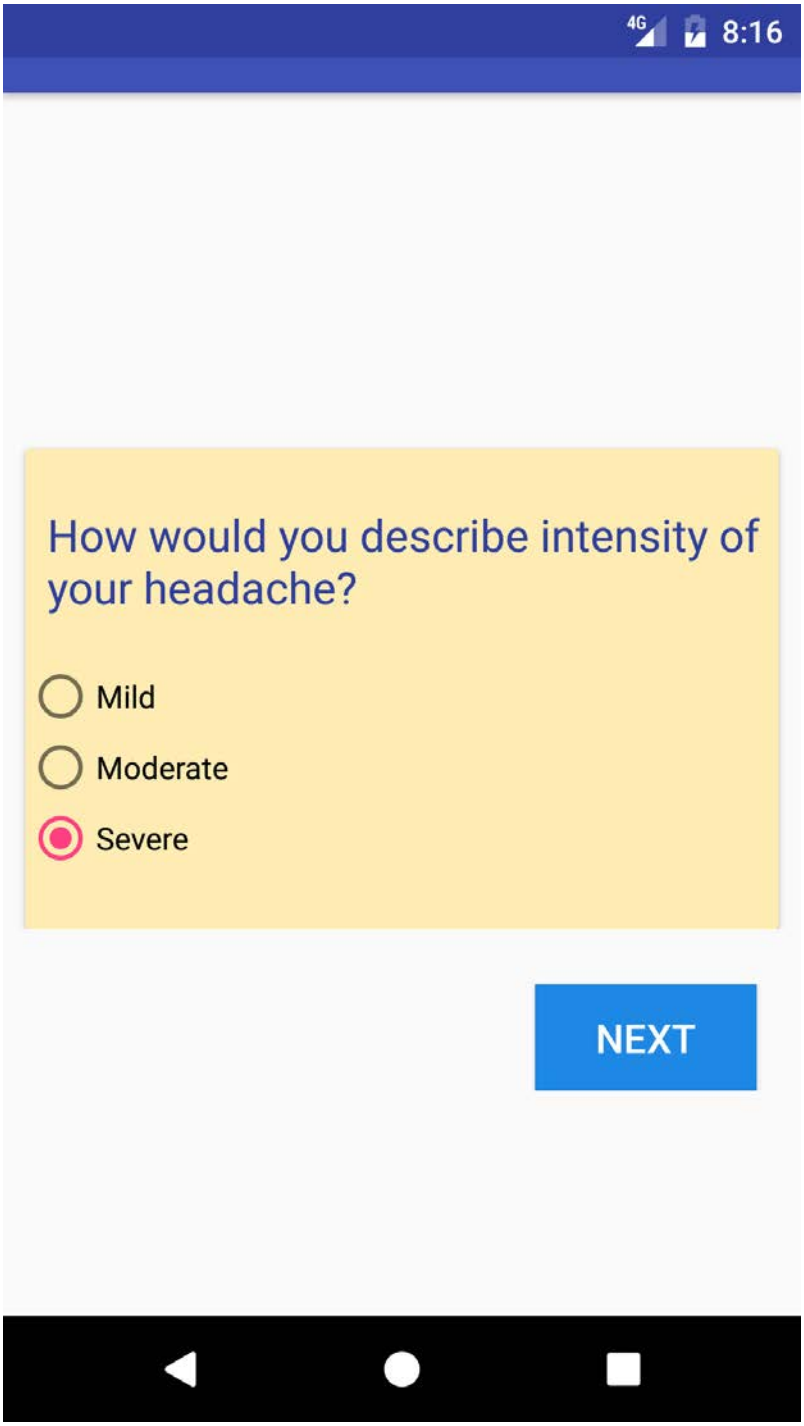

8:16
How are you feeling
Headache
Back pain
Fever
Lethargy
Dyspnea
Abdominal pain
NEXT

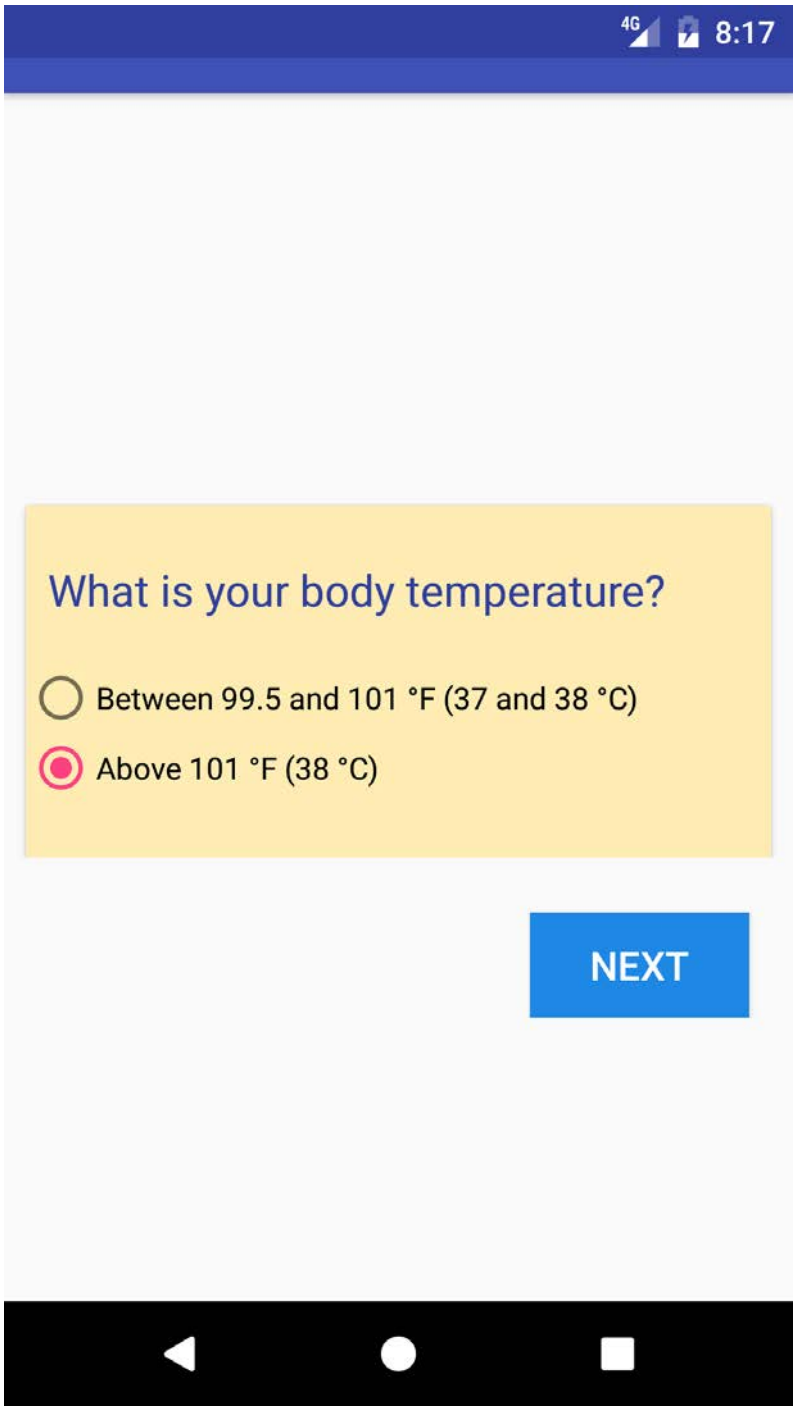
Questions:

According to the above selected symptoms the application asks the user some single type or multiple type questions to diagnose and get the condition of the user. Once if the next button is clicked user will be navigated to further different questions adaptively.

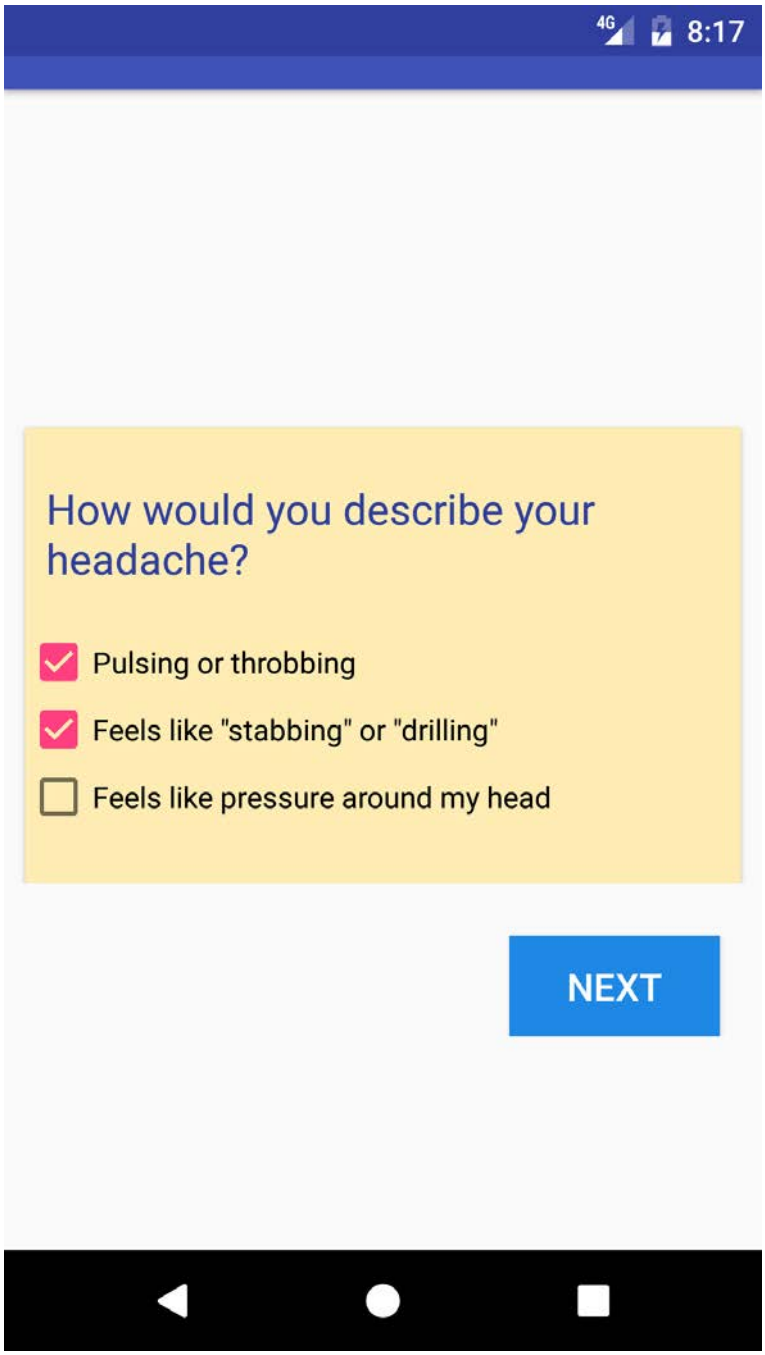


Single type questions: user can select only one option.

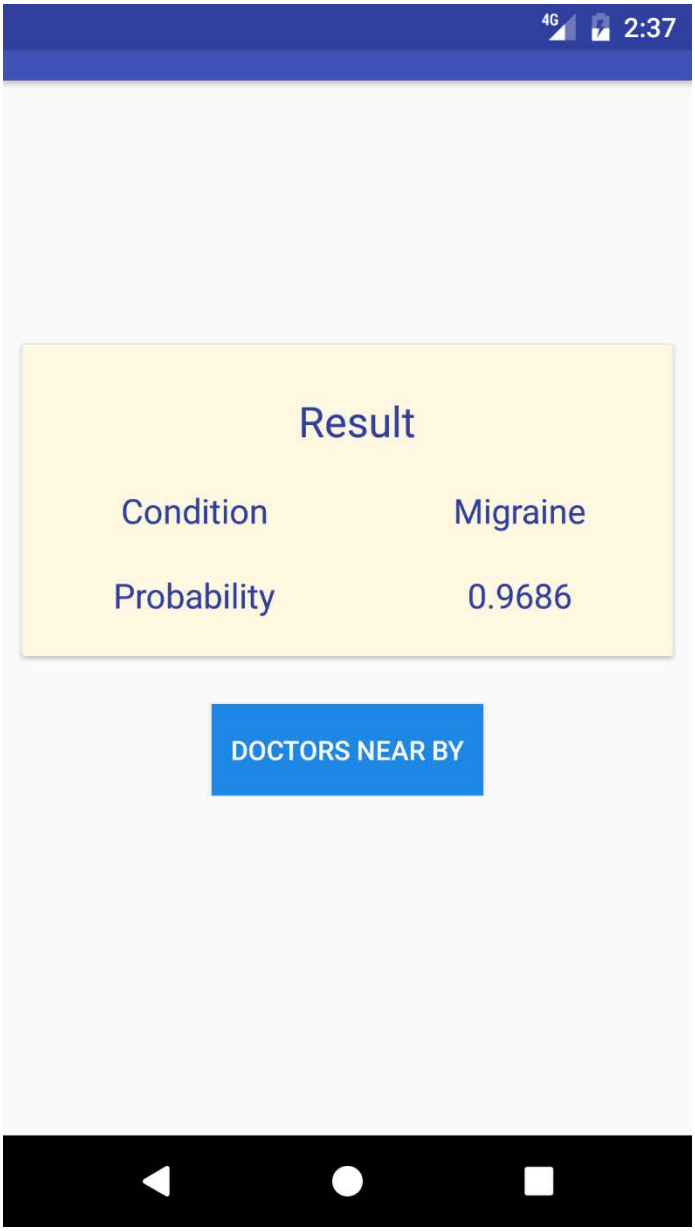



8:17
What is your body temperature?
Between 99.5 and 101 °F (37 and 38 °C)
Above 101 °F (38 °C)
NEXT

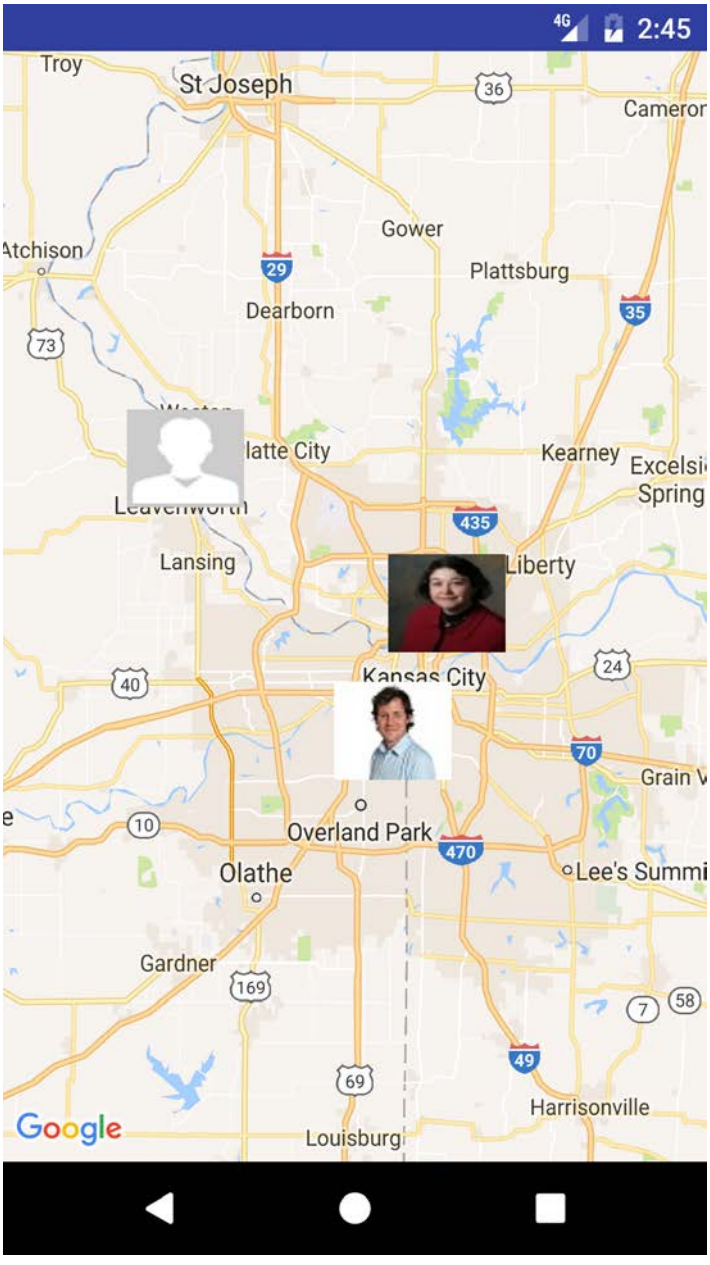
Multiple type questions: User can select multiple options according to his symptoms and condition.



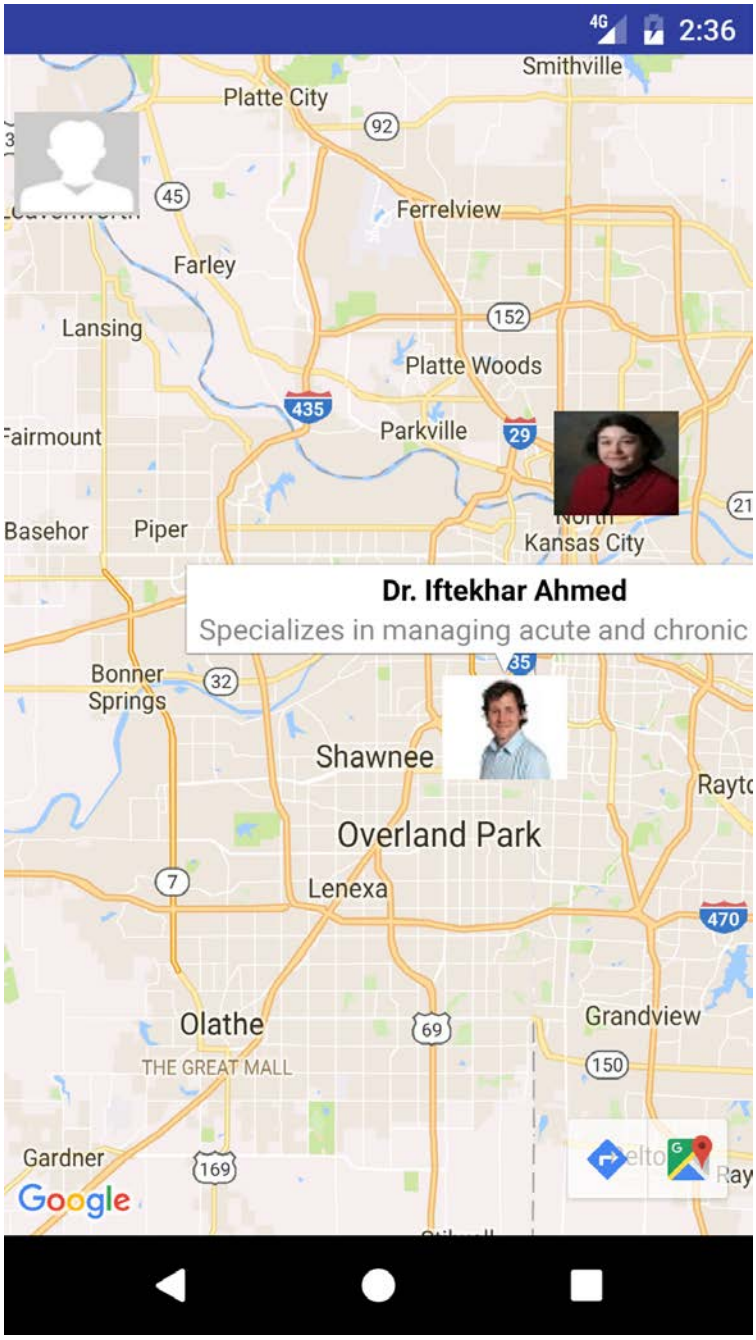
Conditions: According to the response given by the user, application generates the report which involves the condition and its probability. If the probability is greater than 0.8 then user will be given a button doctors near by. By clicking on this button the user can find the doctors according to the condition near his current location.



Maps-Near By Doctors: This google maps displays the doctors near the location of user according to his health condition.



When the user click on the doctor it specifies the information related to doctor.


2:36
Smithville
Platte City
92
45
Ferrelview
Farley
Lansing
152
Platte Woods
435
Parkville
29
Fairmount
Basehor
Piper
Kansas City
Dr. Iftekhar Ahmed
Specializes in managing acute and chronic
35
Bonner
Springs
32
Shawnee
Overland Park
7
Lenexa
470
Olathe
69
Grandview
THE GREAT MALL
150
Gardner
169
Google

.

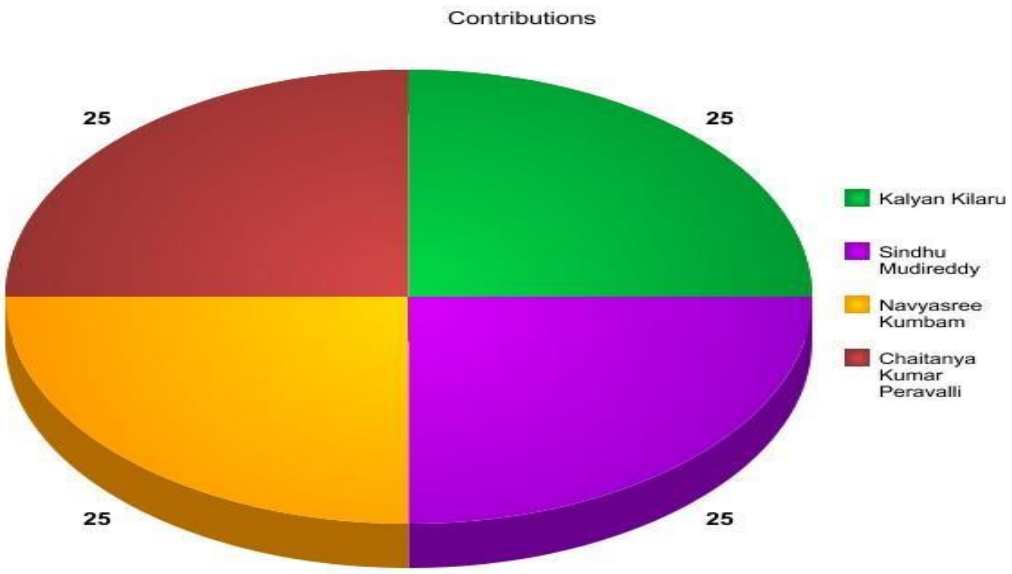
6. Project Management

Work Completed:

- Design and Architecture of the application
- Login authentication using Google Firebase.
- Generated the report by diagnosis using Infermedica API
- Collected the information of doctors using BetterDoctor API
- Maps activity is implemented which displays the doctor's details.

Contributions:

- Sindhu Mudireddy - 25%
- Navyasree Kumbam -25%
- Kalyan Kilaru -25%
- Chaitanya Kumar Peravalli -25%



Work to be Completed:

- Storing all the reports of the user such that they can be accessed in future at any time.
- Improving the User Interface if still required.

7. Bibliography

- https://developers.facebook.com/docs/facebook-login/android
- https://developers.google.com/identity/protocols/OAuth2
- https://developer.infermedica.com/
- https://creately.com/
- http://stackoverflow.com/
- https://www.fluidui.com/