HEALTH CARE

By: **Vishakh Lakshmikanth**

Type: Individual Project

Introduction:

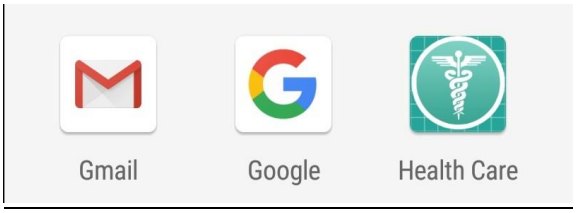
This android application aims at identifying the disease by classifying the input data from patient redefining the symptoms. Later based on the symptoms detected, the application displays the description, precautions, suggestions, pre-medical conditions and so on. On patient's necessity, he/she can locate the nearest hospital/drugstore.

Description:

In this project I have implemented the below mentioned features (in brief):

- ✓ WelCome screen at the initial launching of the app using unique methodology.
- ✓ Feature to Register and SignIn into the app for security validation.
- ✓ Maintenance of explicit user database for external validation and identity security.
- ✓ FingerPrint Biometric Authentication for app security via Hardware API.
- ✓ Dynamic disease checkbox with instant information display upon check-in.
- ✓ Web API based interface for viewing web content.
- ✓ Google YouTube API video for visual interpretation of diseases.
- ✓ Google Maps for nearby hospitals and navigation for it.
- ✓ Invoking other system apps through my application functionality.
- ✓ High-end frame-rate animation visuals by implementing external API libraries.
- ✓ Implementation of user Application-Exit functionality for ease operation.

Screenshots:

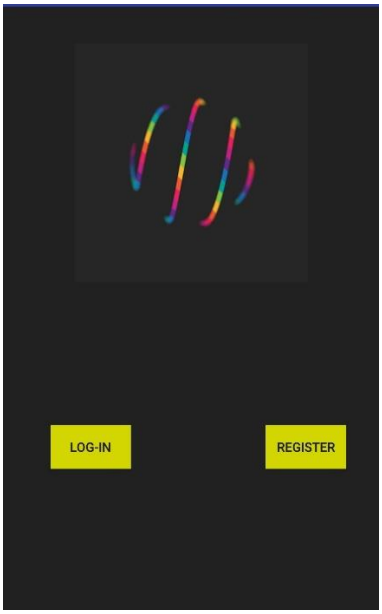


Screen-1

Above scree-1 exhibits the customized app icon when Health Care app is installed on a working android device with an android version above 5.1

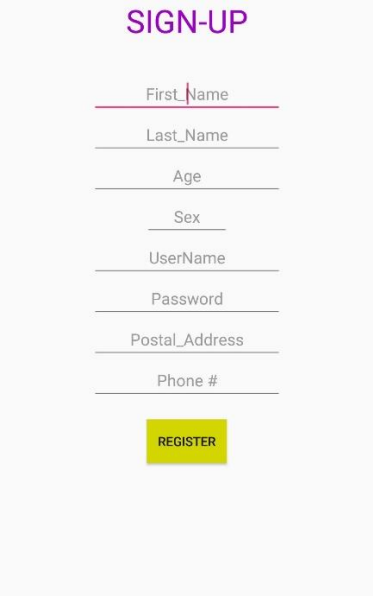
Screen-2

The screen-2 acts as a warm welcome screen for the users wherein the screen timeout is coded for 3secs to facilitate the users to read/view the content on the welcome screen. This feature was achieved by implementing an external library ‘splash-screen’ rather than traditional in-built library.



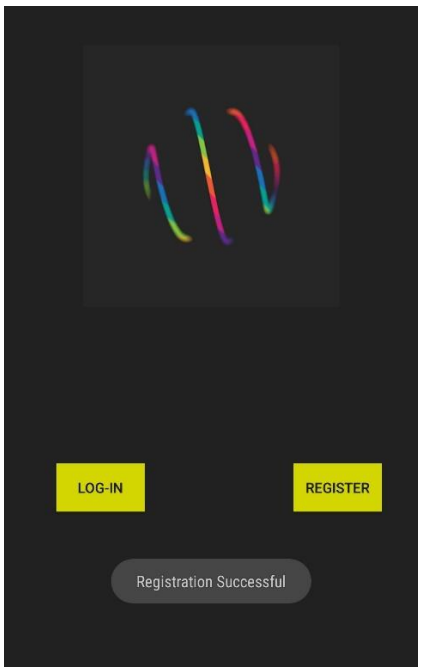
Screen-3

As displayed, this screen-3 provides users the functionality of user registration and login actions thus maintaining the access control of the app from security threats.



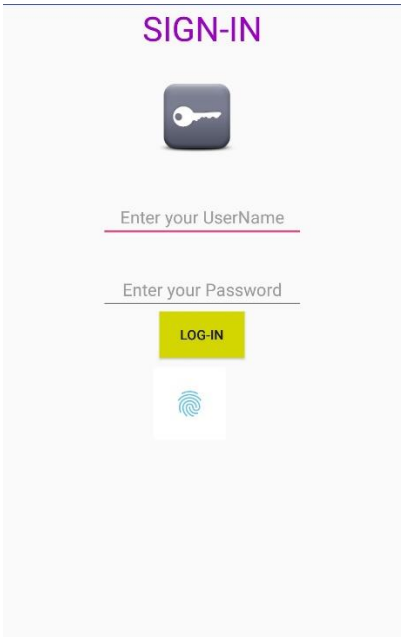
Screen-4

Upon the user selection of Register from screen-3, the user is brought to screen-4, its clearly stated that this activity is solely used for new user registration wherein upon successful registration this enables the user to have login access control for the app.



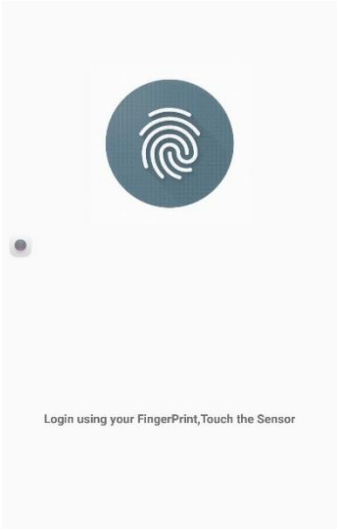
Screen-5

After the user registration, the user is seamlessly brought to the authentication page with a successful toast message displayed at bottom of screen-5. Another notable keynote is that, this page embeds a high frame-rate animation running at top of the screen.



Screen-6

Upon the user selection of Login in screen-5, the user is directed to screen-6, wherein the user can seamlessly login via his/her credentials acquired from successful registration. A significant point to consider is that this app facilitates Bio-Metric authentication for more security provenance and ease access. If required, user can select the fingerprint icon which is placed below the Login-In button for biometric authentication.

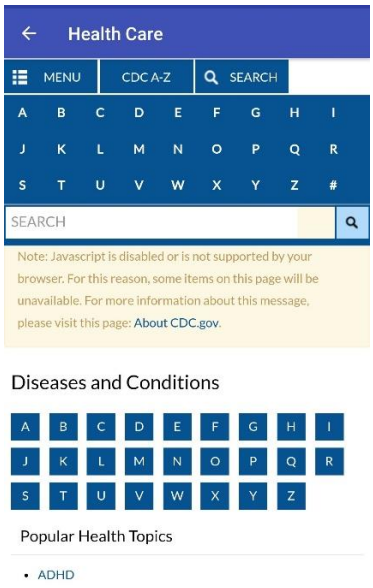


Screen-7

When a user from screen-6 selects the fingerprint icon, then the user is placed onto screen-7 wherein the user will be prompted to place his/her finger on the scanner for authentication/login thus making the user for ease access into the application.

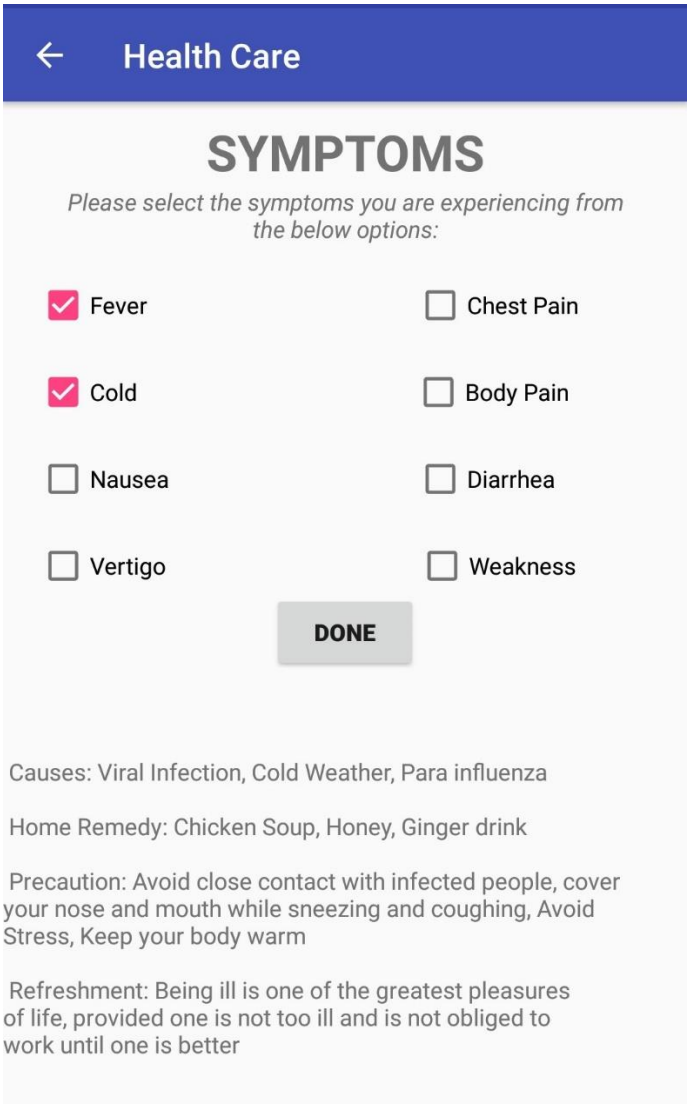
Screen-8

After successful login, the user enters screen-8 wherein the user can select any choice based on his/her medical condition.



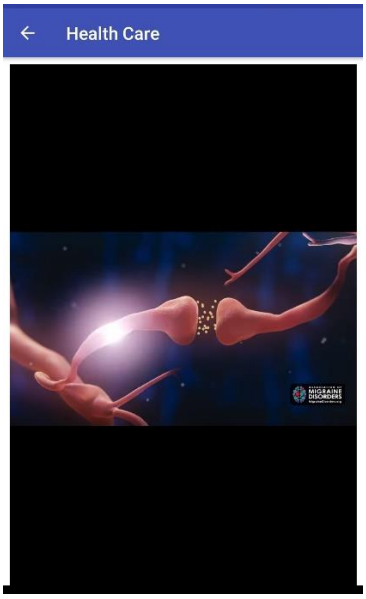
Screen-9

When a user from screen-8 selects that he/she knows the disease, then the application directs the user for screen-9 wherein this screen is generated via Web based API which displays the data in web view and when the user wants additional information then the application facilitates by launching a system browser which will be installed in the user's device thus helping the user to get the right content at right time.



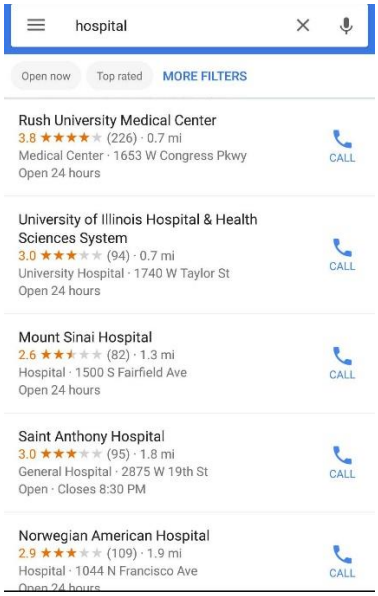
Screen-10

When a user from screen-8 selects that he/she needs help in identifying disease, then the user is brought to screen-10 wherein there is a list of symptoms and when a user selects his/her symptoms then instantaneously there would be causes, home remedy, precaution and refreshment data shown below the symptoms and to mention, the data that gets displayed below is dynamic. This application provides extensive functionality when (cold & vertigo) OR (fever, cold, body pain, weakness & diarrhea) OR when all the symptoms are selected/checked and Done button is pressed.



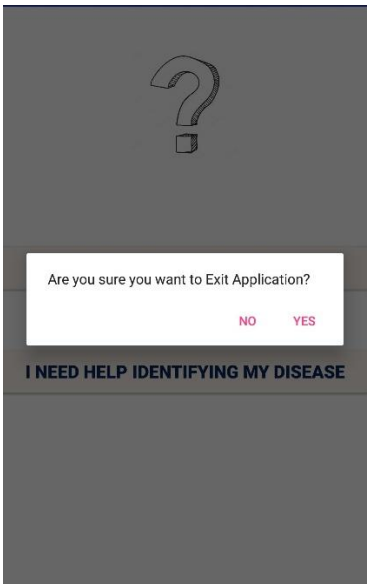
Screen-11

When user from screen-10 selects either a combination of (cold & vertigo) OR (fever, cold, body pain, weakness & diarrhea) via the list of symptoms, the application opens Google YouTube Video in screen-11 pertaining to the symptoms the user has selected respectively. This functionality implements the functionality of well-known Google API for rendering the YouTube video into this application thus helping the patients to get a visual information of the disease that the patient is suffering from.



Screen-12

When the patient from screen-10 selects all the symptoms then the application launches the google map to facilitate the patient to search for nearby hospitals/drug stores as displayed in screen-12.



Screen-13

When the user tends to exit from the application, dialog box as shown in screen-13 pops for user exit confirmation thus avoiding the user from unintentional exit from application.

Final Project Discussion:

This application implements varieties of API's for ease functionality and those are as follows:

A. Hardware API – FingerPrint Reader:
   - ✓ This enables the application to provide extra level of security by implementing biometric authentication and validation. This API has been implemented during the Login phase of this application (screen-6 & screen-7). [Not covered in Lecture]

B. Google API – YouTube Data:
   - ✓ This enables the application to render YouTube video inside the application frame with seek functionality. This API has been implemented after symptoms selection (screen-11) [Not covered in Lecture]

C. Web API – Web Content:
   - ✓ This provides the functionality to view the web content inside the application frame in a well-organized fashion. This API has been implemented when the user selects that he/she knows the disease name (screen-9). [Not covered in Lecture]

D. Graphics API – Splash Screen:

- ✓ This provides the functionality to create a well-defined welcome screen and a high frame-rate animation along the application activities. This API has been implemented in the welcome screen (screen-2) and in other activities (screen-3,5,7) thus creating high-end visual animations. [Not covered in Lecture]

E. DataBase Container:

- ✓ This enables the application to persistently store the user info. such as user-registration field's data that will be used in other activities such as login verification and validation. [Not covered in Lecture]

Challenges:

Experience throughout the journey of this project we quite interesting and challenging.

One among the challenging issues faced during this project development is the incompatibility issue among two functionalities. To be in brief, I have implemented fingerprint authentication and YouTube video playback functionalities together but in my initial development these two functionalities were incompatible each other in a single API SDK (API used 23). The SDK installed on the emulator had its fingerprint scanner support but the application as unable to detect the hardware and was popping with 'unable to detect fingerprint reader' issue.

But the interesting fact is that the same application (without any changes) was successfully able to run on a real android device with all its functionalities without any errors or incompatibility issue.

Future Development:

This application can be enhanced in future by implementing a feature of collaborating with many hospitals to provide on-line(visual) medication and first-aid treatment for primary injured patients. Extending with this future aspect, we can add the functionality to provide on-click call facility to patient's family doctors or personal assistants and later we can tie-up with local and international drug store for seamless prescribed drug home-delivery service.

Experience:

- ✓ My interaction with Android Studio and Android SDK was quite good with enriched programming interface and numerous options to play with. But to mention, android studio was consuming lot of time than expected while launching the application and while during gradle build process. To be specific, while programming in .xml file most of the time the preview of the layout was not loading on-time (not dynamic) then I had to regularly rebuild the project to get the updated layout preview.
  As a possible solution, android studio must be compatible with lower hardware specification devices so that the application loads and builds the project seamlessly.

- ✓ My overall experience as an Android Developer was quite outstanding. I got an opportunity to learn and experience mobile computing applications which was a new platform to work with. All the weekly assignments boosted my confidence to take-up challenges during my project development by enabling me to implement many functionalities in a creative way rather than a traditional manner.
  Truly, from my entire project development I got lot of positive experiences such as the implementation of hardware level fingerprint reader, graphic animations and many more. This project exposed me to a lot of new domains such as mobile web application development and so on.