



Android Based Smartphone Application for Healthcare and Wellness

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Abstract: This is an android based application that can be used when minor medical help is needed and doctor is unavailable. This application allows you to manage your health by suggesting medicines, setting reminders (to have water, fix appointment with doctor, take medicine etc.), view exercises and sending a message to your emergency contacts with the location, in situation of critical need. This is achieved by integration of technologies like Cloud, DBMS and GPS and an efficient algorithm that makes the medicine suggestions reliable. It aids in providing overall health and wellness facilities to the user via data stored in the cloud so that it occupies less memory and runs smoothly.

Keywords: Android, Emergency, Healthcare, Reminder, Cloud, DBMS, GPS.

1. INTRODUCTION

Health is a major issue in developing countries these days. As people are prone to diseases, problems like allergies, infections, stomach disorders etc. are very common these days. Issue is that doctors are not available everywhere and every time. At time people come up with situations where minor medical help is needed but it is not possible to reach a doctor immediately ex: while travelling, late night etc. It is our duty to keep our body fit and healthy.

Keeping in mind that smartphone is the most common “personal computer” today, ‘always on’, highly portable and can record a large number of details about its user’s current status and whereabouts, we are introducing an android application whose objective is to suggest medicines with formula and dosage, suggest exercises to continue a healthy living and get rid of minor pains, set reminders and send a message to their emergency contacts when needed.

The application is designed on Android Studio. Private cloud and server hosting is used. All data is maintained on cloud. Other technologies used are SQL and GPS. Operating system is Linux. It can be helpful in sectors where healthcare facilities are not easily available and emergency situations. It is life, money and time saving application which is easy to use and provides a good user interface.

2. PROPOSED SYSTEM

The proposed system is based on Android Operating system which is especially designed to help users in times when reaching a doctor is not possible. It will help them treat their problem until next time they can visit a doctor.

Android is a Linux-based operating system designed primarily for touch screen mobile devices such as smart phones and tablet computers, developed by Google in association with the Open Handset Alliance. Android was built from the ground-up to enable developers to create compelling mobile applications that take full advantage of all a handset has to offer.

The database holds tables for users, medicines, symptoms, formulae, emergency contacts and reminder. Every time a user makes a request, data is fetched in real time from the cloud i.e. involves real time processing.

Since Internet and smartphones are used by majority of the population these days, the application can be highly useful in Rural Areas or Places where doctors, hospitals and other medical facilities are not available 24x7. Travelling to new places, where we cannot easily locate nearby doctors. In such cases of illness, the user can access the application for reference. In case of a Medical emergency, users can notify nearby hospitals, relatives or friends with the emergency alarm feature. The application also provide various fitness exercise tutorials for health benefits.

3. ADVANTAGES OF THE PROPOSED SYSTEM

This application saves time of visiting a doctor for minor help, saves money and most importantly save lives in case of an emergency by informing the near and dear ones.

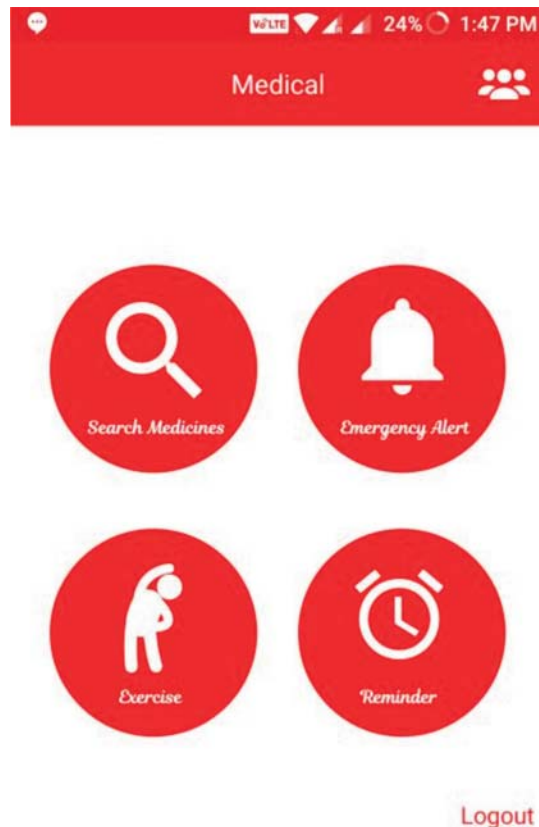


Figure 1: Home screen

Also the reminder and view exercises module helps the user take care of his health on a daily basis.

The reminder focuses to help a user not to forget about small actions to keep a check on his/her health like by setting an alarm to have medicines, fix appointments with the doctor or drink water, whose good consumption helps get rid of minor ailments very easily.

This system helps users in situations of unavailability of medical help. It helps users take an immediate action until they meet a doctor next time. Such situations may be when a person is travelling, or it's late in the night or it might help a student in the hostel and also an elderly person staying alone can call for urgent help via the emergency feature. Also this application will be of great help in areas where medical facilities are not so common.

Health is such an important issue but in the current time, people don't pay much heed to it and suffer later. But another thing is that everyone does carry an android phone and has access to an internet connection. We are making use of these two to let everyone manage their health and stay fit.

4. IMPLEMENTATION

- 1. Search Medicine :** This module helps the user select his/her symptoms from a multi-select scrollable list. The symptoms selected are matched against in the disease table *i.e.* A symptom-disease analysis is conducted in the back end. It is done in five steps, first we find out the disease to which the symptoms are referring. To make it more reliable and increase the efficiency a fraction is calculated. For example, if the database has four defined symptoms for malaria and four for dengue and the User selects any three symptoms out of which two are common for both dengue and malaria, say high fever and headache. But third symptom is shivering. So the logic behind the result is as follows, it calculates that fraction for dengue as $2/4$ but for malaria it is $3/4$, which is higher, thus, due to high match with malaria, it is preferred.

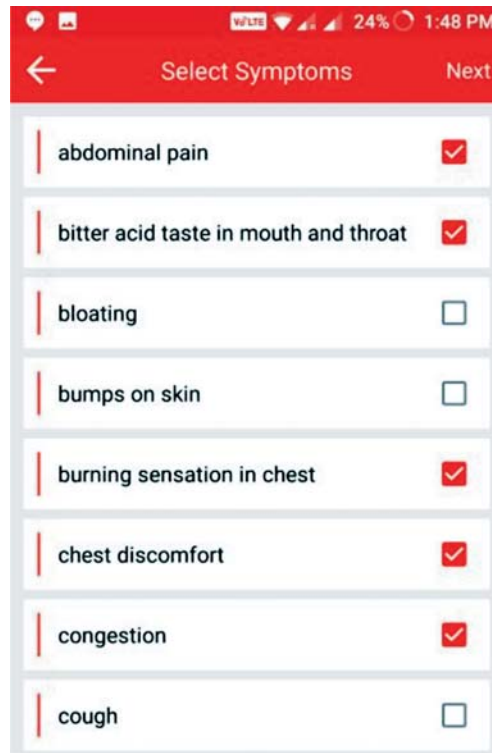


Figure 2: Selected symptoms

Once the disease is identified, the 'disease id' is mapped in the 'formula' table. The corresponding 'formula id' is picked and is matched against 'medicine name' in 'medicine' table which then suggests the medicine. The medicine is suggested to the user with intake dosage as per user's weight. Since weight is an essential factor in several medications. The suggestion also lets the user know the formula name of the medicine so that the user can take whatever medicine with the same formula is available.

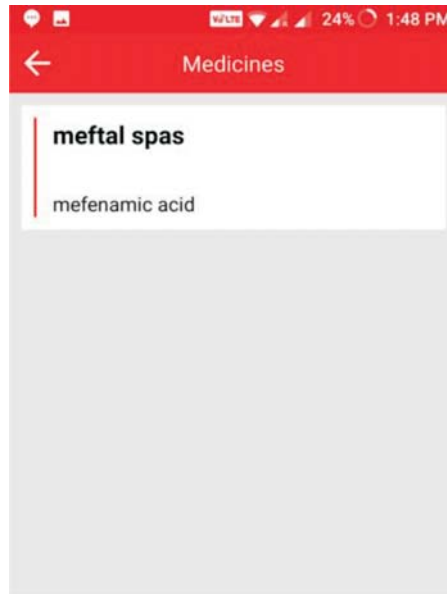


Figure 3: Medicine and formula suggestion

2. **Emergency alert :** This part of system gives the user a convenient way to send a help message to their emergency contacts. The user can add the emergency contacts which could be any one, *i.e.* their doctor, family or friends and by clicking on the alert now button a message with the location of the user would be sent. Who will receive the alarm messages is manually predefined by users.

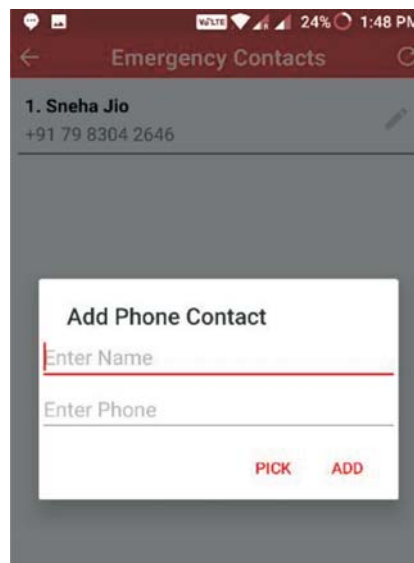


Figure 4: Emergency contact

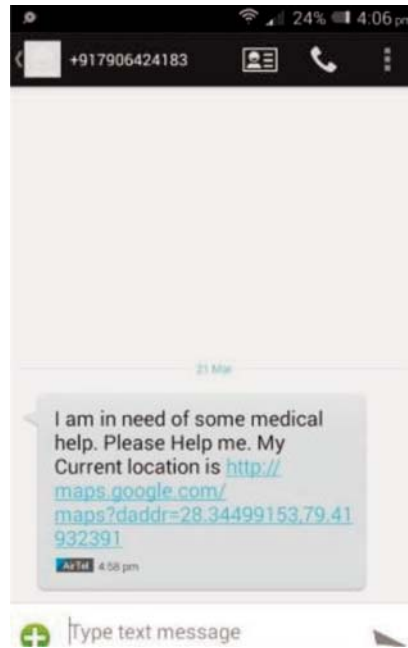


Figure 5: Emergency Alert

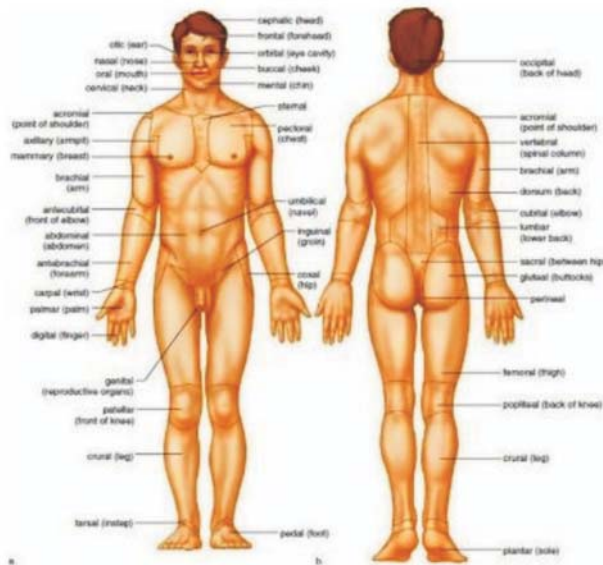


Figure 6: Exercise module

- Exercise :** The exercise section of the application shows a human figure image. Each part of body is a dynamic link to exercise videos. This feature lets the user view video demonstration of exercises that he/she can perform on a daily basis to avoid any orthopaedic problems. Also these exercises can be performed to get rid of any minor pains. The exercise videos are classified as neck, knees, shoulder etc. On touching the body part for which the user wants the exercises a video for the same is provided.



Figure 7: Screenshot of categories

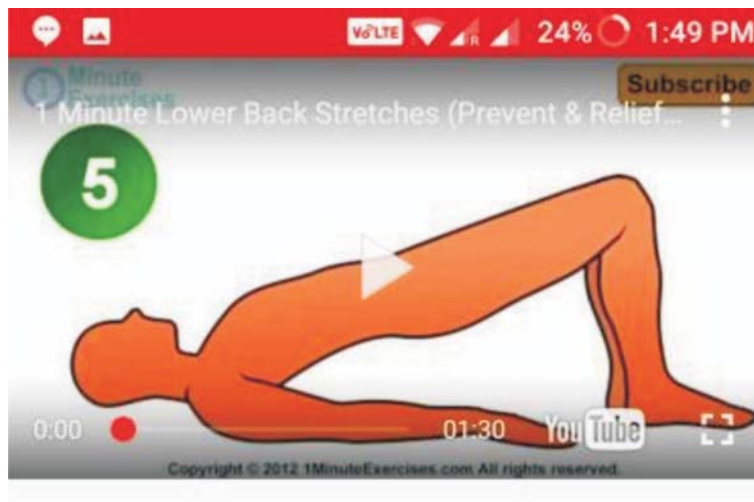


Figure 8: Exercise video

- Reminder :** The objective of this feature is to remind the patients of their dosage timings through Alarm Ringing system so that they can stay fit and healthy. A medication reminder can help to prevent these life-threatening mistakes. They remind the users to take the right medication at the right time. This feature focuses on the people who forget to take medicines on time. It allows users to set an alarm along with section for date, time and medicines and its description which will allow them to set alarm for multiple medicines at different time intervals. All the information will be saved in the database. This makes any time availability of the patients' records. The notification system will send a notification after setting an alarm. The user can activate or deactivate the notification accordingly.

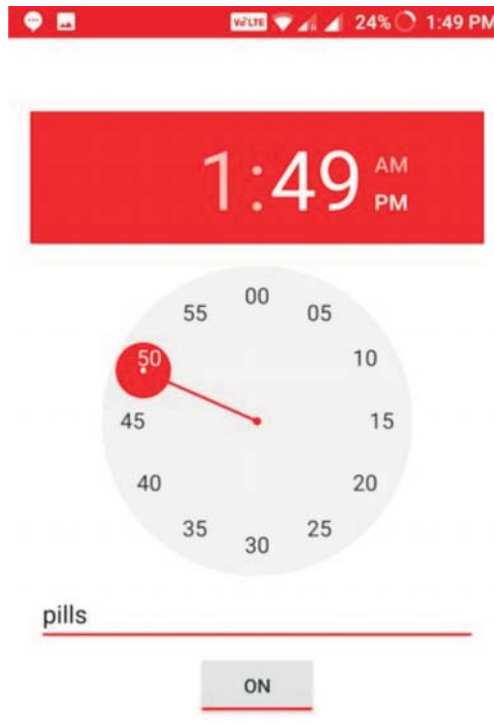


Figure 9: Screenshot of setting reminder

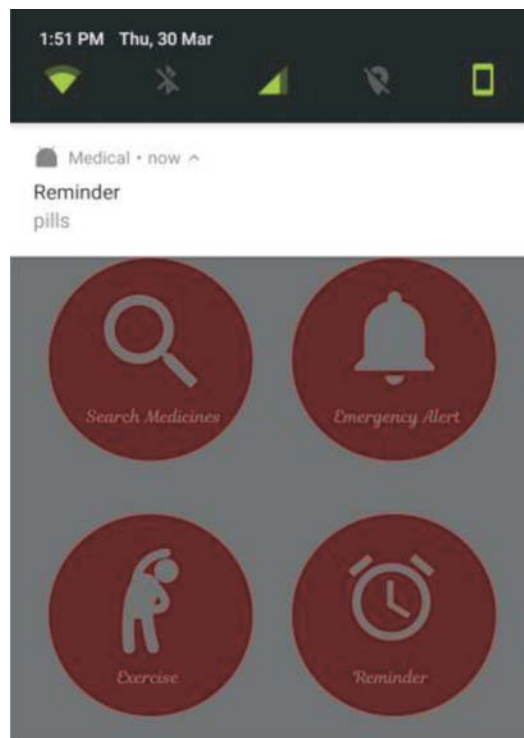


Figure 10: Screenshot of reminder ringing

5. RESULT

The mobile application was developed with the help of the Android Studio. Front end was designed using java programming language and server requests were handles with php. Filezilla tool was also used for uploading files to the cloud server.

The application covers all age groups. The features like emergency help are extremely useful for the elderly who are staying alone and also for patients with any illness that requires instant medical aid. Exercise module is a good way for youngsters and adults to stay fit by following the exercises on a daily basis. The search medicine can help everyone like during travelling, late nights or hostellers. The reminder module keeps a check on your forgetfulness and reminds you to take medicines, water, fix appointments etc.

We offered trial to people of different age groups and they found it really helpful. Hence this application is of great use to everyone to lead a healthy life.

6. CONCLUSION AND FUTURE SCOPE

The application size is merely in megabytes as all data is hosted on cloud to provide smooth functioning. Using cloud improves the overall performance of the application and GPS provides precise location to the emergency contacts of person who is need of medical help. The user interface has been made such that all age groups can use it easily.

This application saves user's time, money and most importantly life in case of an emergency.

Future work includes improving the overall performance by addition of new and improved features, more diseases and corresponding symptoms and medicines. Also the medicines suggested will be directly ordered from nearby pharmacy stores. Also the application will not only suggest medicines but also "do-it-yourself" home remedies. Various improved ways to increase the disease-medicine analysis will also be introduced.

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