

Healthcare System for Covid-19 using Android

¹Kalyan Bamane, ²Aishwarya Gaikwad, ³Aditya Gujar, ⁴Renuka Honde, ⁵Mayuri Hire, ⁶Sumedh Mahajan

¹Assistant Professor, Information Technology, DY Patil College of Engineering, Akurdi, Pune.

^{2,3,4,5,6}B.E., Information Technology, DY Patil College of Engineering, Akurdi, Pune.

ABSTRACT

Our main aim is to develop a healthcare system which will help in the treatment of covid-19 disease. Our application offers numerous services viz. Covid Tester, Plasma Donation, Book Appointment, Database Service, Helpline service, etc. Our application can be used by doctors to view the symptoms of patients and detect their severity. The patient's information of these services will be stored in the database record of the application. We have thought of implementing the following design which consists of Android GUI, SQLite Database, Android Technology and the services our application can provide. These services can have their own database as well as they can be designed (if needed) using different technologies. Starting with the GUI, it interacts with the user showing what services this application can provide. As the user demands a particular service, the record of interaction will be stored in the database and the database records can be accessed by doctors to treat the patients. In our application, users will act like clients and the database registry will act like server.

Keywords: Android Technology, Android GUI, SQLite Database.

INTRODUCTION

In the current situation of India numbers of covid positive patients are increasing rapidly day by day. As the number of cases of covid-19 are increasing, there is manually load on doctors, families while taking care of corona patients. In order to cope up with the problem, we have come up with a solution of Health Care System Network for doctors and patients. In this system, people who have symptoms of COVID-19 can test their positivity of disease through online assessment implemented in this software. This online assessment test result and information will be reviewed by the doctors included in the panel. Due to these facilities of online checkup, the crowd which is gathered in the hospital for checkup and testing of virus will be reduced to some extent. If people having dangerous disease like diabetes, high blood pressure want to carry out their regular monthly checkup, then they can do it from their home by consulting the doctor online through our application. People recovered from Covid-19 can also register themselves for plasma donation. People can also seek help from the helpline service provided in our application.

1.1 EXPERT SYSTEM

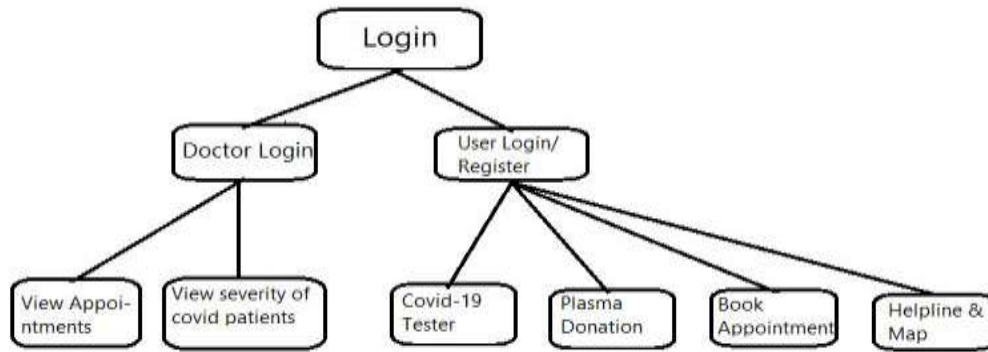
A. EXISTING SYSTEM

The current system only have limited options like online assessment, helpline and vaccination. It only focuses on the current active patients and the other diseased patients and people recovered from Covid-19 are ignored by the current existing system.

B. PROPOSED SYSTEM

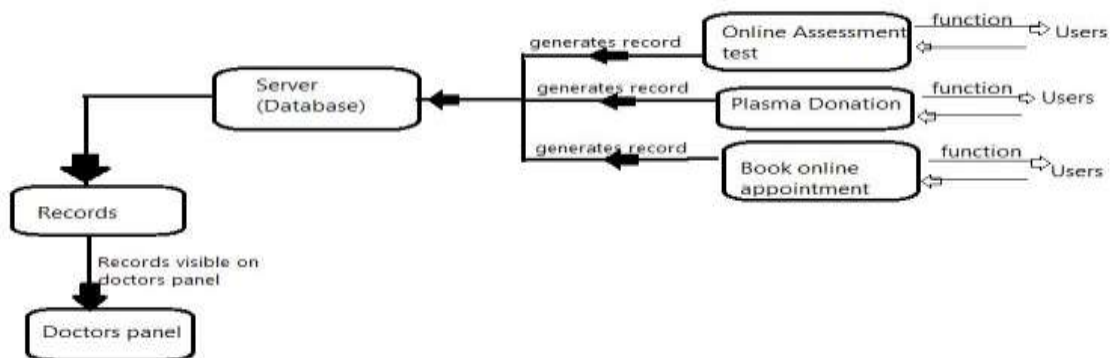
It provides a plasma donation registration facility for the people recovered from Covid-19. People can even book doctor’s appointment through our application and consult doctor online. Our proposed system focuses on the active Covid-19 patients and the patients recovered from Covid-19. Our proposed system will help to cope up with the crowd to a greater extent.

1.2 SYSTEM ARCHITECTURE



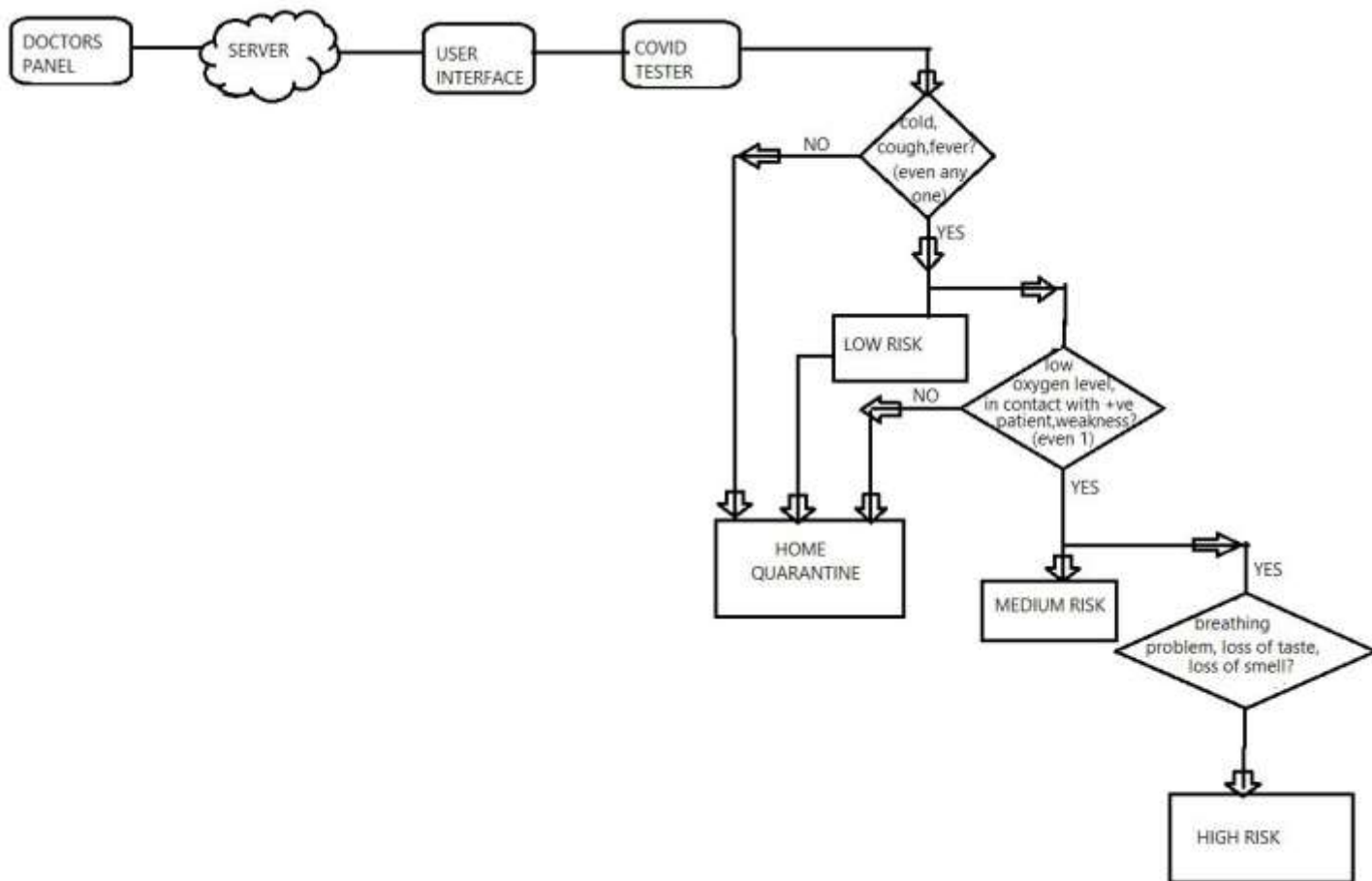
The proposed system architecture provides two options for Doctor Login & User Login. Both the options will have separate interfaces through which they can interact with the database. The above mentioned services will be provided to users and doctors respectively through the interface. The records of user interaction will be saved in the database with a unique entity such as Email ID for easy access of database and to reduce redundancy of data. As all the records are saved safely at a server(database), it becomes easy for doctor’s panel to easily and quickly access the patients record.

A.DOCTORS PANEL



Doctors panel is specially designed so that doctors can monitor and analyze patients virtually. Doctors can keep a track of patient’s health record through the server. If a patient is found to be at high risk of Covid-19 then specific actions can be taken immediately. It becomes easy for the doctors to keep track of COVID patient’s health those are home quarantined by continuously monitoring their health and diet. If there is a shortage of plasma in the hospitals, doctors can view the records of people who can donate plasma and the plasma requirement can be fulfilled quickly. All the record of patients are saved at one server so it becomes easy for the doctors to access the records quickly and easily.

B. COVID TESTER



The main aim of covid tester is to determine the severity of risk of covid-19 disease. Based upon several factors or symptoms the severity will be determined and accordingly the user will be home quarantined or admitted in the hospital. This function will give a clear picture to the users about the risk and accordingly users can contact the doctors before the condition worsen. This would help the doctors in controlling the covid situation in the initial stage to some extend.

WORKING PRINCIPLE

The basic feature of our system is login/register. There are two options for logging into the system. Those options are (1)login as a user and (2)login as a doctor. Once the user logs in into our system, he/she will have to complete their profile by entering valid details. Once that is done the user will have access to other features on the homepage.

On the homepage users will get numerous services like book appointment, plasma donation, covid tester, maps , helpline, feedback. When a user wants to consult the doctor online then they can book online appointment. Due to this the risk of getting infected by travelling to the hospital becomes less. Also the crowd in the hospitals can be controlled to a limit.

If a user thinks he has symptoms of Covid or if the user was in contact with a covid patient then they can take online assessment by choosing the covid tester option provided in our system. In this service a questionnaire will be provided based on the medical terms and user has to correctly answer the questionnaire. Depending upon the answers given by the users, the risk of getting affected will be determined.

When the users recover from Covid-19, they can help other Covid patients by donating plasma. This service will only be available to those users who are recovered from Covid and those users can register themselves for plasma donation. If a user has not been affected by Covid-19 then he cannot register for it and his details will not be saved in the database for plasma donation.

Sometimes Covid patients are not treated good by the society or they might need ambulance facility to go to the hospital. In this case, there is a service of helpline provided in our system. When the user clicks on helpline facility, he/she might get all the emergency contact numbers. By clicking on the particular number, the call will automatically be connected to the facility through dial pad.

If the user wants to travel to the hospital but is unknown about the routes, then the user can take help of maps facility implemented in our system. Through maps facility the nearby hospitals, medicals, labs, etc can be located easily.

If the user logs in the system as a doctor, then they will get the options on the homepage to view the records of users. The options provided will be (1)View Covid Tester Reports, (2)Plasma Donation Record, (3)Online consultation. By choosing those options, doctors can view the severity and the risk of getting affected by covid among the people and they can take the proper precautions at the proper time. Doctors can even keep the track of patient's health by continuously monitoring their health and diet.

If there is a shortage for plasma for Covid patients, then the plasma can be immediately arranged for Covid patients due to the facility of plasma donation records. By this facility patients recovery rate will be boosted to an extend.

Through online consultation facility, doctors can carry out their regular checkup. This facility is mostly beneficial for the people suffering from serious diseases like blood pressure, diabetes, cardiac disease, etc because these people are at a high risk of getting affected by Covid-19. Due to online consultation people don't have to travel to the hospital. They can talk to doctor from their home and continue with their medication.

METHODOLOGY

1.ANDROID TECHNOLOGY:

Android is an open source platform for developing mobile applications. Android applications can be developed using Android Studio platform which is an open source platform. It provides its SDK freely to minimize the development and licensing costs. By using Android, you can integrate and tweak the mobile app according to your business need. Nowadays Android applications are scripted in Java programming language with the help of set of libraries. Anyone can build Android applications with the good knowledge of Java programming language Android even helps with the protection against viruses. Thus, safety, scalability, versatility and reliability are the exceptional benefits of android application development.

2.ANDROID GUI:

GUI means Graphical User Interface which is used to interact with the users. The primary goal of GUI is interaction. The design of GUI should be good and simple so it becomes easy for the users to interact with the system. If the architecture of GUI is convenient then it becomes easy for the users to give correct information so that the correct data is stored on the server. Indirectly this correct data helps in correct analysis and prediction. For Android application development, Android Studio provides a drag and drop feature so that the designing phase of GUI becomes easy and fast.

3.SQLite DATABASE

SQLite is an in-process library that implements a serverless SQL database engine. The applications interact with the SQLite database read and write directly from the database files stored on disk. Reading and writing operations are very fast for SQLite database. It only loads the data which is needed, rather than reading the entire file and hold it in memory. If you edit small parts, it only overwrite the parts of the file which was changed. While creating a database we don't need to install it. It just requires installation of few libraries to run SQLite database. SQLite database is accessible through a wide variety of third-party tools. Due to such advantages it becomes easy to work with SQLite database.

CONCLUSION

This work proposes a new mobile healthcare system for COVID patients. This application accept the relevant information from the patient and transfer this information to expert system and make ease to get rapid diagnosis for remote area patients. By using this system, the healthcare professionals can monitor, diagnose, and suggest medication to their patients. Three parts : a records data from a patient in real-time, an android mobile phone that forwards the received data to a central server and finally a server responsible to store and analyze that data by expert system. The use of wireless technology is to increase the functionality of the system. It is also beneficial in reducing or minimize to minimize human error and to maintain past data.

REFERENCES

- [1] Android Based Health Monitoring System for Cardiac Patients, Author-Jay Mourya, University of Mumbai, India, 04 April 2017, IRJET.
- [2] Android Based Health Care Monitoring System, Author-Shrinivas R. Zanwar, Shahu College of Engineering, 07 Jan 2017, ISSN.
- [3] DEVELOPMENT OF ECG MONITORING SYSTEM USING ANDROID APP, B. Rama Murthy, s, Rayalaseema University, Kurnool, 18 March 2017, IEEE.
- [4] Smart Hospitals Using Internet of Things, Pooja Kanase, Pad. Dr. D. Y. Patil Inst of Engg, 03 March 2016, IRJET.
- [5] Rajesh Naidu, "Android Based Healthcare Monitoring System" International Journal of Applied Sciences, Engineering and Management ISSN 2320 – 3439, 1, January 2016, pp. 98 – 100.
- [6] Nidhi Mutha, "Patient Health Monitoring Using Android Application" International Journal of Innovative Research in Computer And Communication Engineering Vol. 4, Issue 3, March 2016, IEEE.
- [7] Amit Maurya, "Design of a Wireless Health Monitoring System", International Conference on Control, Instrumentation, Communication and Computational Technologies (ICCICCT) 2014.
- [8] Uttara Gogate, Jagdish Bakal, "Smart Healthcare Monitoring System Based on. Wireless Sensor Networks." Computing Analytics and security trends. 2016.
- [9] Manisha Shelar, "Wireless Patient Health Monitoring System", International Journal of Computer Applications (0975 – 8887) Volume 62– No.6, January 2013.