



IJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 Issue: III Month of publication: March 2021

DOI: <https://doi.org/10.22214/ijraset.2021.33353>

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Android App for Online OPD Appointment and Hospital Information System

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Abstract: *In this modern world, People are very busy with their schedules and they are not taking care of their health status. Whenever we go to a hospital we have to wait for the doctor to come and attend the patients. Also to make the appointments a patient has to go to the respective hospital and make the appointments. Though technology has developed so far, the mobile phones play a major role in making the appointments. In olden days when the mobile phones are not developed as like now, People used to call the hospital and make their appointments. Even now people are not fully adapted to technology. Our aim is to make a simple application that will help the patients to make the appointments, pay bills online, consulting with others and everything that comes under the same single application. Here the android application that we created is very simple to use and maintain. We use Android Studio for designing the application and the Cloud Fire Store as database. In our application we can make payments online, video consulting, book appointments and helps us to save a lot of our time in our busy schedules.*

I. INTRODUCTION

The primary usage of our mobile application is to provide easy and comfort and to reduce the waiting time of the out patients in a hospitals. In this modern world the population in our country is growing rapidly, so people have to establish their connectivity with nearby hospitals and medicals to save their time and energy because everyone is doing their work in day and night irrespective of time in digital world so time saving and spending a quality of time is very important. Our application reduces the waiting time of the out patients in a hospital. Patients waiting in the hospitals will increase their stress and the person could feel restless, the doctor cannot be prepared for any time in the hospitals because they need their own time to spend with family or to do personal works so pre scheduling their work and updating it to the hospital the people will know the status of the doctor and they can fix their appointment in accordance with the appropriate time it will increase the betterment of treatments and the patients could take rest in home peacefully and could get rid of the disease and get proper diagnosis very effectively. Moreover the crowding in the hospitals out patients were could make the spreading of contagious disease very blasting and the contagious disease will easily spread faster to the children and aged people and they suffer more and it makes more risk factors to their life and discomforts their family. The hospitals management will also struggles more when crowding occurs, the nurses and compounders have to work more to tackle the crowding and in results in more human work wasted. The suffering of children and aged is very worst hospitals disaster we can completely avoid it by using our mobile app. By using our application the hospitals could be used effectively and the usage of disinfectants would be reduced to a large level the intensive care unit also functions stress free because all the workers in the hospitals can do their job easily without the rush of out patients department. People could also pay the hospitals bills through our application it also saves time and effort people can also get the treatment from home via video calling.

II. RELATED WORK

P. Sivakumar [1] proposed an application that gives the accessible clinic and specialists subtleties dependent on the patient's close by area. The abutting position of clinical focus is dealt with the in-grained goodness of GPS in Smartphone. In Hospital administration by a solitary snap client can find closest emergency clinics with offices and appears the rundown of expert specialists accessible and furthermore client can ready to view and contact the close by blood givers. Intrigued clients can likewise enroll them as a benefactor utilizing this application.

Sura Abed Sarab [2] proposed this project is to automate or make online, the process of day to-day activities like room activities, admission of new patient, discharge of patient, assign a doctor and compute the bill etc. This made the complicated process of hospital management as simple as possible using structured modular technique menu oriented interface. The software is designed in such a way that user may not have any difficulties in using this package. The main purpose of this exercise is to perform each hospital's activity in computerized way rather than manually which is time consuming.

Bhavana Vutla [3] proposed an application that shows the measurements of number of cases recorded progressively upon client's solicitation. The framework permits the client who is now influenced to give their area so it assists with recognizing the dengue-inclined districts.

The framework permits the client who is suspicious about their wellbeing status, to follow if it's really dengue, provided that this is true, gauge their degree of earnestness accordingly being helped to the correct medical care places through the application. The framework permits client who'd prefer to get the total data about dengue, it's side effects, the influenced or dengue seen districts, preventive measures to be taken and so on.

Md. Nasfikur R. Khan [4] proposed an application that can keep a record of the users history, send a remainder exactly before two hours from the appointment time and send notification if the doctor is unavailable on the appointment date and time. The app also includes 24/7 doctor service where patient can reach medical assistant just by calling the hotline number. Finding blood donors get easier than ever as this app will allow users to track donor availability. For the donors this app will keep record of date and time of donation and set an automatic remainder three months from the blood donation. Getting 24/7 ambulance services will be easier through this application.

Tran Le [5] proposed a few discoveries expanded PC insight as the principle use of AI which called profound or non-profound AI. The hole from past models is utilizing one capacity or one kind of AI to break down, estimate illnesses as opposed to aiding patients and specialists in medical procedure.

There are infrequently white papers utilizing AI for patients way to deal with preparing them to find out about their sicknesses or medical procedure.

The framework permits the client who is suspicious about their wellbeing status. In this manner, with creating of more than one capacity of AI, the paper fabricates a diagrammatic applied model of man-made reasoning on clinical application running Block chain innovation as a well disposed colleague for the two patients and specialists to convey them during pre-medical procedure, medical procedure and post-medical procedure.

Luona Yin [6] proposed a patient can describe his/her symptoms with searchable encryption and sends the cipher text to the cloud server. Then, the electronic health record (EHR) cloud server matches information of the department associated with similar symptoms and sends the department in the cipher text to the patient.

Furthermore, the patient sends his/her requirements with attribute-based keyword search encryption to doctors' profile system (DPS) server, which can search for the appropriate doctors corresponding to the encrypted requirement without decrypting it. The doctors' profiles are sent to the searcher in the cipher text. At last, the patient can make an online appointment with the expected doctor.

Cheng Xie [7] proposed that the automation technologies and health informatics, to a certain extent in China, increases the possibility of influencing healthcare resource distribution via scalping. In this paper, Cheng proposed a method for mining user profiles from event logs of mobile healthcare APP to detect ticket scalpers in elderly healthcare services. A set of experiments on a real world test set and hospital event-logs showed the efficiency of the method.

The method was then deployed in a healthcare APP, called Qu Yi Yuan, to analyze ticket scalpers. It achieved 72% precision and 77% recall for scalper detection on the test dataset of Qu Yi Yuan. It discovered 320 (about 5% of all users) suspected ticket scalpers from the APP users of a real world hospital.

Liu Weilong [8] proposed an online consulting interface design is not simple and beautiful enough, it can be further improved, and the communication between doctors and users also can also be more convenient and quickly to achieve some chat software on the market for text, speech and video effect. The function of outpatient appointment is need permission from the hospital. This application will be a helping hand for people who find it difficult to select hospital and contacting the doctor. The Doctor version should be developed and so on.

III. PROPOSED SYSTEM

In this proposed system we are implementing an Android application that enables the user to book the appointments in a very easy way and also this application has a video calling facility that improves the communication in a modern way. Through video calling the patients can communicate and get consulting in a virtual manner. We also have an online payment option that makes the payments very simple and saves a lot of time. The patient doesn't need to wait for booking an appointment and also they don't have to go to the hospital for making the appointments. This application reduces the time and advances the appointment methods and billing system.

A. Block Diagram

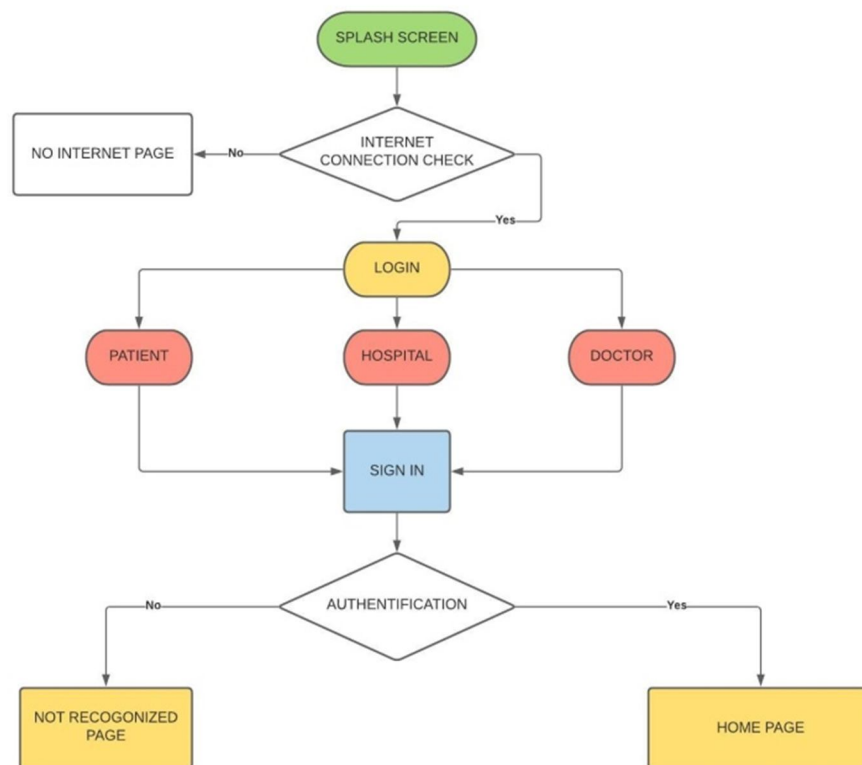


Figure 1 Block diagram of the proposed system - Login

When we open the application there will be a splash screen in the front. After that the login page will appear. In that login page we can create our user accounts. If we are patients we can select the Patient login and for a Doctor and Hospital there are separate logins available. If we don't have an account we can click the sign up button and can create a new account. After creating the account we can login in into the application. After login we can see the respective sessions in the application. If the login information is incorrect we cannot access the application.

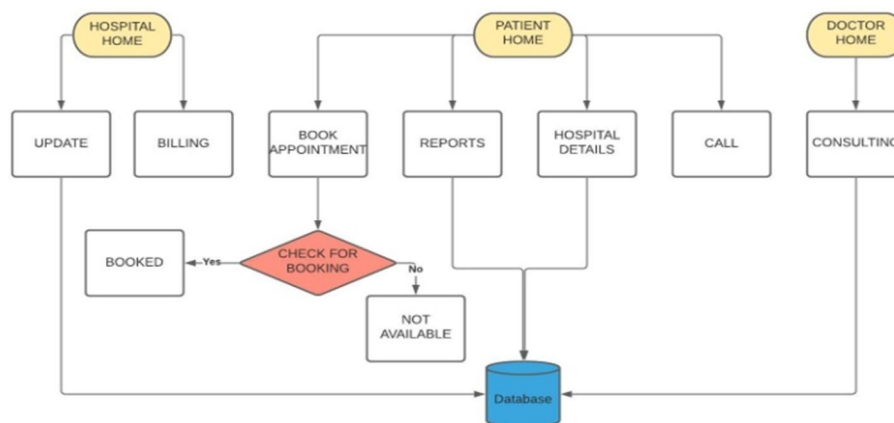


Figure 2 Block Diagram of proposed system – Application system

After login into our user accounts the corresponding systems will be shown. In the Patient login we can see the appointment booking system, billing system, health tip area, and a video calling facility to consult virtually from a remote location. In the Doctor login the doctor can communicate with the patients and can do the consulting online. In the Hospital login the Hospital can maintain the records of the patients in a safe and secure manner.

IV. SOFTWARE DESCRIPTION

A. Android Studio

Android studio is an authority programming incorporated improvement climate (IDE) for Google's Android Operating framework, based on JetBrains' IntelliJ IDEA programming intended for Android advancement. It is accessible for download on Windows, macintosh OS and Linux based working frameworks or as a membership based administrations. It is the substitution for the shroud Android Development device (E-ADT) as the essential IDE for local Android application improvement. Android Studio underpins overall similar programming dialects of IntelliJ (and CLion) for example Java, C++ and more with expansions, for example, Go and Android Studio 3.0 or later backings Kotlin and "all Java 7 language highlights and a subset of Java 8 language includes that shift by stage variant."

External tasks backport some Java 9 highlights. While IntelliJ states that Android Studio bolsters all delivered Java variants, and Java 12, it's not satisfactory to what exactly level Android Studio upholds Java forms up to Java 12. Probably some new dialect includes up to Java 12 are usable in Android.

B. Fire Base

Firebase advanced from Envolv, an earlier startup established by James Tamplin and Andrew Lee in 2011. Envolv gave designers an API that empowers the mix of online visit usefulness into their sites. Subsequent to delivering the visit administration, Tamplin and Lee found that it was being utilized to pass application information that were not talk messages. Engineers were utilizing Envolv to adjust application information like game state progressively across their clients. Tamplin and Lee chose to isolate the talk framework and the continuous design that controlled it.

They established Firebase as a different organization in September 2011 and it dispatched to the general population in April 2012. The item helps programming engineers in building constant, synergistic applications. Firebase currently incorporates with different other Google administrations, including Google Cloud Platform, AdMob, and Google Ads to offer more extensive items and scale for engineers. Google Cloud Messaging, the Google administration to send message pop-ups to Android gadgets, was supplanted by a Firebase item, Firebase Cloud Messaging, which added the usefulness to convey message pop-ups to the two iOS and web gadgets. In January 2017, Google procured Fabric and Crashlytics from Twitter to add those administrations to Firebase. In October 2017, Firebase has dispatched Cloud Firestore, a constant archive data set as the replacement item to the first Firebase Real time Database.

C. Java Development Kit

The Java Development Kit (JDK) may be a product advancement climate utilised for making Java applications and applets. It incorporates the Java Runtime surroundings (JRE), a mediator/loader (java), a compiler (javac), associate degree archiver (container), a documentation generator (javadoc) and completely different instruments needed in Java advancement. The Java Development Kit (JDK) is one in every of 3 center innovation bundles utilised in Java programming, aboard the JVM (Java Virtual Machine) and therefore the JRE (Java Runtime Environment).

Designers new Java often befuddle the Java Development Kit and therefore the Java Runtime surroundings. The differentiation is that the JDK may be a bundle of apparatuses for making Java-based programming, tho' the JRE may be a bundle of instruments for running Java code.

The JRE is utilised as associate degree freelance phase to merely run Java programs, however at an equivalent time it's essential for the JDK. The JDK needs a JRE in lightweight of the very fact that running Java programs is important for making them. Introducing the JDK and JRE adds the java order to your order line. you'll check this by dropping into associate degree order shell and composing java - rendition, that ought to restore the Java kind you introduced. The javac order lives within the/jdk catalog, nevertheless is not consequently supplementary to the framework approach throughout institution. we've the choice to introduce javac ourselves, or we have a tendency to might introduce associate degree IDE that includes this order. We'll begin by incorporating and running a Java program as our forefathers would have done it. A .container record may be a bundled set of Java categories. once the compiler has created the .class records, the engineer will assemble them in an exceedingly .container, that packs vogues} them in associate degree anticipated style.

The Java Development Kit (JDK) provides the institution whereat all applications that ar targeted toward the Java stage ar assembled. The JDK incorporates associate degree assortment of instruments associate degreed utilities that play out an assortment of undertakings, that incorporate collection ASCII text file into bytecode, bundling applications, turning up Java virtual machines (JVMs) and handling the runtime climate of Java applications.

D. XML Language

A XML document is an extensible markup language record, and it is utilized to structure information for capacity and transport. In a XML document, there are the two labels and text. The labels give the design to the information. The content in the record that you wish to store is encircled by these labels, which cling to explicit linguistic structure rules. At its center, a XML record is a standard book document that uses tweaked labels, to portray the construction of the report and how it ought to be put away and moved. XML is a markup language, which implies it is a coding that utilizes labels to portray segments in a document. This XML markup language contains genuine words as opposed to programming linguistic structure. The most mainstream markup dialects are HTML and XML.

V. RESULTS AND DISCUSSION

The output of the proposed system is shown in the figure 3, figure 4.

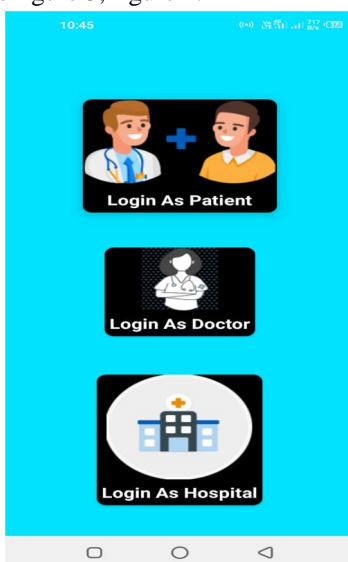


Figure 3 Login system



Figure 4 Application system

When the application is launched first the splash screen will be displayed. After that the login page will be shown. Here the users can select their respective account type and can access the data. The Patients, Doctors and the Hospital users can register and use this application.

VI. CONCLUSION

Life is getting too occupied to even think about getting clinical arrangements face to face and to keep an appropriate medical services. The fundamental thought of this work is to give simplicity and solace to patients while taking arrangement from specialists and it additionally settle the issues that the patients needs to confront while making an arrangement. This framework embraces portable web innovation, coordinates administration arranged execution and depends on android versatile improvement innovation. It will help the majority in their regular day to day existence by giving the medical care data, help and prescription data, arrangement booking, online installments, and so on. For the growing population and growing health issues this software will help us to rectify the human inconveniences and will provide better usage for the future generations.

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