

DOC-ON

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Abstract— DOC-ON is an android based mobile application which helps users to search hospitals and fix appointments effectively. This application guides the users to the hospital by showing the route map from your current location to the hospital through GPS system. The basic modules of the application are –User Login, Doctor Appointment, Blood Donors Management and Emergency. In user login, the users get logged in to the application for the first time. In doctor appointment, the users can search for the nearby hospitals and opt online appointments. It also provides the users with current token status. In blood donors management, there are two facilities, one for viewing the blood donors and other for the new entry. The last module of this app, as its name indicates is used whenever an emergency situation arises.

Keywords— Appointment, online application, android, hospital, scheduling, track, healthcare

I. INTRODUCTION

In our day to day life, it is seen that if anybody is ill, he or she needs to visit the hospital and waits until the doctor is available. The patient should also wait in the queue for getting an appointment. If the doctor cancels the appointment for some emergency reasons, then the patient is not able to know about the cancellation of the appointment unless or until he or she visits the hospital. As the mobile communication technology is developing rapidly, in order to overcome such problems and inconvenience for the patients one can use the mobile application. Earlier, an intelligent agent based appointment system has been proposed in which a scheduling system is provided for patients. The proposed appointment management system which uses application programming interfaces (APIs) from Google map and calendar. This application can be used with other similar systems. The mobile application automatically synchronizes the appointment details with the google calendar for constant monitoring of data. The user gets an alert based on the current specified time before the appointment date and time. There are some drawbacks for the online system that are still working. To overcome these drawbacks an online patient appointment system is proposed using Android enabled mobile application.

The proposed work in this paper is an Online Hospital Management Application that uses an android platform that makes the task of making an appointment from the doctor easy and reliable for the users. Android based online doctor appointment application “DOC-ON” contains three modules. One module is the application designed for the patient that contains a login screen. The patient has to register himself before logging in to the application. After logging in, the patient can select a hospital and can view the hospital details. The patient has the option of selecting a doctor from the list of doctors and can view the doctor’s details. The patient can request for an appointment on his/her preferred day/time. The selected day/time slot will be reserved and patient will receive the notification of the successfully added appointment. The patient can view the current token status of the correspondent doctor at any time and can also view the location of the hospital on map. In addition, the patient can contact to the hospital and the doctor by making a call. The second module is the blood donor management module where users view all details of donors and can register himself as a new donor. The third module, emergency as its name indicates is used whenever an emergency situation occurs. It is designed such that the patient can make a call to the hospital for an ambulance service in case of emergency. All the doctors of the specific clinic are registered by the admin. Doctors cannot register themselves. Rest of the paper is organized as follows.

II. LITERATURE REVIEW

As the mobile communication technology is developing rapidly, there is much work in the literature in this regard. An intelligent agent based appointment system has been proposed in [1] in which a scheduling system is provided for patients. [2] proposed an Android application that is used to remind the patients of their dosage timings through Alarm Ringing system so that they can stay fit and healthy. Searching doctors and hospitals along with navigation details are also available in the app so they can get proper treatment on time. [3] proposed an android based appointment management system which uses application programming interfaces (APIs) from Google map and calendar. This appointment based application can be used with other appointment based systems. The mobile application accepts appointments by saving the record of the appointment on the phone calendar which is synchronized with the Google calendar. The user gets an alert based on preset specified time before the appointment time and date. [4] proposed a Health Track system that communicates with sensors via smart phone for data collection, and stores data concurrently to the central server for further analysis via the internet. Some online systems that are already functional still have some drawbacks. To overcome these drawbacks an online patient appointment system is proposed using Near Field Communication (NFC) technique and Android enabled mobile application. This system works by registration and scheduling appointments based on NFC that accesses patient’s health records and reports to alert nurses and doctors [5]. It uses Representational State Transfer (REST) style for communication interface between reasoning service and the system. Mainly the input contains User’s information, disease history, Knowledge base (symptoms) and output of reasoning service. [6] described an android smart phones and tablets application that is freely downloadable from Google play store and it provides various functionalities including personnel medical records, to trace position of actual user in real-time. Routing algorithm is used to find minimum distance for destination building. There are other studies which involve handheld healthcare [7,8,9] and efficient algorithms for appointment scheduling including self-inspection [10,11,12].

III. DESIGN INTERFACE

The front end design is simple and user-friendly. Once the application is started, the patient needs to register himself and then he will be able to log in into the application. The patient can make an appointment by selecting the preferred doctor, and time. The admin manages the appointments and also registers doctors. Admin is able to view doctors, view patient's records and view feedback also. The back end design includes a server which acts as a centralized database. All the data of the registered doctors and patients and the data regarding the appointments are placed on the server.

A. ANDROID

Android is an open source operating system which is Linux based and android platform is used to develop many useful applications for the mobile devices that makes the tasks of everyday life easier and faster. The android platform also provides built in database (SQLite database) and Web services. Android platform provides connectivity between the server and the application using certain APIs, hence the task of making a doctor appointment using a mobile application becomes easy using the advanced features and libraries available on the android platform.

B. SOFTWARE DEVELOPMENT TOOLS

The following software tools were used during the development process.

- Android studio 2.1.1 and SDK plug-in
- JDK 6
- Android 6.0 (Marshmallow) installed packages
- Ipage Server

IV. PROPOSED WORK

Firstly, the user will have to download the application and install it in their mobile devices. Once installed, the application will remain in the device permanently until the user deletes it or uninstalls it. When the user clicks on the app icon, the first thing that will appear on the screen is splash screen that contains the application's logo. The patient will then have to register in the application on first use. After registration, the patient will receive a username and password. For sign up, the user has to fill the given fields that are username, date of birth, address, email, mobile, password and confirm password and then the user clicks on the signup button to register itself. At that time, all the information provided by the user is saved in the database located on the server. If the user registers successfully then a notification message "successfully registered" is displayed on the app. Different validation checks are also maintained while registering the user. If both the passwords are not matched then the user will be notified that the "passwords didn't match" and if email is not valid then the user cannot register itself and a notification will be displayed that "email is not valid". After successful registration, the patient has to use this username and password for logging into the app for each time usage. For signing in, the user has to provide the registered username and password otherwise if the user enters such a username or password that is not registered then the user will get a notification message that "signin failed check your connection or contact support". After logging in, the menu screen is displayed containing different options like hospitals, doctors, clinics, about and sign out. The patient then selects the particular hospital from a list of hospitals and then he can select the doctor departmentwise and view his profile by clicking on the available doctors. By clicking in the book appointment button, different available time slots are displayed on the screen. The patient has to send a request for appointment by selecting a time. The central database gets updated accordingly. Then the user will get notification message of "successfully added" if the appointment is successfully registered in the database. Here, the user receives a token number and he/she can view the current status of the token which gets updated by the admin side accordingly. By clicking on the "get directions on map" button, the location of the hospital is displayed on the screen using the google maps. The about option on the menu screen shows the application's objectives and the developers of the application. The patient gets logged off by clicking on the sign out button on the menu screen. The second module of this system is the blood donor management where one can add himself as a donor and can also view a list of blood donors along with their contact details. Another module of this system is the emergency management, where the patient can call directly for an ambulance service or can directly locate the nearby hospitals using GPS system.

V. HARDWARE/SOFTWARE REQUIREMENTS

A. Hardware Requirements

- Android Phone

B. Software Requirements

- Wamp/Xamp Server
- Android Software Development Kit
- Java Development Kit
- Browser

C. Languages Used

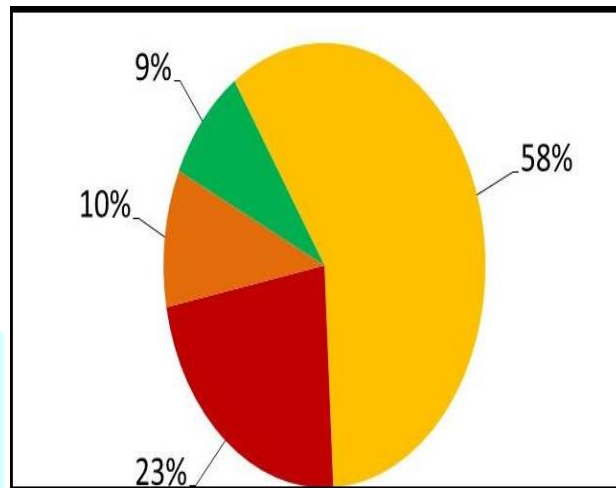
- Java

- PHP
- SQL

VI. USAGE

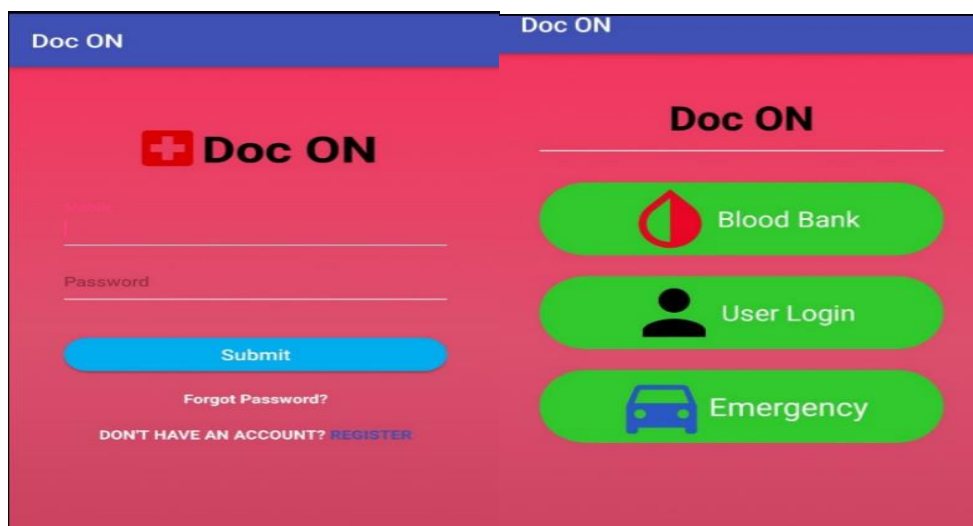
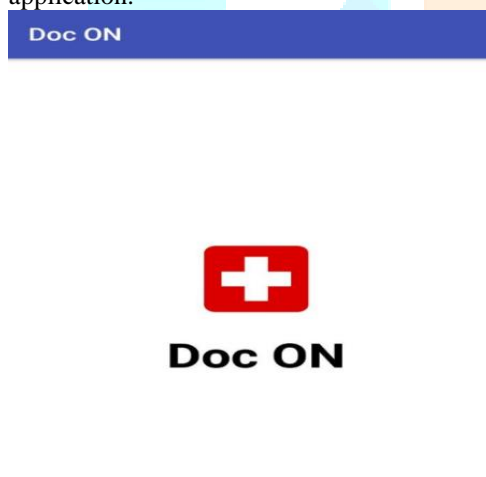
According to a small study conducted, the application was distributed among different age groups from 15 years to 60 years. And the following observation was made. It was found that 20-40 year olds used 58% more than the other age groups. 23% was used by people ranging from 40-50 years. 9% was used by the children under 20 and the rest 10% lies with oldage. This also strengthened the purpose of our application, ie, improving the health status of the society.

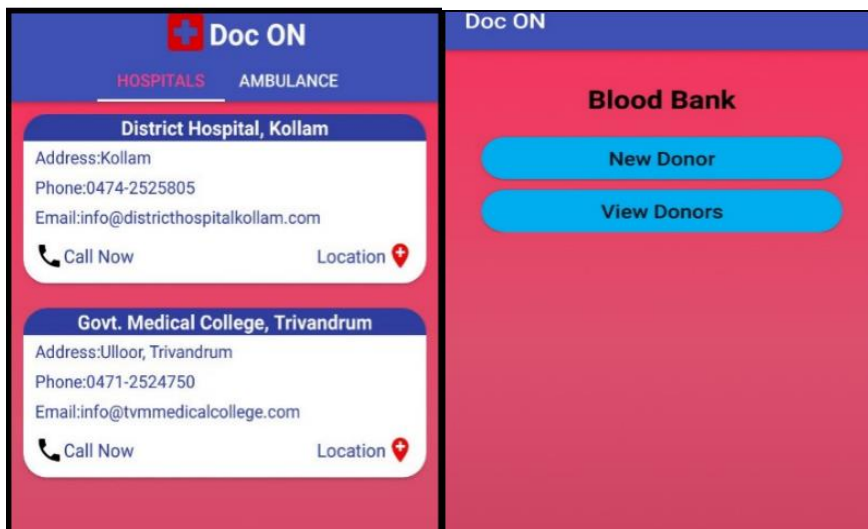
Fig. 3 Pie Chart showing the statistics of usage of the application



VII. SCREENSHOTS

The following are the relevant screenshots of the android application:





VIII. CONCLUSION

Implementation of the proposed online appointment system has been done in android studio. The tasks involved in this work are divided into modules. The proposed system is efficient and has user friendly interface. Addition of the admin and doctor modules in the android application are included in future scope which would help the doctor to register on the application and perform all the tasks on the app. The admin would be able to use the app for managing the details of the patients and the doctors. A payment or some amount may be charged to the users/patients while making an appointment to avoid the unethical users as many users register themselves just for fun and has no concern by making an appointment.

XI. ACKNOWLEDGMENT

I express my gratitude to our principal, Dr. M.C Philipose, Principal, SAINTGITS College of Engineering for providing us with excellent ambience that laid potentially strong foundation for our work.

My thanks and appreciations also go to Dr. M Wilscy (Dean of Computer Science and Information Technology) for showing me the right path which led to the successful completion of my paper.

I extend my heartfelt thanks to Prof. Dr. Jubilant J Kizhakkethottam (Head of the Department of Computer Science) who has been a constant support in every step of my paper and the source of strength in completing this paper.

I express my sincere thanks to Asst. Prof. Jerrin Sebastian (Guide), Asst. Prof. Reni K Cherian (Coordinators) of the Computer Science Department for providing us all the facilities, valuable and timely suggestions and constant supervision for the successful completion of my paper.

I am highly indebted to the faculties of the department for their valuable guidance and instant help and for being with us. I extend my heartfelt thanks to my parents, friends and well-wishers for their support and timely help.

Last but not the least I thank Almighty God for helping me in successfully completing this paper.

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