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Blood Beacon-Android Application for Blood Bank Management System

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Abstract - *The project Blood Beacon is an android application developed to help users find the right blood donor at the right time. The app stores information of users like name, age, blood group, address, and so on. The app has a login page where the user has to register and only then they can use the app. This ensures the safety of the app. The app helps users find a suitable blood donor when required by searching for the required blood group in the city/area which they want. This helps in reducing time to manually search for a donor. In case of an emergency, there is also an option of sending notifications to all users so that anybody can respond to the receiver. Also, since this app is developed for a mobile device, it ensures instant communication and location tracking. Once a request for blood is made, a registered donor can easily reach out to the receiver. Thus, the application helps in reducing the time required to search for the availability of the required blood or a suitable blood donor manually.*

Key Words: **Android Application**, **Blood Bank, Donor, Push Notification, Location**

1. INTRODUCTION

Blood bank is a place where blood bags that are collected from blood donation events is stored in one place. Blood banks consult to a division of hospital laboratories where blood and products derived from blood are safely stored and where proper analysis and tests are done to ensure reduction in the risk of transfusion related incidents. The scope of the project is that in a short span it can provide users with many facilities related to blood donation. It gives an elegant management of blood, blood banks, list of hospitals, and donors available online. The main purpose of this project is to interconnect all the hospitals, blood banks and donors into a single network, and store various data and information of blood and health of each individual. This system is used to store data over a centralized server which consists of database where the individuals' information cannot be accessed by a third party.

1.1 Objective

Android device users will be able to make quick decisions in selecting a suitable donor required. By using this application, it will help to greatly reduce time taken to select the right donor. This system can be used to display all the information of the donors available and select the rightful donor appropriately. In order to reduce the number of mishaps that occur to human lives due to shortage of blood in the case of emergencies, we are developing this application to reduce the time required to avail the blood from the right owner at the right time in case of an emergency.

1.2 Existing System

In the existing system, the blood bank management system exhibited at a lot of ineffectiveness and inefficiency that had fetched impact taken by management. The system that is based on paper card to collect blood donor data, keep records of the blood donors, and disseminate results to blood donors, had weakness that needed IT based solutions. The system was characterized by delays and sometimes failure to access historical records; errors were witnessed in entry and manual analysis of results, secrecy of records lacked because unauthorized persons could easily access the records.

1.3 Proposed System

The proposed Blood Bank management application helps the people in need of blood by giving them the details of the availability of their required blood group or information regarding the donors with the same blood group. The people in need of blood can search for the donors by providing their city/area name and the required blood group. It saves time as he can search donors online without going anywhere. Using this system users can get the required blood in time and can save a patient's life. Our application can work 24x7 so user can get information of blood donor any time. Blood donors can also get themselves registered in the app so that they can get requests from other users for blood donation and can save the life of another person. The main benefit of this system is the information of available blood group. When blood is needed in case of an emergency then people might have very less time to arrange blood so if he get the information as to who can donate him blood in time in his city it can be lifesaving. Availability of Android Geo-location enables easier way of obtaining blood during emergencies. Implementation of Real time notification using One Signal Server. Features of Active and Inactive tap option to indicate whether the donor is eligible to donate blood or not.

2. METHODLOGIES

This project is based on an Android OS version 7.0+ developed in Android Studio, a platform which helps developers build the high quality apps for Android devices. It

offers custom tailored tools for Android app developers, including rich code editing, debugging, testing, and profiling tools.

The app uses OneSignal Server, which is a free, multi-platform service used to send push notifications, in-app messages, and emails to users on mobile and web, using One Signal's SDKs and One Signal's powerful API, and find best practices for sending messages to increase user engagement.

The app also makes use of Google Maps API. Using the Maps SDK for Android, maps based on Google Maps data have been integrated into the application. The Google Maps API automatically handles access to Google Maps servers, data downloading, map display, and response to map gestures.

2.1 System Architecture

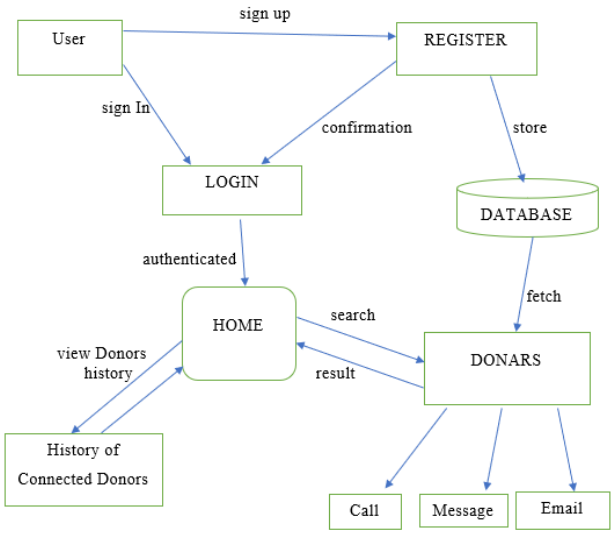

Fig -1: Data Flow Diagram

1. A new user has to sign up into the app. The details entered by the user is stored on the database. Once entered, the user is then redirected to the login page.
2. The user has to login to the app to continue to use it. The user is authenticated by comparing the registered mobile number and password entered by the user with the details stored inside the database. The password is stored using hash encryption.
3. The user is then displayed the home page which shows the list of donors registered in the app.
4. The user can search for the required blood criteria and the appropriate donors' information is fetched and shown.
5. The user can contact the donor he wants through call, message, or email and also use the locate button to track the donor, if necessary, through Google maps.
6. The user can also view the history of donors they have contacted.

3. IMPLEMENTATION

- **Login module:**

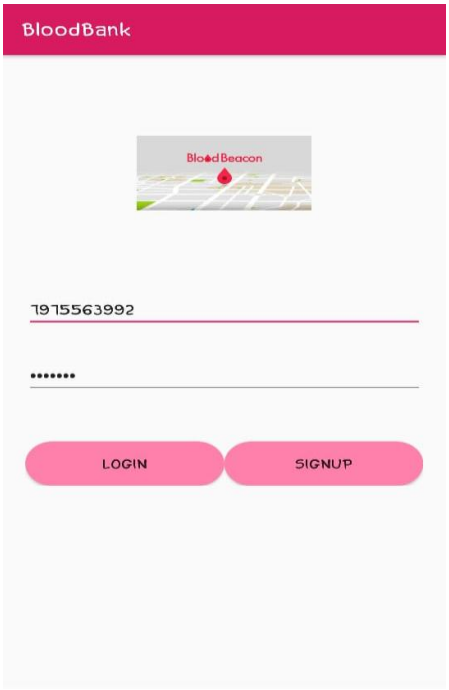

Fig -2: Login page

- **Sign up module**:

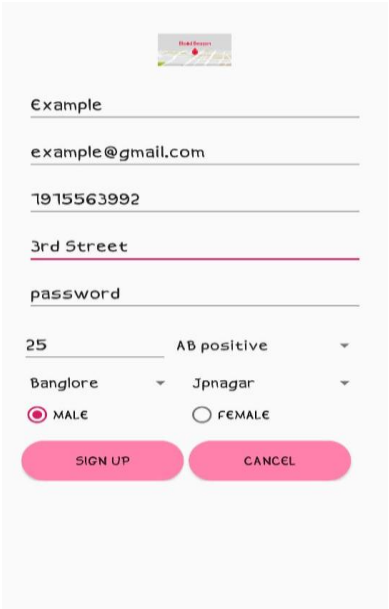

Fig -3: Sign up page

• **List of registered donors:**

Fig -4: Donors List

• **Search module:**

Fig -5: Search page

• **Notification module:**

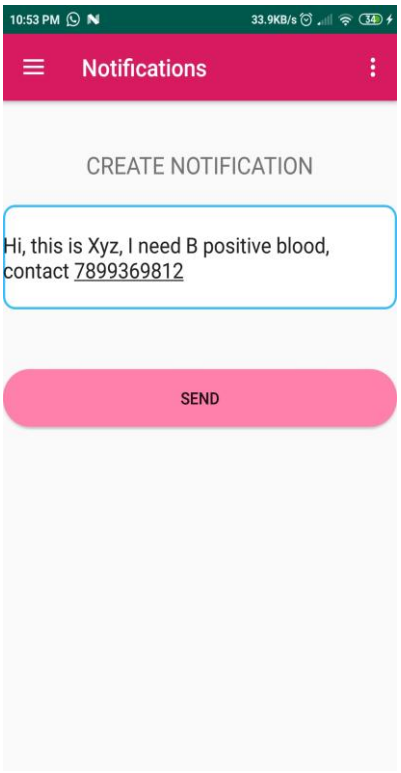

Fig -6: Notification page

4. CONCLUSION

We hereby conclude by proposing an efficient and reliable android blood beacon application. The service provided by the proposed system is needed and valuable to health sector where a quality of blood is considered for the safety of the patient. The donor will get himself registered through this improved system. In case of an emergency requirement, the user can place a request. The wireless internet technique enables the flow of data to work more rapidly and conveniently.

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