

BLOOD BANK MANAGEMENT SYSTEM

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Abstract— This paper presents a high-end system to bridge the gap between the blood donors and the people in need for blood. Application for Blood Bank Management System is a way to synchronize Blood banks and Hospitals with the help of Internet. It is a Web Application through which Registered Hospitals can check the availability of required Blood and can send Request for blood to the nearest blood bank or donor matching with blood requirement and can be ordered online as and when required. Blood bank can also send a request to another blood bank for unavailable blood. Person willing to donate blood can find out nearest blood banks using Blood Bank Management Android Application. The location of the blood bank can also be traced using maps. The Android application can be accessed only by the donors to search the blood donation centers and the requesting blood banks and hospitals to search the nearest blood banks and donors.

Index Terms— Blood Bank Management, Blood Bank, Hospital, Donor, Recipient.

I. INTRODUCTION

The population of the world is multiplying with each coming year and so are the diseases and health issues. With an increase in the population there is an increase in the need of blood. The growing population of the world results in a lot of potential blood donors. But in spite of this not more than 10% of the total world population participates in blood donation. With the growing population and the advancement in medical science the demand for blood has also increased. Due to the lack of communication between the blood donors and the blood recipients, most of the patients in need of blood do not get blood on time and hence lose their lives. There is a dire need of synchronization between the blood donors and hospitals and the blood banks. This improper management of blood leads to wastage of the available blood inventory. Improper communication and synchronization between the blood banks and hospitals leads to wastage of the blood available. These problems can be dealt with by automating the existing manual blood bank management system. A high-end, efficient, highly available and scalable system has to be developed to bridge the gap between the donors and the recipients and to reduce the efforts required to search for blood donors.

II. PROPOSED SYSTEM

The proposed system (Blood Bank Management System) is designed to help the Blood Bank administrator to meet the demand of Blood by sending and/or serving the request for Blood as and when required. The proposed system gives the procedural approach of how to bridge the gap between Recipient, Donor, and Blood Banks. This Application will provide a common ground for all the three parties (i.e. Recipient, Donor, and Blood Banks)

and will ensure the fulfillment of demand for Blood requested by Recipient and/or Blood Bank.

The proposed system consists of the following goals and has the scope as follows:

a) Goals:

- To ease the process of blood donation and reception.
- To improve the existing system.
- To develop a scalable system.
- To be highly available

b) Scope:

- Ensure that all the functionalities of a manual blood bank are covered
- To include all the blood banks at least within a city.
- Make sure the program is simple and easy to use.

Module 1: Android application

This module consists of the process of how blood donation process is done in this system. The blood donor can find out the nearest blood banks available according to his/her current location based on the GPRS feature used in this system. The blood donor will then have to register themselves on the application for validation purpose and further donating the blood to a particular blood bank. These blood donors can later also be contacted based on the availability status they have updated on the system for further contact in case of requirement of blood of their blood group.

Module 2: Hospital Web Application

This module consists of the process of how recipients are going to request for the required amount of blood from the blood bank. The recipient has to make use of unique hospital id which is registered in the hospital's database. Only those requests made through a valid hospital id will be considered as valid requests. While requesting for the required amount of blood, the

recipient can check the availability of blood of all blood groups in all the registered blood banks available in the system so that request is not sent to a blood bank which is deficient of the required blood .

Module 3: Blood Bank Web Application

This module consists of the process of how the requests from recipients for the required blood are served. The Blood Bank first checks whether the request is a valid one. After validation it checks the hospital's database to ensure that the required amount of blood is not available in that hospital and after the request is served. The blood bank module also consists of requesting the blood when urgently needed from other banks and from the registered donors who have kept their status as available for further contact.

Module 4: Database

Separate databases are maintained for the android application which mainly consists of the registered donor's information, the database of hospital web application which consists of the records of available blood group samples and also the database of the blood bank web application which consists of records of the blood group samples and their respective quantity available in every blood bank. The database of the android application is in sync with the database of the web application. All the databases will be hosted on the cloud server . This will make them more reliable and also will make them scalable.

III. RESULTS

Shown below are the screenshots of the various activities from the Android application and web application along with their description.

Results of Android Application

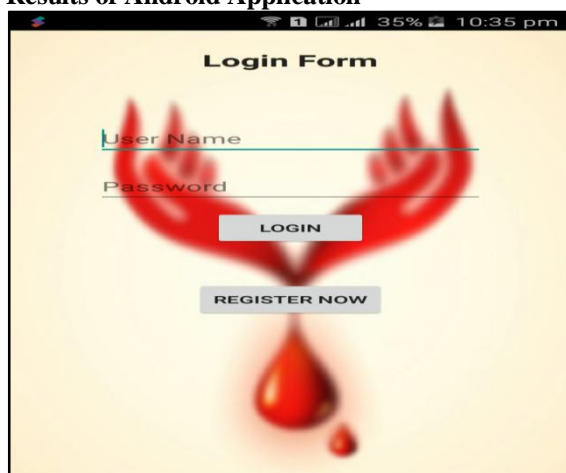


Figure 1: Login Page of Android Application

Description:

The user has to login or register to get started with the Android application. After clicking LOGIN button, the entered password and the entered username will

be sent to the back end database and the user will be granted access if he is registered within the system. On clicking the 'REGISTER NOW' button, the user will be directed to the registration form.



Figure 2: Home Page

Description:

The Home Page offers three options:

1. Locate nearby blood banks: To view nearby blood banks
2. Instructions for donation : Provides basic instructions for donation
3. FAQs : Frequently asked questions by any user

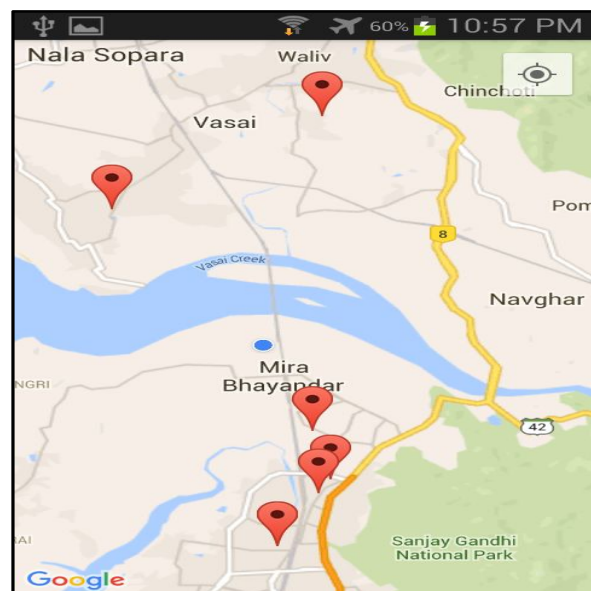


Figure 3: Nearby Blood banks using Google Maps

Description:

The 'Nearby Blood Banks' option opens Google Maps. From this the user can locate the blood banks through red markers. The blue marker gives the user's current location.

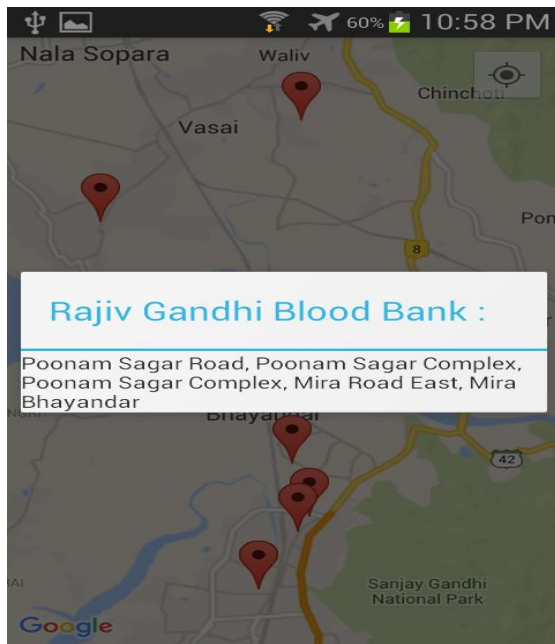


Figure 4: Details of blood bank shown by Google Maps

Description:

On clicking on any of the red marker, its location will be displayed. The user can then locate the nearby blood bank.

Results of Web Application

This application is exclusively for the hospitals and the blood banks

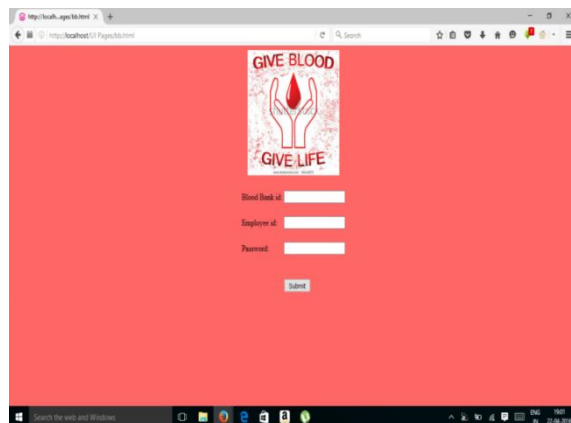


Figure 5: Login page for Blood banks



Figure 6: Login page for Hospital

The hospitals and the blood banks will be provided an id through which they can login into the system. The hospitals and the blood banks registered into the system will be allowed access to the system and they will be directed to the home page.

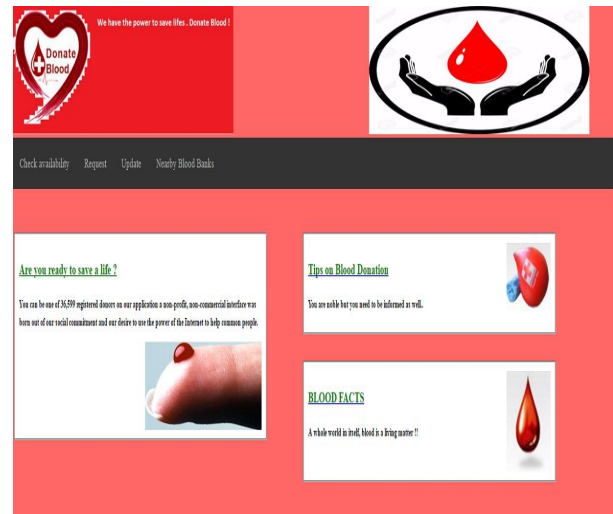


Figure 7: Home page

Description:

The Home page offers three options to the blood banks and hospitals:

Check availability: Availability of blood in the blood banks can be checked.

Request blood: Request for the required blood can be made to the blood banks

Update: The hospital/blood bank can update the status of their blood inventory

Nearby Blood banks: Nearest blood banks can be viewed using Google Maps

The functionality of each of the above options is illustrated further in detail

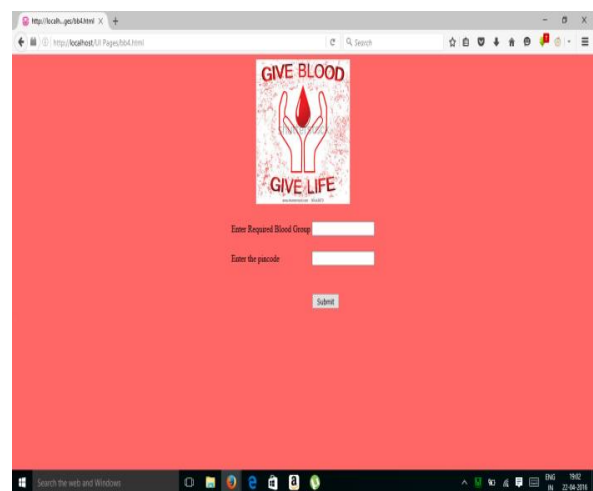


Figure 8: Check availability page

The 'Check availability option' gives the available quantity of the entered blood group from the nearby blood banks and hospitals using the entered pin code.

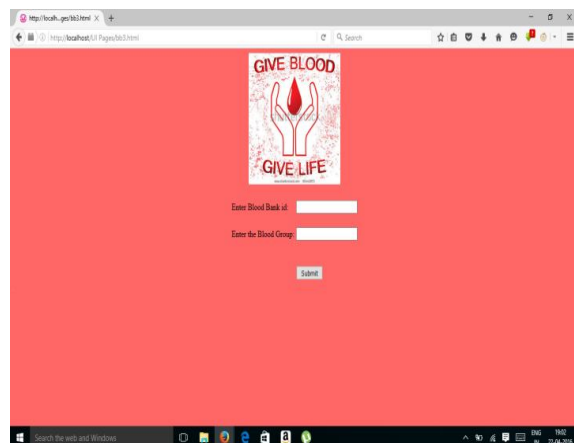


Figure 9: Request page

The 'Request' option can be used by the hospitals and the blood banks to request blood from the registered blood banks. The request can be sent by entering the id of the blood bank and the blood group of the required blood.



Figure 10: Update status page

The 'Update' option can be used the hospitals and the blood banks to update their inventory status on regular basis. The hospitals and blood banks are needed to update their status after every transaction thus to avoid inaccurate data.

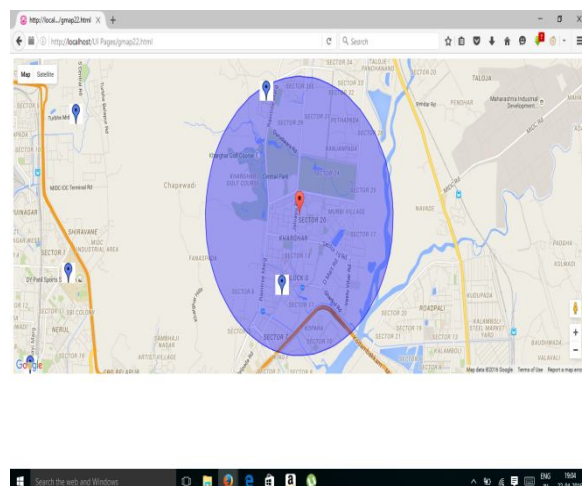


Figure 11: Nearby blood banks page

Description:

The Nearby blood banks option provides the user with Google Maps using which a real estimate of the distance of the desired blood bank can be made by the user. The red marker gives the current location of the user while the blue markers give the location of the nearest blood banks.

CONCLUSION

Technology is introducing new innovations day by day, thus reducing the time required to do things. The proposed system can be used to reduce the time required to deliver required blood to the needy in cases of emergency. The Android application can be used by the people interested in donating their blood by locating their nearest blood bank. The web application provides a way of communication and synchronization between the hospitals and the blood banks. It also provides them with the facility of communicating with the nearby donors in emergency. The database is a vital aspect of the system. The database of the hospitals and the blood banks must be checked for consistency on regular basis for smooth working of the system. The proposed system uses Google Maps which provides the user with an efficient way of locating the nearby donors/blood banks. The Android application is developed using Android Studio which is an open source software, while the web application for the hospitals and the blood banks is also developed using open source tools, hence the system developed is quite feasible.

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