Blood at One Touch

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ABSTRACT

Blood is a saver of all existing lives in case of emergency needs. According to recent studies, one person dies every six minutes and 10 are injured in the same time frame. Availability of blood is major issue in today s life. The reason behind that is number of accidents as well as major diseases. The possibility of finding blood in nearest blood bank is less. This project implements blood bank services using spring and Hibernate. In this project service is created where needy gets the blood at the earliest by creating a database of all the blood banks and providing the list to the user according to his area whenever required using GPS to track his location. Also, if there is a lack of blood in blood banks then notification can be sent to the banks to organize a blood donation camp. The organizations are registered under web application. The organizations send request to blood banks to organize blood camp and the registered organizations has the list of all blood banks. Blood donation camp details must also be given to the users registered under the web application for their vicinity so that they can donate the blood. In web application we provide an option for downloading Android Application for all visitors, so that needy people can find out the hospitals and blood banks in their nearby area. The future work of the system is to extend this application to process through SMS services. By this the contact detail is hidden from other members. Some other text or number will be generated on behalf of the original phone number or email. This can be done without using the internet service where the acceptor sends blood request to donor by web but whereas the donor receiving the request is just a simple SMS in mobile.

Keywords : Global Positioning System, Blood Bank, Blood Camp, Organization, Android Application, Web Application.

I. INTRODUCTION

The main project idea is to develop an efficient system so that the receiver can get the blood at the earliest in emergency. Also, the idea behind project is to maintain stock of blood in blood banks so there is no scarcity of blood in emergency cases. Also, this project aims to enhance hospital and blood bank communication.

The project is mainly implemented as a contribution towards our society. Blood is universally recognized as the most precious element that sustain life. It saves innumerable lives across the world in various situation. According to recent studies, one person dies every six minutes and 10 are injured in the same time frame. Availability of blood is major issue in such cases. The possibility of finding blood in nearest blood bank is less.

The need for the blood is important for treating in medical field. For every second someone needs blood to save their life. The task of blood bank is to receive blood from various donors, to monitor the blood groups database and to send the required blood during the need to the hospital in case of emergencies. In developing countries, especially like India, the blood resource lacks in quantity which is a barrier to others life.

There are many shortcomings like decentralized nature of donor and required blood is needed at serious times. Manually is difficult in the current existing system and tracking the database for particular blood group is complicated. The aim of serving an efficient quality of blood to the patient. The online blood bank management system helps to maintain the database and quality of blood. This increases reliability, fault tolerance and availability. The online blood bank management system with integration of GPS is important because when he

lives are at stake than using the mobile application searching for nearby hospitals and Blood banks is done where it is based on nearby location. Further, these details are accessible by anyone, so a strong authentication mechanism is needed. The services used in the proposed system are web services and domain services.

There is no proper system today which can help the needy to find the blood at the earliest time possible. Also there is certain communication problems between blood banks and hospitals. Considering all these issues the project is implemented as a social cause so that the death due to unavailability of blood is reduced.

II. METHODS AND MATERIAL

A. Existing System

There are some web sites present for finding blood where donors information is present which are not reliable since they don't get often updated. Patient cannot request blood online. Mainly useful for recipients only. Percentage of accuracy is less. We cannot surely say that the needy get the blood in required time. Offline blood requisition form is required which is more time consuming process. The possibility of finding blood in nearest blood bank is less. There is no proper system today which can help the needy to find the blood at the earliest time possible. Also there is certain communication problems between blood banks and hospitals.

B. Literature Survey

The problem which currently exists in the medical field is that blood is needed immediately for an injured person or for any major operation; it is not easily available even though blood banks are present. There are some web sites present for donating blood were the phone numbers of the donors are present which are not reliable since they don't get often updated. At present there are no proper websites and Application.

Table 1: Comparison between various blood bank websites

Name	Done By	Objective
Blood Bank India	USIS Technology	It allows recipient to directly contact the donors in case of emergency. Donors can register to donate blood.
Bharat Blood Bank	Bharat Matrimony	It allows recipients to reach donors. It created a database of donors, classified by locality. Donors in India who want to donate blood can register. Blood recipients can browse the site and display the list of blood donors who are close to their locality.
Blood Bank Management System	Alexis Alexander CibiChacko Lekshmi V.R. Soumya P. Sadanandan	Developed a web portal to facilitate the interaction between the demand for blood and provider. This system makes available safe blood and other blood components, which can offer moral assistance, consistent with the long term welfare-being of the community.
Lions Blood Bank & Research Foundation	Lions club of Madras Egmore	Lions Blood Bank & Research Foundation keeps the availability of bloods and its type in their MIS and they provide the current status of availability of blood through their MIS.
Blood Banks Delhi	XO InfoTech Ltd. ,Gurgaon	Helps to provide blood supply of the different groups from other blood banks, provides service through online registration of blood donors, and gives news and details about blood donation events

C. Proposed System

Unlike the existing system our system provide route of nearby hospitals and blood bank using GPS. Users can

use their android smartphones for using the android application. Online request for blood is send to the blood bank. Android app for user which shows route for required blood bank and hospital. Blood management information system is present. In this information about the blood stock is maintain. Stock maintenance of blood at blood bank which is achieved by sending alert message to the Blood bank when stock goes below certain predefined level. So that the Blood Bank arrange the Blood Camp for maintaining the stock in their Blood Bank. Blood camp can also be organized by other organizations.

Features of Proposed System

1. Provides blood to the needy at the earliest.
2. Provide route of nearby hospital and blood bank using GPS.
3. Manage the records of donors and receivers.
4. Notify users about blood donation camps.
5. Use of Spring and Hibernate Technology.
6. User friendly Android Application.

D. Problem Definition

In India number of accidents are increasing day by day and the requirement of blood is hereby increased. But the needy are not getting blood within required time. Main cause is the process of getting blood is too lengthy and hence there is delay in getting the blood. Also people are not aware of blood donation camps.

Goals and objectives:
- To provide blood to the needy at the earliest.
- To provide route of nearby hospital and blood bank using GPS.
- To develop a blood management information system to manage the records of donors and receivers.
- To notify users about blood donation camps.
- To enhance the communication between hospital and blood bank.
- To maintain the stock of blood at blood banks.

E. Mathematical Modeling

Let 'B' be the | Blood Availability system at the final set
$$B= \{I, O, F, \$\}$$
Identify the Inputs as,

$$I= \{\{I_{11}, I_{12}\}, I_2, I_3\}$$
Identify the Functions/Modules as,
$$F= \{f_1, f_2, f_3\} \text{ Where,}$$
$f_1 = \{f_1/f_1 \text{ is a user module}\}$
$$= \{\{I_{11}, I_{12}\}, \{O_{11}, O_{12}\}\}$$
Where,
I_{11}=Individual User information,
O_{11}=Route of nearest Hospital,
I_{12}=Organization Information,
O_{12}=Organize Blood Banks

$f_2= \{f_2/f_2 \text{ is hospital module}\}$
$$= \{I_2, O_2, f\}$$
Where,
I_2=Notification Receive by User,
O_2=List of nearest BB by stock,
f= Notify BB
$f_3= \{f_3/f_3 \text{ is a blood bank module}\}$
$$= \{I_3, O_3\}$$
Where,
I_3=Blood requisition form sent by Hospital,
O_3=Availability of Blood

Identify the outputs as,
$$O= \{\{O_{11}, O_{12}\}, O_2, O_3\}$$

Identify the Constraints as,
$\$$= 1.The User must be online.
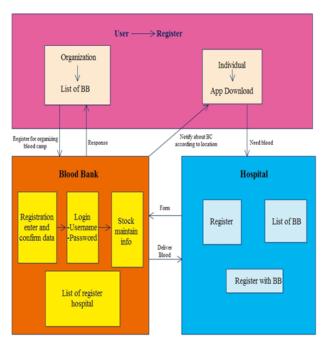2. GPS must be available.

F. System Architecture:

Figure 1. Architecture

III. RESULTS AND DISCUSSION

In the architecture we have created three modules user, hospital and blood bank. Users are of two types' individual and organization. Organization is for organizing the blood camps. Individuals are for donating and receiving bloods. Individual contact hospital when need blood and hospital will contact to blood bank for form filling of blood requirement. Then blood bank will respond to the hospital regarding blood availability.

SRS (System Requirement Specifications)

There are mainly 4 actors in the system:

1. Acceptor: end system user who require blood and blood components in emergency.
2. Donor: end system user who will donate blood in various scenarios
3. Hospital: Middleware between acceptor and blood banks.
4. Blood Bank: this actor will provide blood and various components to acceptor and receive blood from donor

Non-Functional Requirements:

A. Interface Requirements

The system must be developed to suit the particular needs of a user-friendly environment.

B. Performance Requirements

1. Should have proper internet connection.
2. The response time for retreiving information must be less than 5 sec.
3. Should run on 2 GHz and 3 GB RAM system.
4. The response time for sending notification must be less than 3 sec.

C.Other Requirements

1. Security
2. Reliability
3. Ease of Use

Software Requirement:

1. CPU Speed - 2 GHz
2. RAM - 3 GB

Hardware Requirement:

1. Operating System: Windows 7/Windows 8.1, Android Version 4.4 kitkat
2. IDE: Netbeans-7.3.1-windows, Android Studio (android-studio-bundle-141.2135290-windows)
3. Programming Language: Java,xml

IV. CONCLUSION

The work blood at one touch is a step towards contribution to the society. People will get to know the details of nearby blood banks and hospitals in situation where they need blood urgently. Blood banks and hospitals will be able to maintain the record of sale and purchase of blood efficiently. Blood camp organization will become easy process as organizers will directly contact the blood banks. Thus blood at one touch is a very useful product in emergency cases and also it enhances the working of blood banks. People will also get aware of blood donation camps and hence will be able to donate blood. It will be a social product helping mankind.

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