SMART BLOOD QUERY: A MOBILE PHONE BASED BLOOD DONOR RECRUITMENT AND MANAGEMENT SYSTEM FOR DEVELOPING REGIONS

PROJECT REFERENCE NO.: 38S0771

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Keywords: Blood transfusion service; blood donor; mobile phone; ubiquitous; data confidentiality.

Introduction: 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. The Southern regions of Asia are weak in regulation of BTS and sometimes transferring the real time data are difficult. 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 last minute update of information are done in bidirectional way. So the information regarding the Blood Transfusion Services (BTS) is explained as entering the details about the blood groups, members, contact details, etc. and finding the donor with GIS. The update about the information after the donation of the blood by a donor is not entered in the system. The online blood bank management system helps to maintain the database and quality of blood. This increases reliability, fault tolerance and availability.
**Objectives:** proposed system is an efficient and reliable blood donor information and management system based on GIS integrated in android mobile application. The service provided by the proposed system is needed and valuable to health sector where a quality of the blood is considered for the safety of the patient through a systematic process by the blood management system. This system will be the solution for the problems such as wrong information of donors, misuse by third parties and updating the donated blood by the donor which replaces the older systems.

- To Offer blood donor search based on the blood group and the Location.
- To intimate all the user with the emergency of the blood request.

**METHODOLOGY:** Location Based Blood Mobile Blood Bank Using Cloud is basically a Cloud based solution for primary and emergency blood transfusion services. The main aim is to provide fast and efficient way to gain attention of potential donors in the need of hour.

The user’s location will be detected using GPS. If there is need of blood, the donor with the required blood group is identified and notified of the requirement. The project includes algorithm which detects accurate location of the donors, identifies the donors who are available nearby to the location of requester and notifies them. If the identified donors are not available or not willing to donate blood at present then the scope of detection is increased.

**Hardware Requirements:**

<table>
<thead>
<tr>
<th>Processors</th>
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<tr>
<td>Pentium IV.</td>
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<tr>
<td>RAM</td>
<td>:</td>
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<tr>
<td>64 MB.</td>
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<tr>
<td>Storage</td>
<td>:</td>
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<tr>
<td>20GB.</td>
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<tr>
<td>Mobile</td>
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<td>Any Android phone.</td>
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Software (Tools & Technologies) Requirements:

Platform : JDK1.6, Android 2.2
Language : java
Visual Interface : Swing & Awt
IDE/tool : Net bean IDE 6.9.1

System Architecture

System architecture is the conceptual design that defines the structure and behavior of a system. An architecture description is a formal description of a system, organized in a way that supports reasoning about the structural properties of the system. It defines the system components or building blocks and provides a plan from which products can be procured, and systems developed, that will work together to implement the overall system.

Fig: System Architecture
Level 0 Data flow diagram

A context-level or level 0 data flow diagram shows the interaction between the system and external agents which act as data sources and data sinks. On the context diagram (also known as the Level 0 DFD) the system's interactions with the outside world are modeled purely in terms of data flows across the system boundary. The context diagram shows the entire system as a single process, and gives no clues as to its internal organization.

![Level 0 data flow diagram](image)

Fig: - Level 0 data flow diagram

Level 1 Data flow diagram

The Level 1 DFD shows how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts of the system.
1. **RESULTS AND CONCLUSION:**

**Results:**

![Image of installation process](Figure:- Installation Process)

![Image of main display page](Figure:- Main display page)

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*Fig: - Level 1 data flow diagram*
**Figure:- Registration form**

Registration

- Name: sowmya s
- Phone: 7829914419
- Gender: M
- Blood Group: O+

**Figure:- List of registered members**

- Blood Group: O+, Location: Bellary
- Blood Group: O+, Location: Haveri
- Blood Group: A-, Location: Kesala

**Figure:- Broadcasting the message**

Broadcast Message

- Blood needed immediately @vims bellary bed no 786

**Figure:- List of messages displayed**

- Tues, 19 May 2015 14:50:40 GMT+05:30
  “blood required AB-”
- Tues, 19 May 2015 14:39:48 GMT+05:30
  “blood needed immediately @vims bellary bed no 786”
- Tues, 19 May 2015 14:35:20 GMT+05:30
  “blood needed 0+ve @sims hspti tumkur bed no:007”
- Mon, 18 May 2015 19:36:06 GMT+05:30
  “emergency blood needed 0+ve”
Conclusion:

We have proposed a novel technique of blood donor recruitment and information management system. As far as we know, this is the first type of work in BTS domain that addresses all the key parameters of donor recruitment strategies like increasing public relations, effective communication methods, blood Donor Issues in disaster management, donor motivation, counseling as well as donor self-deferral opportunity. The Smart Blood Query Project facilitates its users both blood donors and recipients to access the service any time anywhere with no sophisticated hardware and software installation. Furthermore, we are working on extensive testing of our prototype in real world situation in conjunction with relevant health care professionals and domain experts in order to develop an understanding of complete blood management system for the monitoring of donors, patients and identifying what information is required from concerned group of people. We hope proper implementation of our project can bring a significant change in BTS situation of SEAR and developing countries.

2. Scope:

Currently we are evaluating our project. We are working with a voluntary blood donor organization for testing our system. As for as the responses come till now are positive and optimistic. People who use it praise it highly as it is a real time faster and easily accessible system than the conventional method of contacting blood banks or blood donor organizations for blood. Furthermore when blood banks run short of particular blood type, the application can find a several donors to refresh the supply. We hope to launch the application through a network operator after the testing phase.
Besides the facilities, we are planning to integrate some data mining facilities in our system. We have been spreading an effort to establish the first-ever national, public-private collaboration to track the adverse reaction and incidents associated with blood collection and transfusion as well as tissue, organ, and cell therapy transplantation. The collaboration known as the Bio surveillance Network involves gathering and analysis of data to help identify trends and recommend best practices and interventions intended to significantly improve patient care and safety while reducing overall costs to the health care system. We also wish to implement an intelligent donor classification algorithm, CART to make donor profiling more robust. We hope we can make a better change in collecting voluntary non-remunerated blood donors through this effort.