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Donor Search Algorithm for Blood Bank Application

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Abstract: This paper is aimed to build an application by using which we can help people during emergency situation. Through this application any person who is interested in donating the blood can register himself by providing his details. Admin has the main authority that has the right to access database. Through this app people can help each other during an emergency. Donor has to register to page where he/she has to give their details, like donor name, donor contact number, and donor blood group. In this application, we can search for the nearby donors by using an algorithm called donor search algorithm.
Keywords: Donor, Requester, Blood Bank, Bulk Message, Database, Android.

I. INTRODUCTION

Accidents have increased in number. The victims of the accident loose their life because of lack of rightly help. Some victims can be saved if they are helped at right time. Through this Android application, we can help users in selecting nearest donor and thereby contacting his/her information. We require blood in our daily life as it provides nutrients and oxygen. Blood bank is an application which enables the users to find the donors and these donors should have to register first for transferring the blood from one person to another, blood type of the patient also need to be known. Some times it may happen that the patient may not get the right help at the right time. This may be because of no good networking between donors and requester of the blood. Today smart phones have become a part of daily life. This application can enable the requesters know about the donors from among a given list of donors selected through blood group. Using this app, one can access the emergency services at the right time

II. OBJECTIVES

The main objective of the blood bank management system is to manage the details of donor and blood group. It manages all the information about blood donor. The project consists of administrative end and user end. The administrator is given the access to the blood bank database system where he can access the database. He has the right to add or delete a user from the list if he finds the user not suitable to donate the blood. The purpose of the project is to build an application program to reduce the manual work for managing the blood donor details. It tracks all the details about the blood group, blood bank.

III. LITERATURE SURVEY

To create a secure blood bank application in which the contact details of the donor can be protected [1]. To reduce the time to a greater extent that is spent in searching for the right donor and the availability of blood required [2]. To select a nearby hospitals instantly by tracking its location Using GPS [3] .To collect the blood and transport it to the required persons who are in need of it[4]. To create a bridge between donors and requestor in their vicinity [5]. To provide a web based application to both hospitals and blood banks [6]. To offer cross platform web interface which will let anybody access the detail contact of potential blood donors around the required location [7]. To generate Blood bank portal and Android application for donor to register for donating blood. If donor once has donated blood, he/she will get a list of donors who are nearest to them [8]. To provide software that can be used efficiently at the time of accidents to contact the emergency services such as hospital and police stations. [9]. The general idea of the study is to develop a smart blood finder application is to manage the records of the donors and the people who need blood. Others may need blood because of illness such as anemia [10].

IV. PROBLEM STATEMENT

Using the manual system, we cannot manage records. The safety of the record of the donors and preventing the missing of data is tedious task in manual system of blood bank. Errors might occur when we keep more than one record of the same donor. We cannot provide immediate support using the manually managing system. Whereas using the automated system we can store the records in more secure fashion. We can search for the donors easily. There are many people who are willing to donate blood and hence the increase in percentage of people who are willing to donate blood. The blood received has to be managed effectively. There were no proper means to announce their proper means of schedule. They are using persons to announce their schedule manually. And hence the blood bank management system has emerged to post regarding their blood donation events.

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V. PROPOSED WORK

In this application, we are developing an android application that enables the users to register by providing his/her own details and admin has to provide by providing his/her own details and then after he registers or signs up he will be able to manage the blood bank management service. The user who registers to the application needs the blood he can make a request to the donor who are willing to donate blood. If the donor is already available in the donors list that is willing to donate blood then he can contact them via bulk message service.

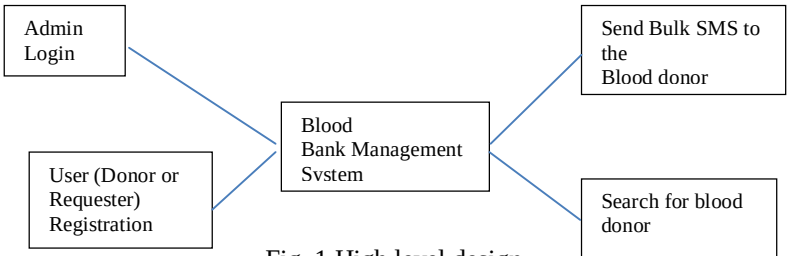

Fig. 1 High level design

Initially, the Admin has to login and the he has to search for the blood donor by using the GPS to find the nearest blood donor using the following algorithm.

We are using the nearest donor search algorithm.

1) *Step1:* Input: Two points coordinates a1, b1, a2, b2.
   Output: Distance between two points.
   Method: return sqrt ((a2-a1)*(a2-a1) + (b2-b1)*(b2-b1)) End Method.
2) *Step2:* Store all the distances in the array by using the structure. D[i].distance.
3) *Step3:* Perform sorting of these distances.
4) *Step4:* Loop I from 0 to n-1
5) *Step5:* Loop J from 0 to n-i-1
6) *Step6:* if D[j].distance>D [j+1].distance
7) *Step7:* temp=D[j]
8) *Step8:* D[j] = D [j+1]
9) *Step9:* D [j+1] = temp
10) *Step10:* Return the sorted array.
11) *Step11:* Print the first element in the sorted array.

The user can be donor and requester and they have to register into the database. After the admin searches for the donor, admin will send the SMS to the donor.

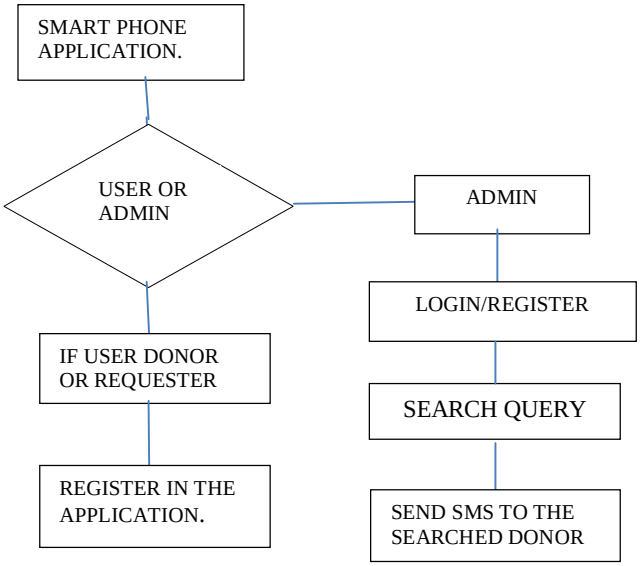

Fig.2 Activity Diagram

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The Fig.2 shows the activity diagram which is a smart phone application which enables to decide whether the user or admin is using the application. If user is using the application then he has to first decide whether the donor or requester is the user and in the next page he/she has to register. If he is an admin, then he has to login/ register first and then perform search query to select the donor and send the SMS to the searched donor.

A. Modules

There are totally three modules in the implementation of the blood bank management system.

They are

1) User Registration Module.
2) Request Blood Module.
3) Blood donor Module.
4) Donor search Module.

User registration module which enables the user to register by providing his/her name, city, phone number, blood group. The registration can be done using the database activity using volley.

Request blood module is the seeker registration module which enables the seeker to register by providing his/her name, city, phone number, blood group. The requester will specify the blood group he required. The registration can be done using the database which uses volley.

Blood donor module is the donor registration module which enables the donor to register by providing his/her name, city, phone number, blood group. Then he has to register using database which uses volley

Blood donor search module will enable us to search the donor by using donor search Algorithm. The algorithm takes the coordinate values from the source as specified by the requester and the destination of all the donors and computes the distance between donors and the specified source.

VI. OUTCOMES

This application provides wide platform support, donor sort, user support to the users. More potential donors can be listed as donor search algorithm is used. The application is scalable, efficient and adaptable to meet the complex need of blood bank. The wireless internet technique enables the flow of data to work more rapidly and conveniently. This application provides a list of donors in the particular locality.

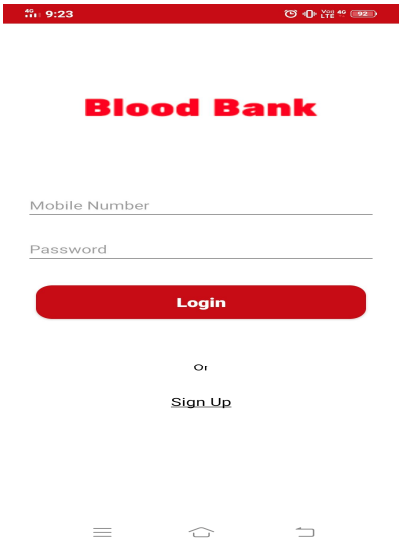

Fig.3 Login Page

Fig.3. shows the login page which includes the fields like mobile number and password which the user provides during the registration. When the user login to the application using mobile number and password he can make request for the blood group or he can search for the particular blood group, even he can register to donate blood.

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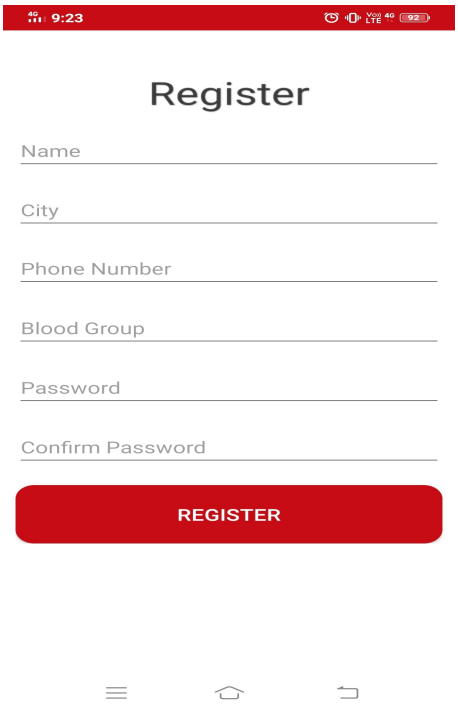

Fig 4 Register Page

Fig.4. shows the register screen which appears on clicking register button by providing his name, city, Phone number, Blood group, Password, Confirm Password. The users who have not registered yet has to register in this page. The name, city , phone number of the user which is used in the login page as the credentials. And the blood group he specifies may be of the following types like AB+, AB -, B+, B-,A+,A-, O+, O- and so on.

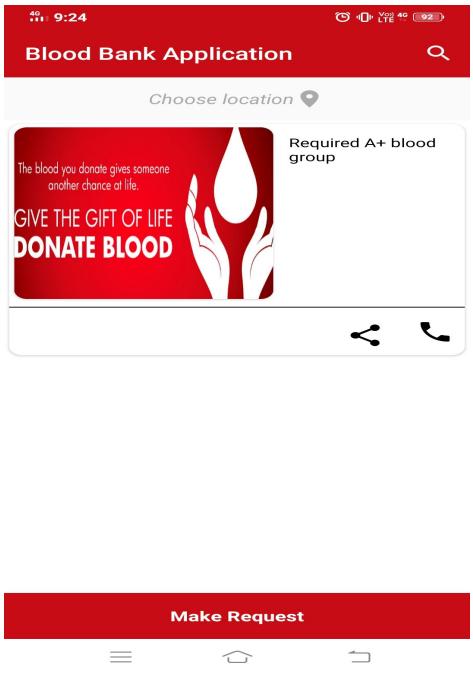

Fig.5 Home Page

Fig.5.Home page displays the list of requests made by the users of the application. It also has the share button and call button through which they can share the requests with other people with various means of communication such as text message and mail. It also has the call button through which user can call and contact for the donor.

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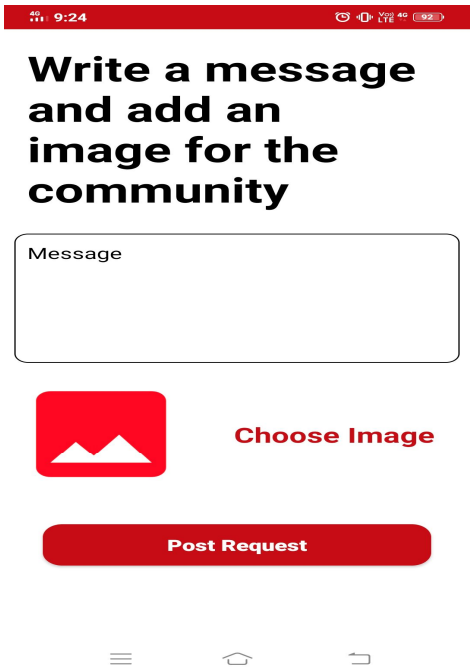

Fig.6 Make Request Page

Fig.6. shows the make request page where the user can request to the blood donors with a message to the community. Message written helps the donors to donate the blood of particular blood group.

VII. CONCLUSION

This paper is intended to build a centralized blood bank management system which can enable the requester to search for the donors who are eligible to give their blood based on certain criteria like blood group and location. This paper is successful in building such kind of application. Hence effective analysis can be done using this application which we have proposed in this paper. In future, various technologies can be used to enhance this system. This paper is focussed on the reducing the donors with long waiting time. This application proposed in this paper is to develop an emergency application for people who need blood by using message system. Response time is decreased in distributed databases. Blood donation is the one way to the person in healthy life.

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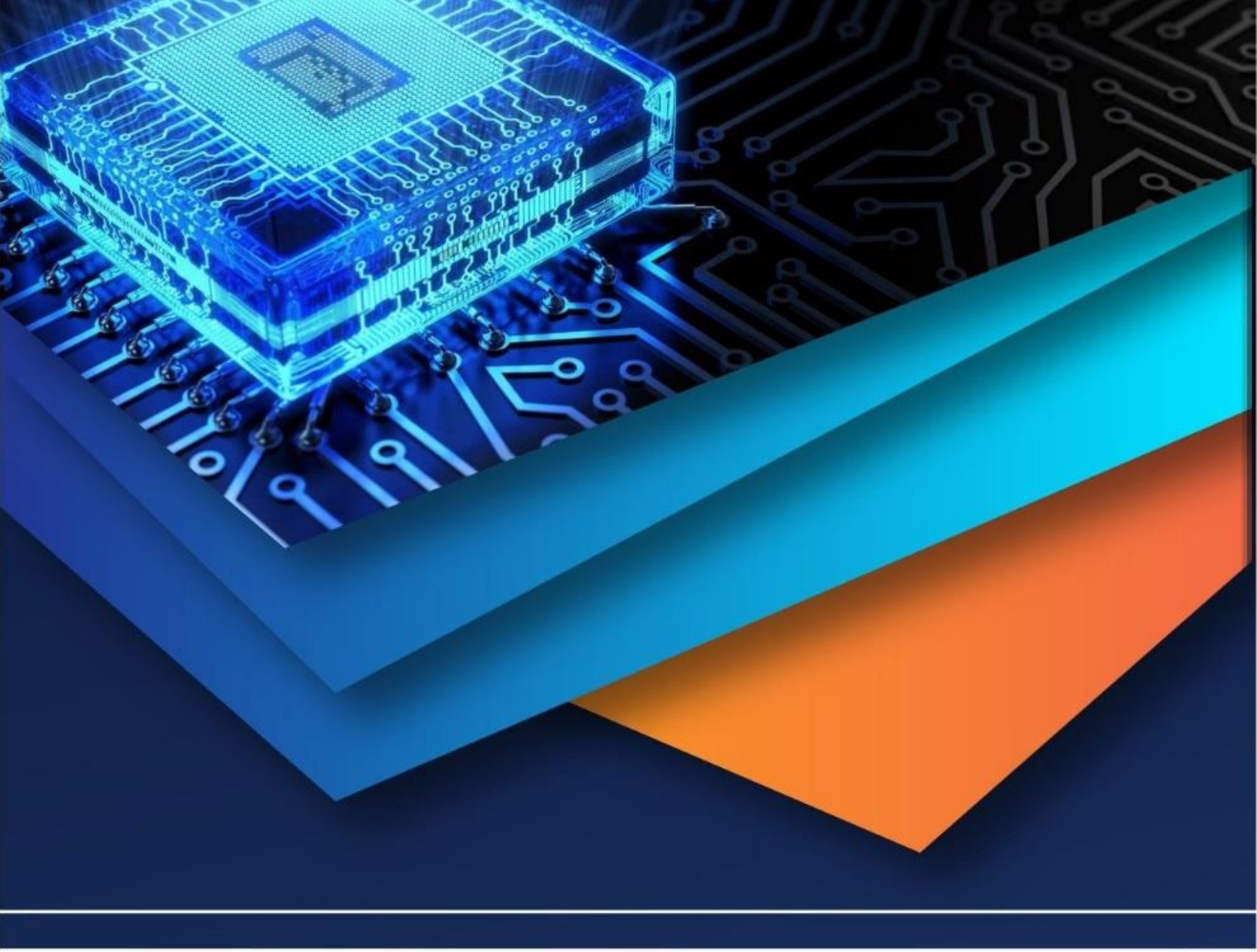

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