Blood Bank Management System

CSE3001 – Software Engineering

PROJECT BASED COMPONENT REPORT

by

Thanushri R	**17BCE0188**
Tanvi Gupta	**17BCE0909**
Barkha	**17BCE0314**

School of Computer Science and Engineering

March 2019

DECLARATION

We hereby declare that the report entitled "Blood Bank Management System" submitted by us, for the CSE3001 Software Engineering (EPJ) to VIT is a record of bonafide work carried out by us under the supervision of Dr.Narayanan Prasanth.

We further declare that the work reported in this report has not been submitted and will not be submitted, either in part or in full, for any other courses in this institute or any other institute or university.

Place: Vellore

Date: 26.03.19

ACKNOWLEDGEMENT

We would like to thank our professor for his continual help and support which led us to complete the project on time. We would also like to thank our friends for helping us learn new skills to make our project better.

CONTENTS

1. INTRODUCTION

Every year our nation requires about 4 Cr. units of blood out of which only 5 lakh units of blood are available. It is not that people do not want to donate blood. Often, they are unaware of the need and also, they do not have a proper facility to enquire about it. As a result, needy people end up going through a lot of pain. India has many blood banks, all-functioning in a decentralized fashion. In the current system, individual hospitals have their own blood banks and there is no interaction between blood banks.

The main aim of this project Blood Bank Management System is to maintaining all the information pertaining to blood donors, different blood groups available in each blood bank and help them manage in a best way. This system provide transparency in this field, make the process of obtaining blood and making it effective. Blood Bank Management System can help to collect blood from many donors from various sources and distribute that blood to needy people who require blood. This system can manage list of donors who are eligible for donation on a particular date with contact number. This system is an online blood bank management system that helps in managing various blood bank operations effectively.
Blood Bank Management is crucial and very necessary for hospitals so that they can connect patients to donors effectively. Today's need of the hour is to have a system that can help us to arrange for blood during emergency situations. People are seen wandering here and there in search of the right blood type for the patient. This system helps the hospitals store blood of each type and if more blood is needed during any kind of emergency, then it provides a platform for the people to directly talk with the willing donors who have their names registered in the system. The system automatically keeps maintaining the amount of each blood type. This system provides an effective management and is very useful for the people.

The project consists of a central repository containing various blood groups deposit available along with related details. The project is an online system that allows to check whether required blood deposits of a particular group are available in the blood bank. This system also helps to keep records of the patient name and contacts, blood booking and even need for certain blood group is posted on the website to find available donors for a blood emergency. This system is developed on PHP platform to store blood and user specific details.

We have observed that it takes a tedious amount of time and a long process to find potential donors. Whenever there is a person who is in immediate need of blood, his or her family members first try to get blood from the hospital in which the patient is admitted. If they do not find blood, they call the nearby hospitals to get blood. This takes a lot of time which is very crucial time if the patient is in critical condition. So, we decided to create an online website where a patient can find suitable donors of his own blood type.

1.1 Objective

- To bridge the gap between potential donors and patients in need through our project.
- Our major focus with this project are the hospitals in the rural area where due to lack of availability of resources needs of the patients are not met on time. Through our project we aim to connect these rural hospitals to be well facilitated with the urban hospitals.
- Our software deals with online blood bank and managing the various operations of the blood bank with efficiency and effectiveness.
- The project will be an online system that provides an option to check the availability of the required blood group within the nearest blood bank of the patient's reach. Moreover, the system also has added features such as patient name and contacts, blood booking and requirement of blood group is posted on the website to find available donors for a blood emergency.
- Also, to suit our clients, donors in particular, the system will also aim to facilitate the transportation facility wherein the willing donors can be brought to the hospital with the help of the licensed cabs wherein they can book the cabs according to their convenience and reach the desired destination.
- We also have taken the initiative to spread awareness by organizing camps with the other NGOs.
- The main aim of this project is to effectively manage the blood banking system.
- We aim to bridge the gap between potential donors and patients in need through our project.
- Our major focus with this project is the rural area hospitals where there is lack of resources due to which needs of the patients are not met on time. Through our project we aim to connect these rural hospitals to well facilitated urban hospitals.
- Our software deals with online blood bank and managing the various operations of the blood bank with efficiency and effectiveness.
- It also checks the availability of the required blood group, provides necessary information about the voluntary blood donors who have registered online.

1.2 Motivation

Blood Bank Management is crucial and very necessary for hospitals so that they can connect patients to donors effectively. In today's date, India faces a shortage of 10% relative to its blood requirement. The issue is not a dearth of donors but an ineffective management of blood banks. This motivates us to create a system which is used for effective blood management. This also provides a proficient way to search the voluntary blood donors. It also provides tips regarding the necessary measures that are to be taken before the blood donation.

The problems faced by Blood Banks are they are not able to retrieve information about blood and its donors of past years and resort to contemporary techniques to store data. Information regarding blood availability is not updated hence resulting in wastage of blood. Replacement donating is posing as a risk to the acceptor as information is suppressed. There is a lack of awareness regarding where to donate, when to donate, when not to donate, what all components can be donated. Lack of proper storage of blood and its components. It doesn't have any centralized database. Inaccessibility of available blood in case of requirements. Lack of proper instruments at blood bank centers.

2. LITERATURE SURVEY

[1] UML PROFILE FOR ASPECT-ORIENTED SOFTWARE DEVELOPMENT

Aspect oriented technology is rooted back to the separation of concerns and this paper is concerned about the UML architecture and the extension mechanisms to support a new technology. UML profiles is a predefined set of extension mechanisms. Aspect stereotype and relationship specifications have also been discussed. UML diagrams like class diagrams etc are also being mentioned. Aspect oriented model and composition pattern (theme) are based on subject-oriented design principles where Clarke's model decomposes the elements in one notation and recomposes them with other.

[2] BLOOD BANK MANAGEMENT SYSTEM

This paper is based on blood bank management system which is designed to help the Blood bank administrator to meet the demand of blood by sending or serving the request for blood

as and when required. The proposed system gives the procedural approach of how to bridge the gap between the recipient, donor and blood banks. This application will provide a common ground for all the three parties and will ensure the fulfillment of demand for Blood requested by Recipient and/or Blood Bank.

[3] In today's world of information and communication where person can order the pizza online with the surety of getting it in 30 minutes, where person can book the movie ticket online, where person can book his holiday trip online, where person can make his train reservation online, then why not person can get the information of the blood group, just in one click. Today the world is become a Global village where every thing is online. There are so many web based solutions provided in the market for the comfort of the people.

[4]Many people who have surgery need blood transfusions because blood loses during their operations. For example, during heart surgery, one third of the patients have a transfusion. The people who have serious injuries such as from car crashes, war, or natural disasters need blood transfusions to replace blood lost during the injury. It may come as a surprise that due to adequate management practices thousands of liter of blood get wasted every day across the country, therefore, there is need of adoption some of the best technique for the blood bank. So the adoption of IoT can also become beneficially for the blood bank to improve the management system the blood banks. Many authors confirmed about the beneficiary of Blood Bank management system, therefore many researchers have developed for the blood bank management some of them summarized below.

3. TECHNICAL SPECIFICATION

- The operating environment is supported by both LINUX (Ubuntu from 14.04 to 18.04) and Windows (only XP and Windows 10). The preferable web browsers should be Google chrome or Mozilla Firefox. Hardware Requirements will be given by the system used.

- We are assuming that everyone has access to a good internet connection and holds prior knowledge about how to use such Web applications.

- We assume that each and every user using the website knows English because no other language interface is being used.

- We assume that each and every donor is entering original and authenticated data and the developer is not responsible for any fake data (if found).

- Frontend: HTML, CSS

- Backend: SQL

- Connectivity: PHP

- The tools which are being used are Rational Rose for making the use case diagrams and other modelling diagrams, Microsoft Visual Studio for the making of the Gantt Chart, YED graph editor for the work breakdown structures and flow diagrams, Microsoft Word for the preparation of this document, HTML and CSS for developing the web application, Angular for predefined templates and MongoDB as the back end.

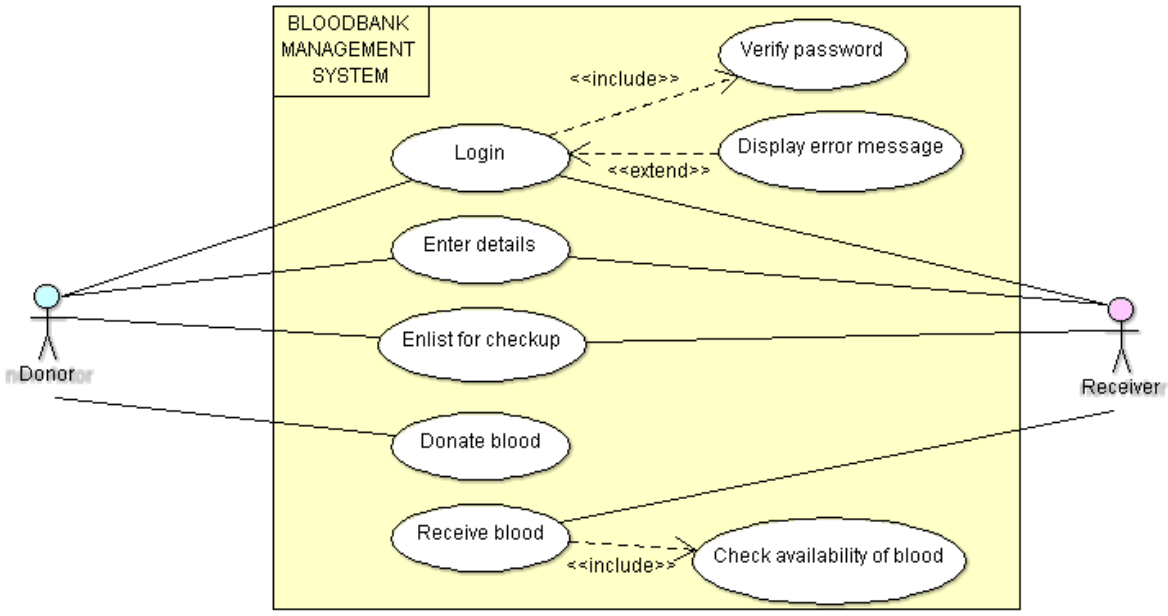
- HTML is the language in which most websites are written. HTML is used to create pages and make them functional. The code used to make them visually appealing is known as CSS. These are languages used for frontend when creating a website.

- PHP (recursive acronym for PHP: Hypertext Pre-processor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. Instead of lots of commands to output HTML (as seen in C or Perl), PHP pages contain HTML with embedded code that does "something" (in this case, output "Hi, I'm a PHP script!"). The PHP code is enclosed in special start and end processing instructions <? php and ?> that allow you to jump into and out of "PHP mode." This is used for connectivity between frontend and backend.

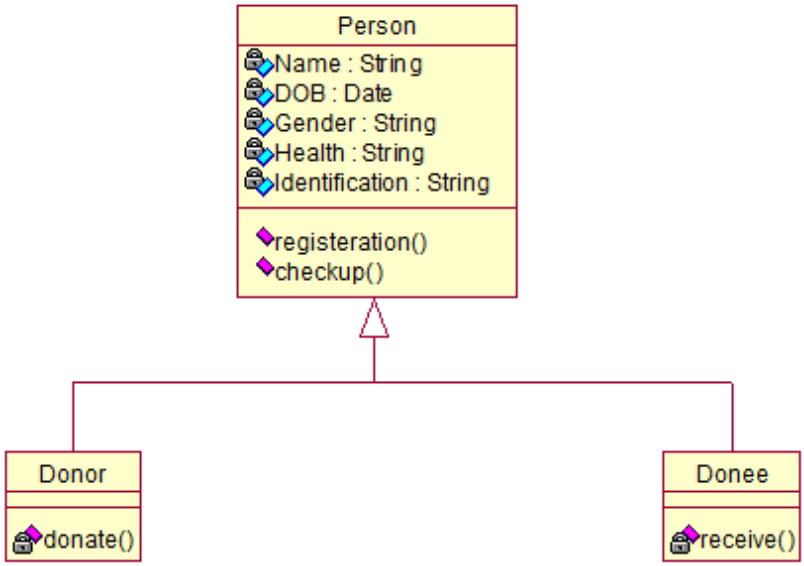
- Structured Query Language (SQL) is a domain-specific language used in programming and designed for managing data held in a relational database management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS). It is particularly useful in handling structured data where there are relations between different entities/variables of the data. SQL offers two main advantages over older read/write APIs like ISAM or VSAM: first, it introduced the concept of accessing many records with one single command; and second, it eliminates the need to specify how to reach a record, e.g. with or without an index. This is used for backend while creating a website.

4. DESIGN

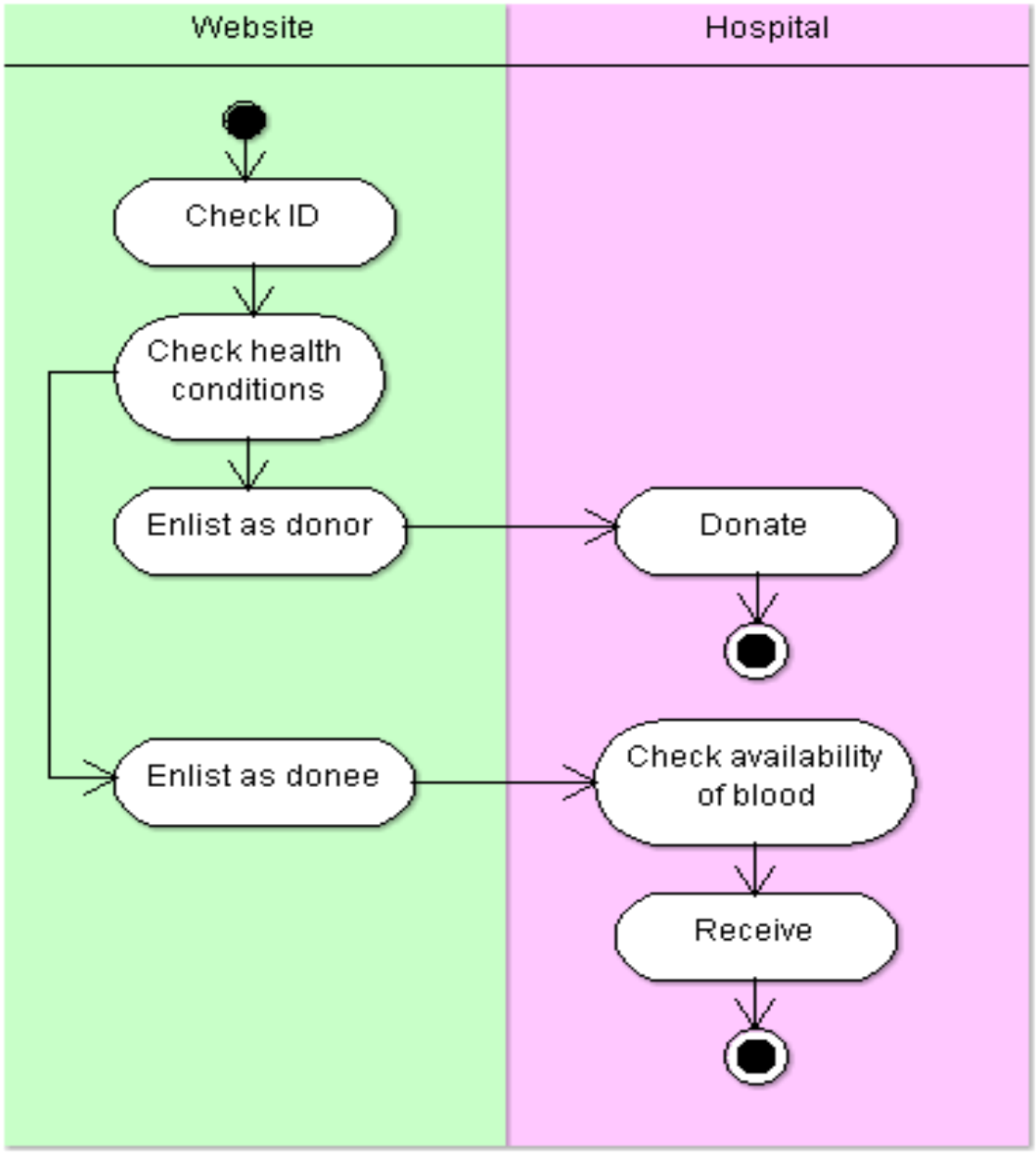
4.1 Usecase diagram



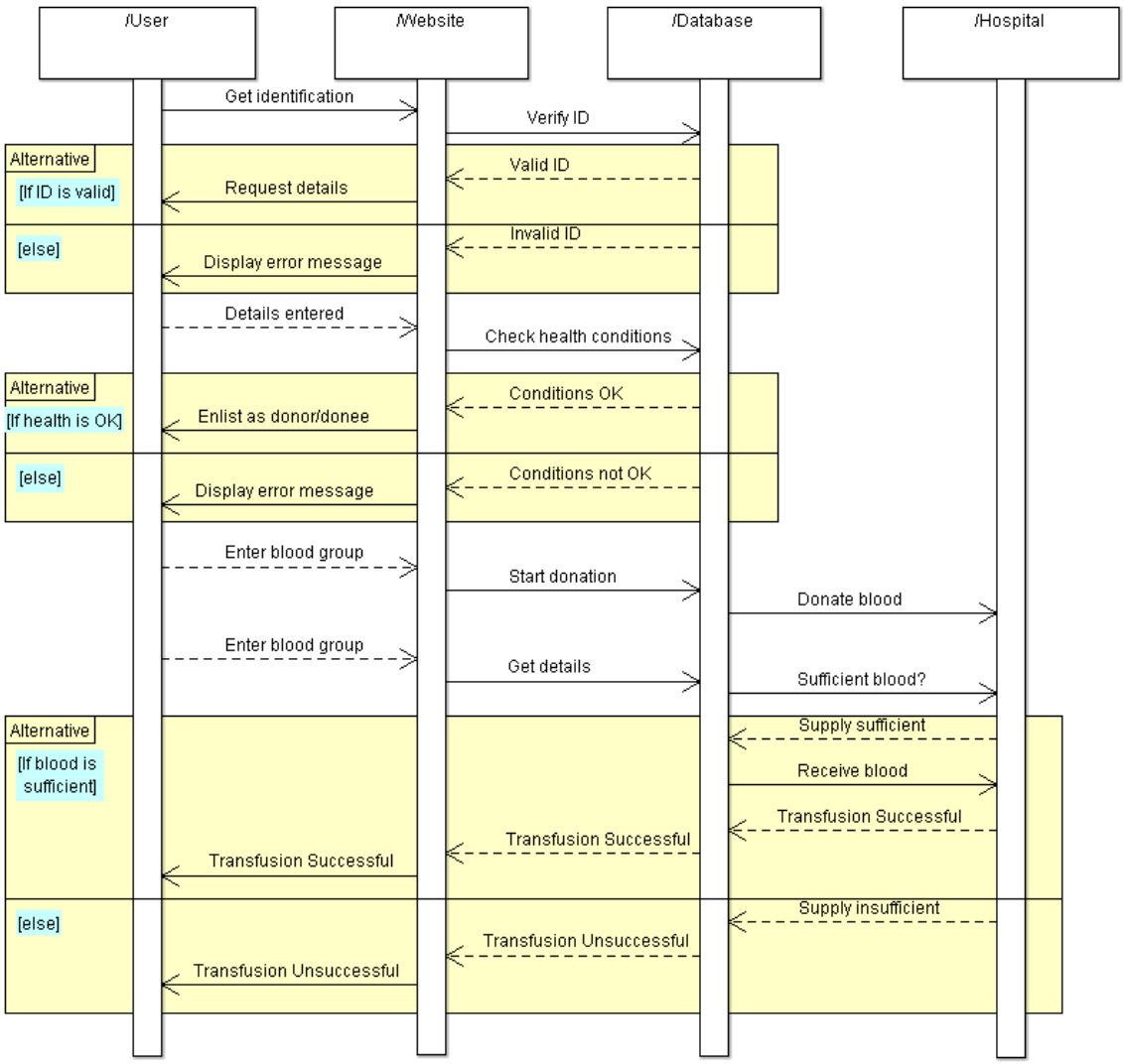
4.2 Class diagram



4.3 Activity diagram



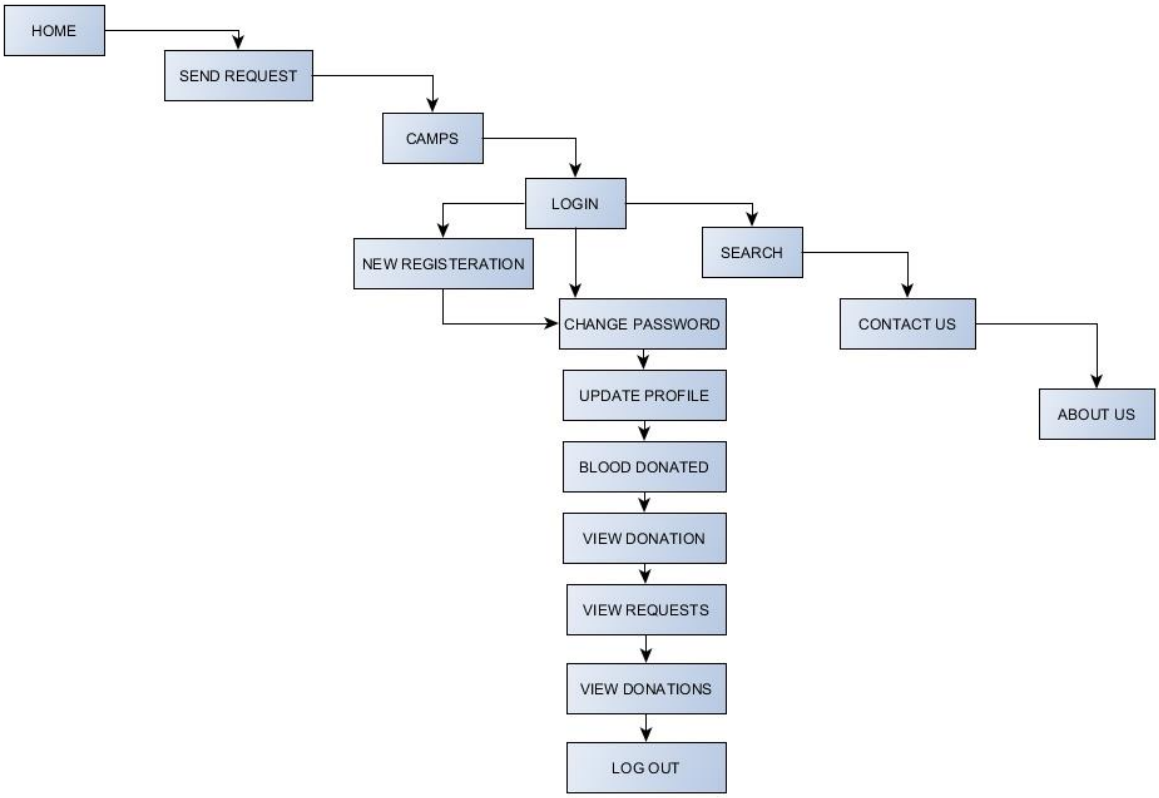
4.4 Sequence diagram



5. PROPOSED SYSTEM

How does our website work? Basically, a person has to login to our website and then enter his details, his blood group type and according to his blood group type our website searches for suitable donors from the database from which the patient can get the details of any person with his matching blood type.

BLOCK DIAGRAM OF PROPOSED APPLICATION SYSTEM



The different end users for this project are listed below.

Hospital Administrations:

• To effectively reach the registered donors through Emails or texts, also for the unregistered potential donors through our social media notifications.

• To keep track of the availability of particular blood groups.

Local NGO's:

• These organizations can partner with the hospitals (rural areas specifically) to create awareness among the people by organizing different campaigns to donate blood.

• NGO's can bring in bulk registrations, and the people registering for Blood donation camps of NGO's will get default registered under our website.

Individual Donors and Receivers:

• To retrieve information of the receivers from our website, and vice versa.

Web developers:

• They are the people who develop the website where all the information is being posted.

DEVELOPED MODULES LIST:

Home page

About us

Send request

Camps

Sign up

Login

Updating password

View Requests

Book Request

Store blood donated Data

View previous Donations

Contact Us

Search for Blood donors

The different functionalities of this system are listed below:

- DESCRIPTION: Names and details of the donors and donees are being posted on the website for information.

- CHECKUP: Donors should be tested for their health conditions by checking if they suffer/have suffered from any diseases before they donate blood. This ensures that the blood is safe and secure. The website provides information about the requirements before donating blood.

- DONATION: This is where the donors donate their blood in different locations like health centers and clinics, NGOs. Camps which are being organized are also displayed in the website.

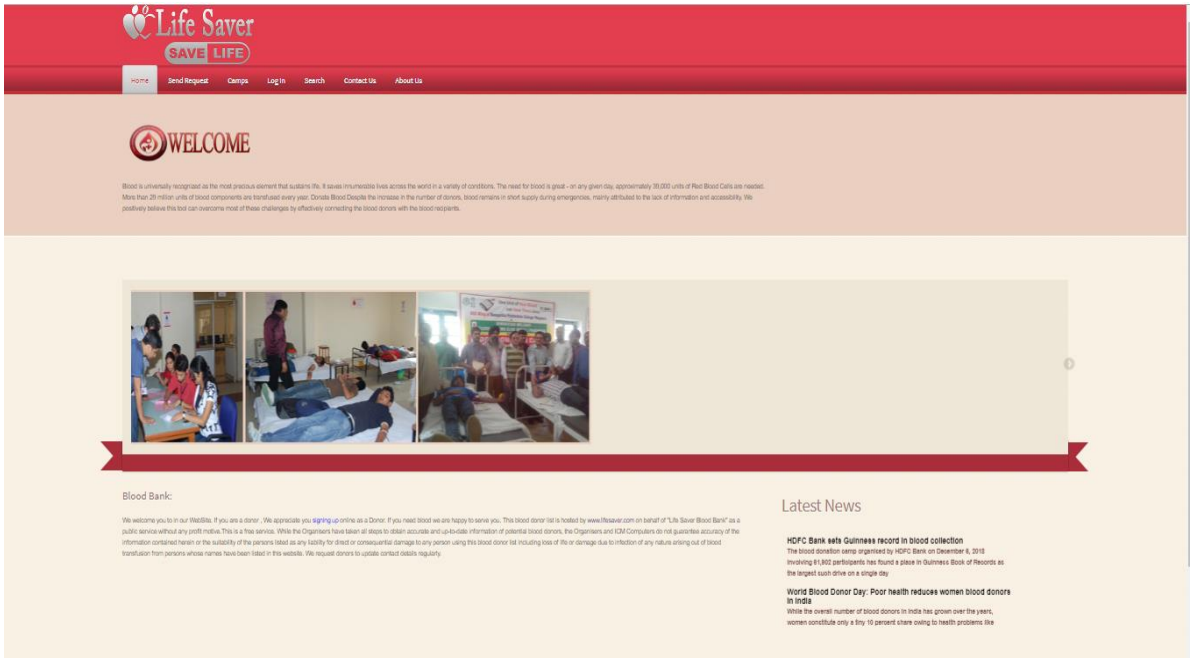
- LINKING: Blood banks, health centers and clinics are all linked by using the details of the donors and receivers in the back end and linking them with the front end.

- RECEIVING: Donees can easily find their suitable donor by efficient searching of the list of donors in the system by checking different criteria and blood is booked for the required receivers.

6. RESULTS AND DISCUSSION

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

HOME PAGE



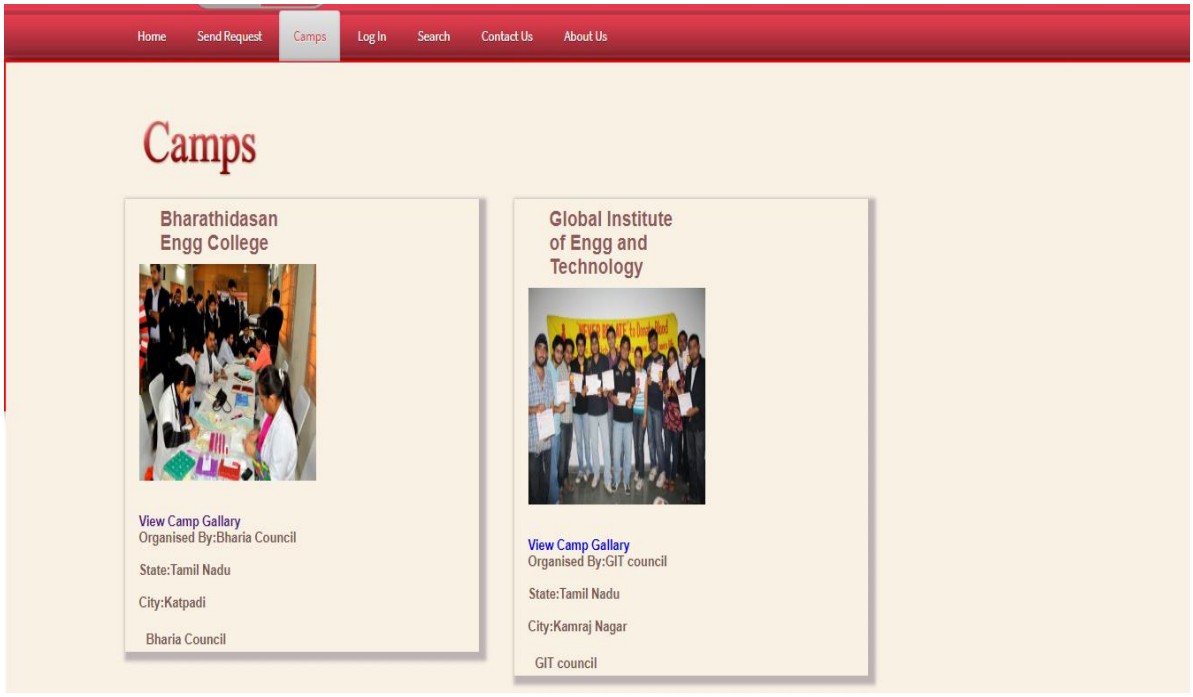
The Home Page offers us the option which provides basic instructions for donation.

SEND REQUEST PAGE

This page is used to send request for the required blood to the blood banks by entering the

donee details. The ‘Request’ option can be used by the hospitals and the blood banks to request blood from the registered blood banks.

CAMPS PAGE



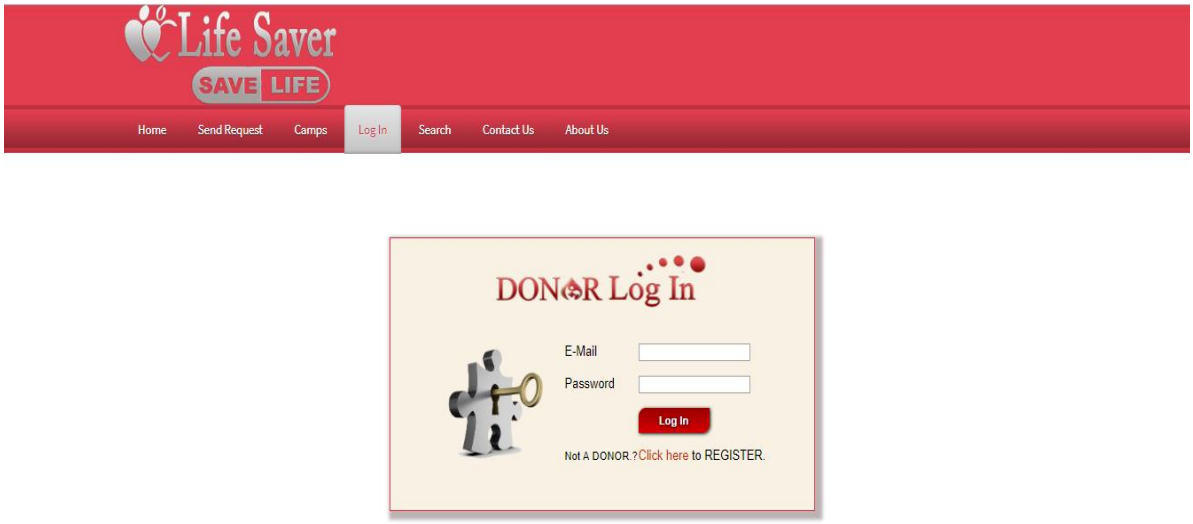
This page provides details about the blood camps which are being organised where the blood which has been donated is used for the emergency patients in hospitals and private clinics.

SIGN UP PAGE

When the user has not registered as a donor, he/she can register and sign up here by entering

their details.

LOGIN PAGE



This login page is being used by the users to view his/her details. This login page is being utilised when the user has already registered.

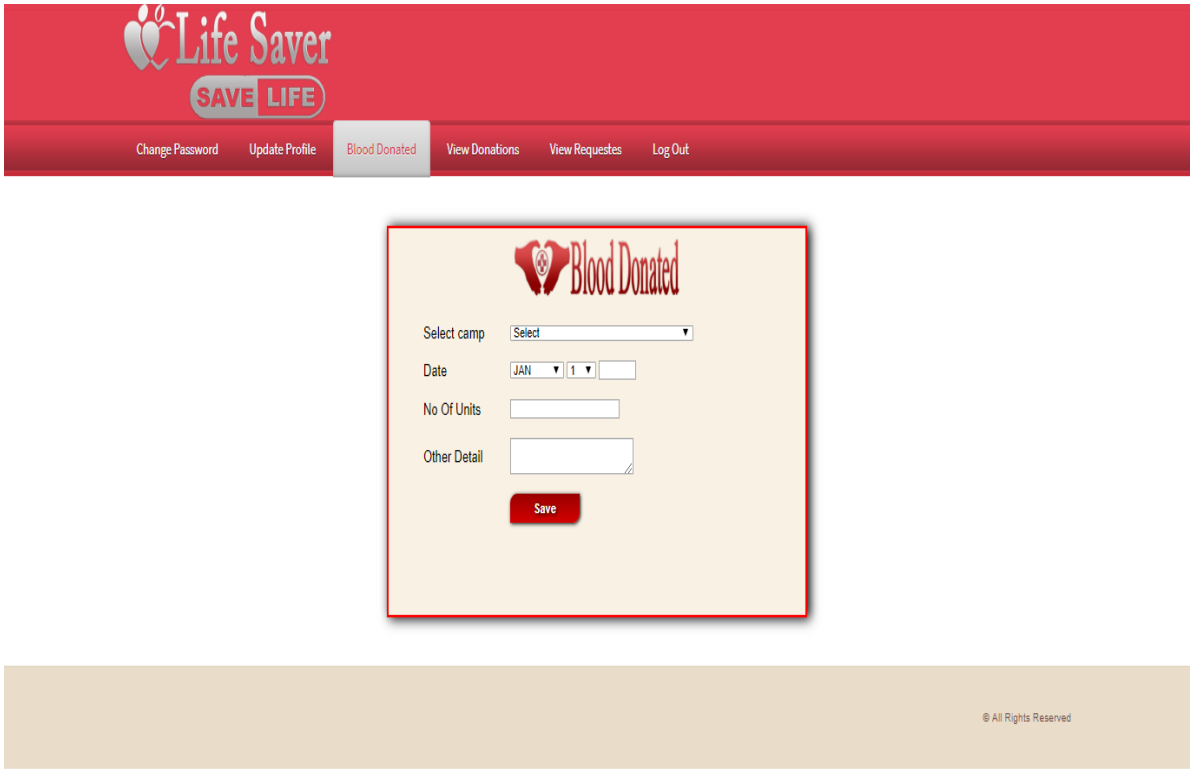
LOGGED IN FRONT PAGE

This is the web portal after the donor logs in.

UPDATE PROFILE PAGE

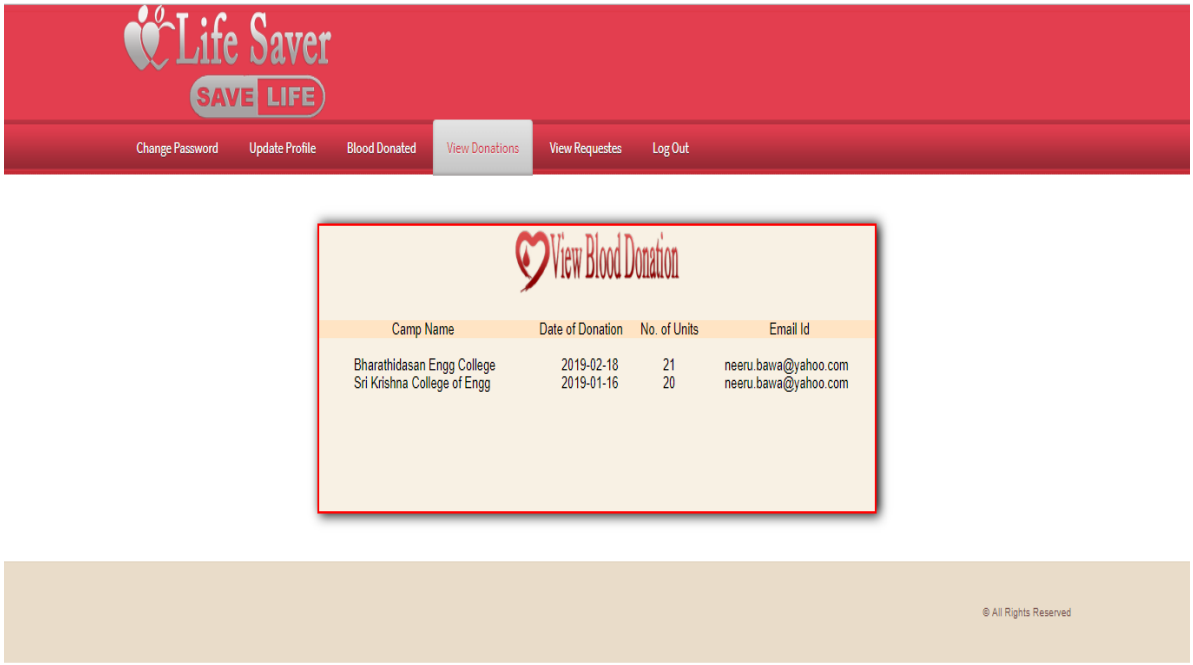
This page updates the profile of the donor.

ADD DONATION DETAILS



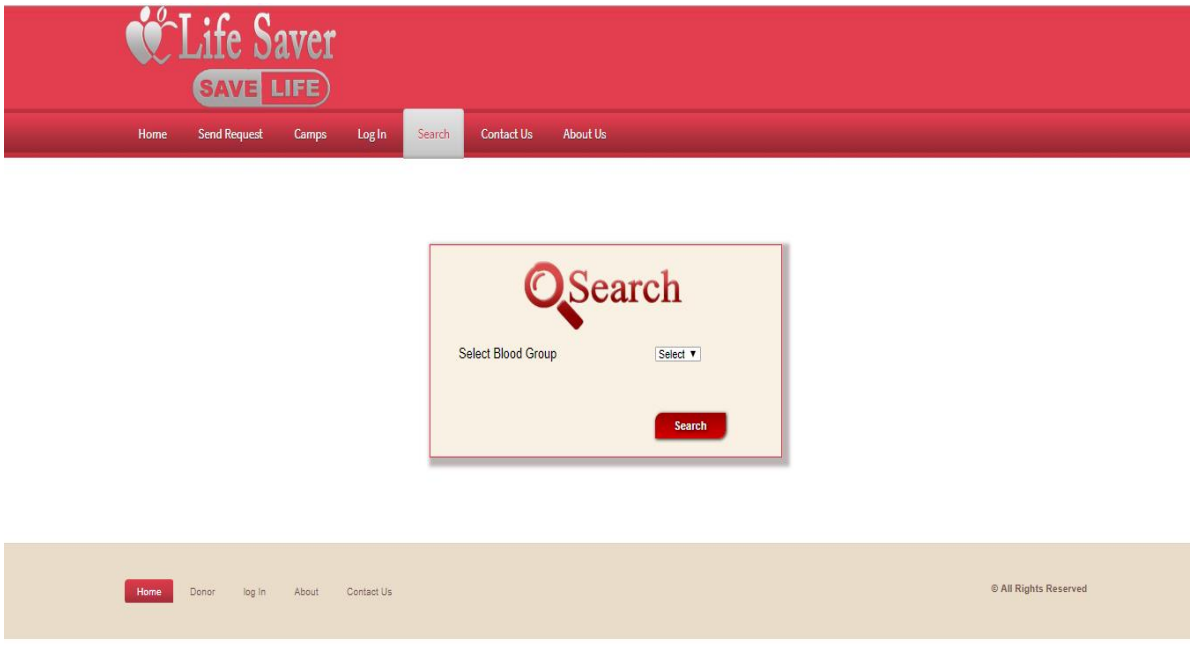
Here, the donor can enter the details of his/her donation like how much units he/she has donated and the date he/she has donated the blood.

VIEW REQUESTS PAGE



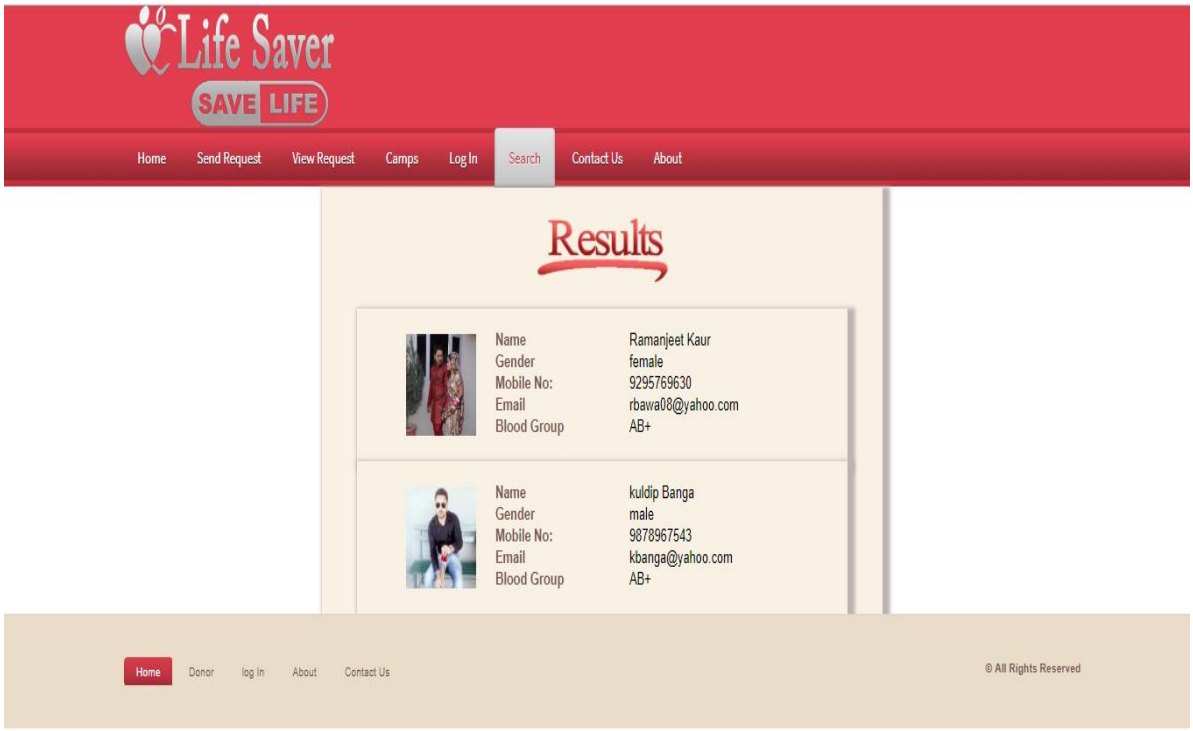
This page displays the details of the request which are being made by the receiver who are in need of blood.

SEARCH FOR BLOOD DONORS



This page is used to display or search the donors so that the receiver gets his/her blood.

SEARCH RESULTS



This page gives the results for the donee after we search for the donors by entering the blood group in the search page.

CONTACT US PAGE

By the completion of this project, we managed to

- Ease the process of blood donation and reception
- Improve the existing system
- To develop a scalable system
- To be highly available

Scope of discussion:

- Ensure that all the functionalities of a blood bank are covered.
- Make sure the program is simple and easy to use.

7. CONCLUSION

Blood Bank Management is crucial and very necessary for hospitals so that they can connect patients to donors effectively. In today's date, India faces a shortage of 10% relative to its blood requirement. The issue is not a dearth of donors but an ineffective management of blood banks. We aim to bridge the gap between potential donors and patients in need through our project.

Our major focus with this project are the rural area hospitals where there is lack of resources due to which needs of the patients are not met on time. Through our project we aim to connect these rural hospitals to be well facilitated with the urban hospitals.

Our software deals with online blood bank and managing the various operations of the blood bank with efficiency and effectiveness.

Technology is introducing new innovations day by day, reducing the time required to do new things. The proposed system can be used to reduce the time required to deliver required blood to the needy in cases of emergency. Our project provides a way of communication and synchronisation between hospitals and blood banks. It also provides them with the facility of communicating with the nearby donors in case of emergencies. The database is a vital aspect of the system. The database of the hospitals and the blood banks must be checked for consistency on a regular basis for a smooth functioning of the system. Web application for the blood banks is also developed using open source tools, hence the system developed is quite feasible.

References

[1] https://www.testingexcellence.com/

[2] https://study.com/academy/lesson/

[3] Reference from SMART INDIA HACKATHON THEMES

[4] References from the blood donation camps organised inside the campus

[5] K M Akkas Ali, IsratJahan, Md. Ariful Islam, Md. Shafaat Parvez, ”Blood Donation Management System”, Institute of Information Technology, Jahangirnagar University, Dhaka, Bangladesh , Department of Computer Science and Engineering

[6] JavedAkhtar Khan and M.R. Alony, “A New Concept of Blood Bank Management System using Cloud Computing for Rural Area (INDIA)”, TIT Group of Institute of Engineering, Bhagwant University Ajmer, (RJ) INDIA, International Journal of Electrical, Electronics

[7] Prathamesh Raut, Prachi Parab, Yogesh Suthar, Sumeet Narwani, Sanjay Pandey, “Blood Bank Management System”, Thadomal Shahani Engineering College, Bandra, Mumbai, Maharashtra

[8] Omar Aldawaud, Tzilla Elrad, Atef Bader, “UML profile for Aspect-Oriented Software Development”, Lucent Technologies, Illinois Institute of Technology, Chicago, IL

[9]http://www.ijera.com/papers/vol%201%20issue%202/012260263AF.pdf

[10] https://www.irjet.net/archives/V5/i1/IRJET-V5I1101.pdf