

D2R: Smart Blood Donation

Submitted in partial fulfillment of the requirements for the award
of
Bachelor of Technology degree in
Information Technology

By

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DEPARTMENT OF INFORMATION TECHNOLOGY

SCHOOL OF COMPUTING

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade “A” by NAAC | 12B Status by UGC | Approved by AICTE

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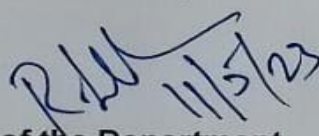
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **Richa Sharma(39120095)** and **Lakku Snehalatha reddy(39210115)** and who carried out the Project Phase-2 entitled "**D2R:Smart Blood Donation**" under my supervision from January 2023 to May 2023


Internal Guide

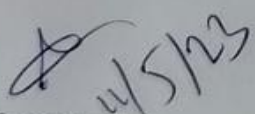
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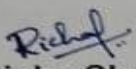

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DECLARATION

I, **Richa Sharma(39210095)** hereby declare that the Project Phase-2 Report entitled **D2R:Smart Blood Donation** done by me under the guidance of **Ms. Ramalakshmi, M.E.** submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering Degree in Information Technology.

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ABSTRACT

“D2R: Smart Blood Donation” is a mobile-based project developed in android platform. This android project provides an easy and fast way to search for blood. This app enables users to find blood in emergency situations. Here Users can easily find the details of donors and receivers through their mobiles. Social media Serves as a powerful tool for people to share their stories and needs, reaching new audiences across the globe, but things that need immediate attention like need for blood and other medical requirements take time that we don't have when shared through social plat forms like WhatsApp and Facebook. Many people around the world die as their family and hospitals couldn't arrange for blood at the right time. We can help you here with our app, “D2R”.

We help you to find nearby locations blood camps and blood donor in a particular location by an effective platform to share their needs.

Users need to register with the application to view all the information which is available on the app. The user can search the details and find the details of the blood donors. Users can get brief details about the donor's contact details including their location. The user can make a call or message directly by using this application.

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CHAPTER 1

1.1 INTRODUCTION

Conventionally, when a patient needs blood, he/she has to contact a blood bank or a compatible blood group of a donor in their circle, family, and friends. However, it is difficult to find suitable donor within a limited group of people in a given time. In addition, there is no guarantee that blood banks will have compatible blood group in stock. There is also steady increase in blood donation requests posts in social networking sites (like Facebook, twitter, Instagram, etc.) requesting for donation.

D2R application can resolve these issues by connecting patients promptly with a large pool of donors in the same region via an authorized clinic. When a patient needs a blood donation, the clinic (where the patient is admitted) can use the application to contact the blood donors in the vicinity or nearby city based on their location. The registered donors will get notification about the blood donation needed at a specific clinic where they can go and donate.

In many countries, demand for blood and blood products exceeds supply and services face the challenge of making them available sufficiently, in addition to ensuring their quality and safety. Adequate supply can only be ensured through regular voluntary and unpaid donations. In this context, technological advances in health, from the introduction and expansion of eHealth technologies, have contributed substantially to accessibility to information and services, strengthening the health system and meeting the prerequisites of equity and social justice. This also applies to initiatives aimed at gathering and maintaining blood donors.

D2R application provides donors with functionalities including “blood request”, “donation history”, “invite friend”, and “book an appointment” (with the clinic to donate blood), at the same time the requester (aka clinic) can send requests and use this application to maintain the different blood donation activities.

1.2 Background

Coronavirus pandemic uncovered blood deficiency across numerous Indian states, and this present circumstance emerged notwithstanding numerous great Samaritans over and over again venturing forward to give their blood.

India needs 15 million units of blood every year except figures out how to gather just 11 million units, a deficiency of 4 million units.

On the event of World Blood Giver Day, the wellbeing experts highlighted the need to feature the weaknesses and further develop foundation and organization of blood donation centers across India. As indicated by certain reports, India needs 15 million units of blood every year except figures out how to gather just 11 million units, a shortage of 4 million units. It is additionally assessed that almost 12,000 people bite the dust in India every day, due to non-accessibility of value blood. While this is one

side of the coin, the opposite side shows that India squanders around 6.5 lakh units of endlessly blood parts every year, because of absence of legitimate storerooms.

Many specialists are raising their voices on the dire need to address this main issue in the general public.

Ladies experiencing draining during pregnancy or at labour, ladies and youngsters experiencing pallor because of hunger, casualties of injury, and so forth, all need blood or/and blood-related items like plasma or platelets.

"Every day India needs huge amounts of blood to treat numerous patients going through a medical procedure or seeking therapy for different types of malignant growths. While there is a lack of value blood in the country, huge amounts of it gets squandered when it cannot be bonded to a patient, inside the perfect opportunity, and in the correct means. Key variables prompting gave blood wastage absence of legitimate storerooms, spillages, tainting, testing delays because of labour supply issues and so forth. This multitude of issues can be addressed and should be made plans to guarantee we arise into a sound India," said Dr. Pradeep Panigrahi, Clinical Chief, SLG Medical clinics. "A few reports propose that India doesn't have even a solitary very much oversaw blood donation centre in no less than 63 regions as of September 2020. This absence of blood donation centres office additionally adds to the medical services conveyance trouble, bringing about loss of lives in crisis circumstances like injury/mishaps. Numerous singular clinics are endeavouring hard to guarantee there is a legitimate stockpile of value blood to those out of luck; yet the organization of blood donation centres should fill in numbers to guarantee we address this worry," notices Dr. Satwinder Singh Sabharwal, COO, Mindful Gleneagles Worldwide Emergency clinic.

1.3 Problem Statement

In the case of an emergency, it is quite hectic for a patient to hunt for donors. What happens when someone requires blood but is unsure what to do?

There is a wealth of information available among receivers (those who get blood), donors (people who donate blood), blood banks, and hospitals (nearby locations). The medical facility is not equally provided throughout the country. If someone needs blood, he or she should first contact known people such as neighbors, family members, and friends, then the nearest hospitals/clinics and blood banks; if they cannot find the right blood group, it is extremely difficult for them to contact other people in order to obtain blood in a timely manner. An emergency situation, such as an accident in which uncommon blood types are required, or a blood shortage in which the hospital has to reach a large number of donors but has no way of doing so.

That is the problem I hope to resolve with my application, which allows anybody interested in donating blood to register as a donor. Furthermore, if any general user wishes to submit a request for blood online, he may do so by browsing the database; changes are reflected in all interfaces utilised, and updates are in real time. As a result, the system enables easy and speedy connection among diverse organisations, including patients and blood banks. It is intended to address the shortcomings of the current system.

1.4 Subject and Field of study

1.4.1 Operating system

For the most part, Android Operating Systems (AOS) gadgets are accessible with a merger of open-source programming and exclusive programming yet with AOS source code discharged by Google Inc. Under the open-source license assertion. Initially, AOS was created by Android Inc. in October 2003 that Google upheld monetarily and later acquired it in 2005. Android was uncovered in 2007 related to the establishment of the Open Handset Alliance; a relationship of equipment, programming, and media transmission organizations devoted to direct open guidelines for smartphones and other cell gadgets. Android is well known in a wide range of specialized fields that require an easy to understand, minimal effort and adaptable programming or applications for innovative gadgets. Because of the Android open-source style, its empowered programming engineers worldwide and dedicated them to utilize the Android stages a base for Smartphones and PC tablets related tasks that include new highlights for cutting edge clients. The other working framework's engineers are additionally making their undertaking in AOS for Android gadgets to make more progress. This sort of achievement made an objective for patent prosecution as a component of Smartphone wars between innovation producers. AOS based gadgets discover more shopper requests relatively to Microsoft Windows, Apple iOS and Mac OS X gadgets consolidated in the most recent three years. Now AOS is the most used mobile platforming the word.

1.4.2 Global positioning system

By using data from GPS satellites to determine exact land area, the Global Positioning System (GPS) has enabled a route in equipment. At first, it was only used by the US military. Later, however, this administration became publicly available on a global scale, and most collectors are now built into cell phones, PC tablets, aeroplanes, GPS beacons, and cars. Many now feel that it is more advantageous to just use their cellphones with GPS as route tools rather using another GPS device. Contrary to consumer and commercial GPS systems, cell phone routes frequently receive free and quickly scheduled updates. Moreover, GPS is frequently used to track children, objects, animals, and elderly people suffering from dementia and Alzheimer's diseases. Google Maps is typically used to choose the destination, calculate the travel time, and determine the distance to a destination from your current position. Essentially, Google Maps features a wide range of utilisation programming interfaces (APIs) that enable you to integrate Google Maps' remarkable suitability and usefulness into your mobile apps. Google provides instructions on how to use a library to play Google Maps in mobile applications.

1.5 Specific Objectives

This project's primary goal is to create and provide:

- A dynamic location base blood donation application to find blood donors in case of emergencies within the region.
- To help the people who are in need in blood.

1.6 Scope of study

Depending on the blood group selected, donors and blood banks' locations will be shown on a Google Maps sheet on the application's home screen. The presented donor information will include the most recent geolocation. The user may utilise WhatsApp to talk inside the app to get in touch with a donor.

Other special features include:

- Verification of users
- Emergencies contacts.
- Find nearby hospitals.

1.7 Justification of study

The cell phone has become a crucial component of daily life and is frequently utilised in study environments for both academic and non-academic purposes. This study is important for both educational and health organisations since it aims to increase awareness of blood donation, mobile technology, how it is transforming and saving lives, and how it enhances our daily lives.

Many similar applications that focus on these issues are now available on the market. Also, they frequently experience errors. According to my study, several of these programmes happen to solve these errors and offer superior solutions.

1.8 Methodology

The D2R blood bank system is a great project this is designed based on the successful completion of projects on blood bank management system. The aim is to provide blood donation service who are in need. Mobile Application Based Blood Bank Management System is an Android based application that is designed to store, process, retrieve and analyse information of patients and donors within a blood bank. During an organ transplant, accidents, cancer treatment etc. blood is required. For blood donation, one needs to check for a donor or needs to visit blood bank. The Manual Blood donation system has many disadvantages where it is too time taking process, often leads to error results, consumes lot of manpower, lacks donor information, retrieval of data consumes a lot of time, accuracy is less. At time of emergency, it becomes hard to approach the right donor. Rare blood groups cannot be available all the time at all blood banks and recipients find difficulties to track the right blood donor.

1.9 Expected Results of the Study and Possible Use

The system to be developed is expected to enable the overall population to comprehend and encounter the fact that cell phones can help save lives and not see their cell phones as just an apparatus for making calls or taking pictures. D2R will have an extraordinarily favorable position over the customary method for discovering and locating blood donors within the region and country in the future.

CHAPTER – 2

2.1 LITERATURE SURVEY

In “Android blood bank” by prof. Snigdha et.al [1] proposed an application for blood donor. In that application the donor can find the exact path by using GPS (Global Positioning System). The detail of blood donors will be saved. private data and confidential data are only viewed by the administrator. They have methodologies like PHP, MY SQL, Android.

In “MBB: A Life Saving Application” by Narendra Gupta et.al [2] has proposed a method to create a website with android application. In their application they have proposed, the donor is tracked by Geographic Information System (GIS). The purpose of their website is used to update their current system where data's can only be viewed by authorized user. They contain two device type: 1) An android phone with android OS. 2) A computer for website and database which is used to store the information about the donor.

In “An Android Application for volunteer Blood Donors” by Sultan Turhan et. al [3] proposed an application for volunteer blood donor, main aim of this application is to notify regularly the donor location to Rh**. Rh** is a smart information system which aim to control the blood donation and blood supply chain.

In “Android Based Health Application in Cloud Computing for Blood Bank” by Sayali Dhond [4] has proposed android based application for blood donor, in which the donor's information are stored in cloud. They user should request blood on the cloud and the information are sent to nearby hospital or blood donor who are register on cloud.

In “The Optimization of Blood Donor Information and Management System bt Technopedia” by P. Priya et.al [5] has proposed a method of creating website with android application in which the blood donor can easily available within the required time. The donor who are nearby location are easily tracked by GIS. In this application the website is to update the information of donor who have already given blood in various hospital. While comparing to manual system, computer-based information system is time consuming, laborious [6].

Data mining concept is important benefits to the blood bank sector, data mining tool can be a fundamental tool to analyze the data gathered by blood banks through their information system [7].

In “Android Blood Donor Life Saving Application in Cloud Computing” by T. Hilda Jenipha and R. Backiyalakshmi [8] has proposed an application for blood donation. In this application during emergency, it will list of donors in the city. In this cloud-based services are provided in which it will prove important in emergency blood delivery. They can enable immediate access to donors' information and location. It will ensure

the instant location tracking and communication. only the register person can access these services

S.NO	Year	System	Advantages	Limitations
1	2014	Android blood donor lifesaving application in cloud computing	Develop a computer system that will link all donor	It does not allow integration with blood donor management system
2	2016	Online blood bank management system using android	Faster communication between agent using restful services	The system does not give emergency services
3	2016	Android blood bank	Wireless internet technique enables the flow of data to work more rapidly	It reveals real time location of donor which is not good for security purpose
4	2016	An efficient android app for blood donation process	This application will help to develop public awareness along is visitor of the hospital	It does not have control limit over professional blood donors

Table.1

2.2 Inference from Literature Survey

The overall review says that blood is essential need for every human without blood no one can live in this world. In case of any emergency the patient needs blood, the doctors will check in hospital or blood bank.

In case if blood is not available, we can use this type of applications. In these applications who are all willing to donate blood can register they information. In case of emergency the patient may not get blood at that time once we enter the blood group which we needed it will show the nearby donor who are willing to donate blood.

Once the blood is donating the information of the donor will be disappear for next three month. The immediate availability of blood can save other lives in case of emergency needs. Blood transfusion is a continuous demand, as it is widely required for many medical surgeries and critical operation.

[1]From that paper, many critical data of donors were used. A donor's blood donation frequency and the last donation time were included in the utilized data.[2] Smart Blood Bank is online web based project. Today you can easily connect with anything through

internet services.[3]It is a web application allows you to access the whole information about Blood Bank Management Software.

2.2.1 Literature review:

AUTHOR	YEAR OF PUBLICATION	DESCRIPTIONS	PROS	CONS
Shadi Alzu'bi, and Darah Aqel	2021	The immediate availability of blood can save other lives in case of emergency needs. Blood transfusion is a continuous demand, as it is widely required for many medical surgeries and critical operation.	supplying blood from blood donors to the hospitals and transfusion centers as well as matching the blood compatibility between the donors and patients	It's a time consuming process.
Pinar KIRCI, Seyma AKTAS and Burcu SEVINC	2020	In the paper, many critical data of donors were used. A donor's blood donation frequency and the last donation time were included in the utilized data.	We can identify active donors, and approach them conveniently	Not helpful in emergency cases

Table.2

AUTHOR	YEAR OF PUBLICATION	DESCRIPTIONS	PROS	CONS
Tarun Kumar,Vaibhav Srivastava	2017	Smart Blood Bank is online web based project. Today you can easily connect with anything through internet services.	The system database will be accessible in real time.	The system doesn't keep the details of the gathering stock of blood.
Ravi kumar, Shubham Singh, V Anu Ragavi	2017	In the paper, this is a web application allows you to access the whole information about Blood Bank Management Software	A doctor or a patient can request for an exact blood group	No use in emergency cases

Table.3

AUTHOR	YEAR OF PUBLICATION	DESCRIPTIONS	PROS	CONS
Monika Mandale, Pradnya Jagtap and S. S. Patil	2017	Blood bank System is to create an e-Information about the donor and organization that are related to donating the blood.	It is also able to maintain reports like stock, etc.	It doesn't provide the live location.
SACHIN KUMAR	2020	The entire project has been developed keeping in view of the distributed client server computing technology, in mind.	We can identify active donors, and approach them conveniently	Not helpful in emergency cases

Table.4

2.3 Concept of blood donation

Blood donation is a voluntary procedure that can help save the lives of others. There are several types of blood donation that help meet different medical needs. Blood donation, also called blood banking, refers to the process of collecting, testing, preparing, and storing whole blood and blood components intended primarily for transfusion. Blood donors are typically unpaid volunteers, but they may also be paid by commercial blood donation and processing enterprises, such as independent blood banks and donor centres. In certain nations, built-up provisions are restricted, and givers normally give blood when family or companions need a transfusion (coordinated donation). Numerous benefactors give as a demonstration of philanthropy; however, in nations that permit paid gifts, a few givers are paid, and sometimes there are motivators other than cash, for example, paid downtime from work. Donors can likewise have blood drawn for their own future use (autologous donation). Giving is moderately sheltered, yet a few benefactors have wounds where the need is embedded or may feel blackout. Potential benefactors are assessed for whatever may make their blood hazardous to utilise. The screening incorporates testing for illnesses that can be transmitted by a blood transfusion, including HIV and viral hepatitis. The giver should likewise respond to inquiries concerning the restorative history and take a short physical examination to ensure the gift is not unsafe for his or her well-being. How frequently a benefactor can give changes from days to months depending on what segment they give and the laws of the nation where the donations happen. For instance, in the United States, contributors must hold up for about two months (56 days) between entire blood gifts, yet just seven days separate platelet pheresis gifts and the twice per day, seven-day time span in plasmapheresis. The amount of blood drawn and the strategies change. The gathering should be possible physically or with mechanised hardware that takes just explicit parts of the blood. The greater part of these fractions of blood utilised for transfusions have a short timeframe of realistic usability, and keeping up a consistent supply is an exigent issue. This has prompted some expanded enthusiasm for

autotransfusion, whereby a patient's blood is rescued amid medical procedure for persistent reinfusion—or, on the other hand, is "self-given" prior to when it will be required. For the most part, the idea of "donation" does not allude to providing for oneself.

2.4 What is blood?

Blood is a fluid that the heart pumps throughout the body via the veins, arteries, and other blood vessels. Typically, an adult guy of average stature contains 6 quarts (5.6 litres) of blood. By removing carbon dioxide and other waste, the blood also carries nutrients and oxygen to the body's tissues. The gloomy blood liquid, or plasma, carries diverse cells, waste products, red and white platelets, platelets, and other components. The majority of platelets, or erythrocytes, are red and make-up between 4.5 million and 6 million per cubic millimetre of blood. They complete the exchange of carbon dioxide and oxygen between the body's tissues and the lungs. They complete the trading of oxygen and carbon dioxide between the lungs and the body tissues. The leukocytes, or white platelets, shield the body against contaminating life forms and outside operators, both in the tissues and in the circulation system itself. Human blood contains around 5,000 to 10,000 leukocytes for every cubic millimetre; the number increases with the presence of disease. The blood additionally contains platelets or thrombocytes, and at any rate, 15 different elements are dynamically involved in blood coagulation. Platelets are little plate-formed cytoplasmic packs of blood-thickening synthetic substances delivered by megakaryocytes; if their generation is frustrated, as by AIDS or chemotherapy, there is an expanded danger of dying. Likewise, circling in the plasma are the hormones that the endocrine organs emit directly into the circulation system. Furthermore, fundamental salts (for example, those of sodium and potassium), basic plasma proteins (egg whites, globulins, and fibrinogen), and metabolic waste products (for example, urea) circle in the plasma.

2.5 Blood group Basics

There are eight blood groups and they are classified using into two systems:

- ABO System
- Rhesus System
- *ABO System:*

The first system is called ABO System it has four main groups:

- O Group
- A Group

→ B Group

→ AB Group

➤ *Rhesus System:*

The second system is called the rhesus system and it is classified as rhesus positive (+) and Rhesus negative (-).

The two systems combine to define the following of eight different blood groups of O-, O+, A-, A+, B-, B+, AB- and AB+.

2.6 Blood Group Compatibility

The table below demonstrates blood type compatibility. All major blood groups can be given to someone with the blood type AB+. On the other hand, O-blood donors are the only ones who can give blood to O-blood recipients.

Blood Type	Gives	Receives
A+	A+, AB+	A+, A-, O+, O-
O+	O+, A+, B+, AB+	O+, O-
B+	B+, AB+	B+, B-, O+, O-
AB+	AB+	Everyone
A-	A+, A-, AB+, AB-	A-, O-
O-	Everyone	O-
B-	B+, B-, AB+, AB-	B-, O-
AB-	AB+, AB-	AB-, A-, B-, O-

Table.5

2.7 Mobile Technology

The whole world is going versatile. Telephones, PCs, and media gadgets presently fit in our pockets and can relate us to an assortment of information sources and empower data about wherever we go. There is a critical enthusiasm for misusing the practically all-inclusive intrigue and bounty of these innovations for their institutional use, which could be dangerous for the society. The possibility of versatile utilisation looks to empower anywhere, whenever, and any gadget' compact and customised

learning; it will encourage correspondence, coordinated effort, and imagination among members in real and proper settings of utilisation. In certain regards, this is seen as an insurgency of without a moment to spare' and only for me' data conveyance. In the present data- based world, fast and proficient dispersion of high-affirmation data is fundamental. Versatile innovation, specifically hand-held cell-based gadgets, is assuming an enormous job in rethinking how data is scattered. The disruption of portable innovation is changing the basic role of cell phones from making or accepting calls to recovering the most recent data regarding any matter. New portable advances, for example, the iPhone, iPad, Android, and comparative gadgets, have changed the way data can be circulated. Previously, cell phones and Personal Data Assistants (PDAs) were primarily used for information storage and display. Today, an inexorably enormous number of gadgets are concentrating on information stockpiling and display as well as correspondence and preparation. As a result, associations have started utilising portable innovations as a method for data scattering. These associations incorporate, but are not limited to, government establishments, academic institutions, hospitals, and various basic framework associations. Versatile innovation offers numerous focal points for both government and non-legislative associations over the conventional strategies for data dispersal. It isn't restricted by land area and can be gotten to anyplace with the suitable innovation. Portable innovation is likewise more promptly accessible on the grounds that the gadgets are consistently with the client and consistently on. This network is particularly significant during military missions and activities. Significant data, for example, enemy knowledge, territory depiction, maps, and resource data can be gotten to by the war fighter in a split second, whenever, anywhere over the span of a fight or crusade. Thus, when messages or other data should be appropriated, it will reach the greatest number of individuals when portable innovation is used. Utilising cell phones for data gathering additionally offers advantages over customary types of data accumulation. Since versatile innovation can be taken anywhere, data can be progressively gathered in the field. Versatile applications help to make the accumulation of data simpler and more productive than customary gathering strategies.

2.8 Existing System

The system we present here is adequate for searching blood donors for available blood and thereby saving valuable time and money. This application provides necessary options to serve people on their emergency need making them free from worrying for blood by providing lot of donors at a single click. The options that are provided by this application are:

- Donor registration and blood collection
- Blood requisition/issue
- Discard accounting
- User access control
- Detailed donor database
- Maintain and update unique donor identification

- Search facilities by donor, patient, doctor, blood bag, and other recognizing factors
- Correlation and cross referencing between files
- Powerful search for donors by blood group, sex, location, telephone number.
- Exhaustive report formats and registers
- Interface with grouping and testing machine
- Sends various auto-SMS for alerting donor and reminding location and time
- Adequate security to protect users' potential information

Besides these, there are ample scopes to improve this application. Some more features can be added to establish this application for a social networking application. Blood Donation Management System is a mobile-based application to maintain day to day transactions in a blood bank.

This application is to create an e-Information about the donor and organization that are related to donating the blood. This software help to register all the donors, Blood collection details, blood issued details etc. When registration is completed, a user becomes a donor who will be able to open an account providing fundamental information with E-mail ID/Registered mobile number and Password.

They can modify their account information by updating username, mobile number and profile picture. If donors are eager to donate blood, they can confirm the system. They can remove their account from the system if they wish for. In this application, Admin is the main authority who can add, delete, and modify information if required. A user is able to search donor from the home page. This application provides search facilities by donor, patient, doctor, blood bag, and other recognizable factors.

A dynamic search will show donor information by nearest place and blood donation expire date. It will make easier to find and contact with donors when needed. There is adding on facility of printing available as an option. Interface with grouping and testing machine provides user friendly communication. This application sends various auto-SMS for alerting donor and reminding location and time.

Donor can send or receive message within this system. This system will automatically alert a donor before 24 hours of donating blood reminding the location and time by sending message when he/she is again eligible for donating blood after his/her previous donating. Donor can use this application through android based mobile phone.

Donors login into the system with their e-mail Id and password. It allows donor to search others by location, blood group. They can get other donors details information. If they want to contact with donor, they can directly call to available donors. We can say in short that Blood Bank and Donation Management System is an online centralized web portal which helps blood banks, hospitals and any other users to look for donors in their nearby area who will be available in quick time. This system helps the admin to check the database when he wants and it is very flexible for the hospital management, blood banks and any users to retrieve the data when they want and they can have the data according to the query given by the user from one particular date to another by the query given by admin.

CHAPTER - 3

REQUIREMENTS ANALYSIS

3.1 FEASIBILITY STUDIES/RISK ANALYSIS OF THE PROJECT

The feasibility study is performed to determine whether the proposed system is viable considering the Technical, Operational and Economical factors. After going through feasibility study, we can have a clear-cut view of the system's benefits and drawbacks.

1. **Technical Feasibility:** The technical issue usually raised during the feasibility stage of the investigation includes the following:
 - Does the necessary technology exist to do what is suggested?
 - Do the proposed equipment's have the technical capacity to hold the data required to use the new system?
 - Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?
 - Can the system be upgraded if developed?
 - Are there technical guarantees of accuracy, reliability, ease of access and data security?
2. **Operational Feasibility:** Proposed projects are beneficial only if they can be turned out into information system. That will meet the organization's operating requirements. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following: -
 - Is there sufficient support for the management from the users?
 - Will the system be used and work properly if it is being developed and implemented?
 - Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above- mentioned issues. The well-planned design would ensure the optimal utilization of the computer resources and would help in the improvement of performance status.

3. **Economic Feasibility:** A system can be developed technically and that will be used if installed must still be a good investment for the organization. In the economic feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Financial benefits must equal or exceed the costs. 13 The system is economically feasible. It does not require any addition hardware or software. Since the interface for this system is developed using the existing resources and technologies available at NIC, there is nominal expenditure and economic feasibility for certain.

3.2 SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENT

3.2.1 SOFTWARE REQUIREMENTS

- ❖ Windows 10 OS or Above
- ❖ Mobile application
- ❖ Google maps API
- ❖ Firebase
- ❖ React native with android studio
- ❖ Languages used:
 - HTML
 - CSS
 - JQuery
 - AJAX
 - Javascript
 - Bootstrap
 - PHP

❖ Windows 10 or above

Windows 10 is a Microsoft operating system for personal computers, tablets, embedded devices and internet of things devices. Microsoft released Windows 10 in July 2015 as a follow-up to Windows 8. The company has said it will update Windows 10 in perpetuity rather than release a new, full-fledged operating system as a successor.

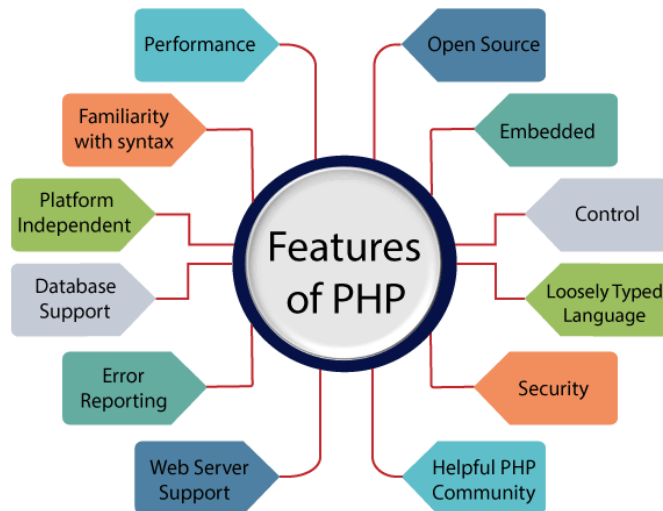
❖ Mobile Application

A mobile app (or mobile application) is a software application developed specifically for use on small, wireless computing devices, such as smartphones and tablets, rather than desktop or laptop computers. Mobile apps are sometimes categorized according to whether they are web- based or native apps, which are created specifically for a given platform. A third category, hybrid apps, combines elements of both native and web apps.

❖ PHP

PHP is a server-side scripting language designed specifically for web development. It is open-source which means it is free to download and use. It is very simple to learn and use. The files have the extension “.php”.

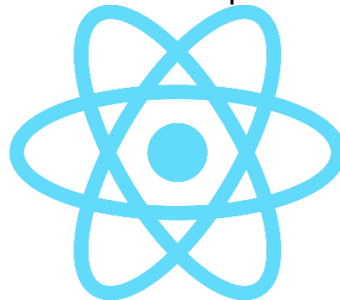
Rasmus Lerdorf inspired the first version of PHP and participated in the later versions. It is an interpreted language and it does not require a compiler.



❖ React native with Android Studio

React Native (also known as RN) is a popular JavaScript-based mobile app framework that allows you to build natively-rendered mobile apps for iOS and Android. The framework lets you create an application for various platforms by using the same codebase.

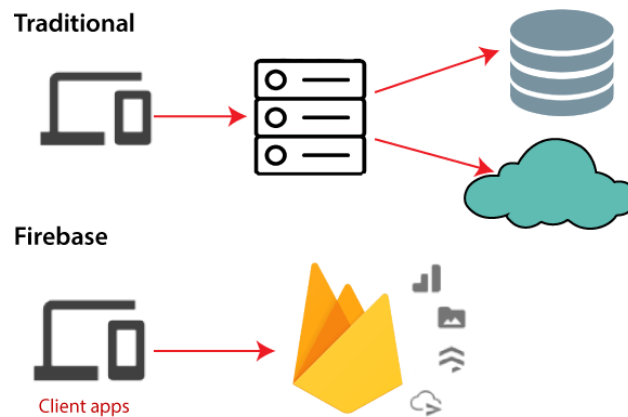
React Native was first released by Facebook as an open-source project in 2015. In just a couple of years, it became one of the top solutions used for mobile development. React Native development is used to power some of the world's leading mobile apps, including Instagram, Facebook, and Skype. We discuss these and other examples of React Native-powered apps further in this post.



❖ Firebase

Firebase is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure.

Firebase is categorized as a NoSQL database program, which stores data in JSON-like documents.



❖ **Google maps API:**

The Maps JavaScript API lets you customize maps with your own content and imagery for display on web pages and mobile devices. A Google Maps API is an API (short for "application programming interface") that allows developers to access Google Maps data and functionality for their own projects.

❖ **Languages Used:**

➤ **HTML:**

HTML is an acronym which stands for Hyper Text Markup Language which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.

Hyper Text: HyperText simply means "Text within Text." A text has a link within it, is a hypertext. Whenever you click on a link which brings you to a new webpage, you have clicked on a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.

Markup language: A markup language is a computer language that is used to apply layout and formatting conventions to a text document. Markup language makes text more interactive and dynamic. It can turn text into images, tables, links, etc.



➤ **CSS:**

Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable. CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs, variations in display for different devices and screen sizes as well as a variety of other effects.

CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.



➤ **Jquery:**

JQuery is a small, light-weight and fast JavaScript library. It is cross-platform and supports different types of browsers. It is also referred as, write less do more? because it takes a lot of common tasks that requires many lines of JavaScript code to accomplish and binds them into methods that can be called with a single line of code whenever needed. It is also very useful to simplify a lot of the complicated things from JavaScript, like AJAX calls and DOM manipulation.



➤ **AJAX:**

Asynchronous JavaScript and XML (Ajax) refer to a group of technologies that are used to develop web applications. By combining these technologies,

web pages appear more responsive since small packets of data are exchanged with the server and web pages are not reloaded each time that a user makes an input change. Ajax enables a web application user to interact with a web page without the interruption of constant web page reloading. Website interaction happens quickly with only portions of the page reloading and refreshing.

➤ **JavaScript:**

JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages. It is an interpreted programming language with object-oriented capabilities.

JavaScript was first known as LiveScript, but Netscape changed its name to JavaScript, possibly because of the excitement being generated by Java.

JavaScript made its first appearance in Netscape 2.0 in 1995 with the name LiveScript. The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers.



➤ **Bootstrap:**

Bootstrap is the most popular HTML, CSS and JavaScript framework for developing a responsive and mobile friendly website. It is absolutely free to download and use.

It is a front-end framework used for easier and faster web development. It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many others. It can also use JavaScript plug-ins. It also facilitates you to create responsive designs.

3.2.2 HARDWARE REQUIREMENTS

❖ **Hard Disk:**

A hard disk or fixed disk, is an electro-mechanical data storage device that uses magnetic storage to store and retrieve digital information using one or more rigid rapidly rotating disks (platters) coated with magnetic material.

During the mid-1990s the typical hard disk drive for a PC had a capacity of about 1 gigabyte. As of January 2019, desktop hard disk drives typically had a

capacity of 1 to 6 terabytes, with the largest capacity, drives reaching 15 terabytes.

❖ **RAM:**

Random access memory (RAM) is a type of data storage used in computers that is generally located on the motherboard. This type of memory is volatile and all information that was stored in RAM is lost when the computer is turned off. The RAM chip may be individually mounted on the motherboard or in sets of several chips on a small board connected to the motherboard. Older memory types were in the form of chips called dual in-line package (DIP). The three main memory circuit boards types containing chips are: RIMMs (Rambus in-line memory modules), DIMMs (dual in-line memory modules) and SIMMs (single in-line memory modules). Most motherboards today use DIMMs. Sometimes, people get confused about the difference between memory and storage, in part because both can be measured in megabytes (MB), gigabytes (GB) and terabytes (TB). By contrast, storage is slower, but it can retain data when the device is powered down. So, for example, if a document has been saved to a hard drive prior to a power outage or system crash, the user will still be able to retrieve it when the system is back up and running.

❖ **Processor:**

A processor is an integrated electronic circuit that performs the calculations that run a computer. A processor performs arithmetical, logical, input/output (I/O) and other basic instructions that are passed from an operating system (OS). Most other processes are dependent on the operations of a processor. Dual core is a CPU that has two distinct processors that work simultaneously in the same integrated circuit. This type of processor can function as efficiently as a single processor but can perform operations up to twice as quickly.

CHAPTER 4

DESCRIPTION OF PROPOSED SYSTEM

All the records are computerized and stored in a well-maintained database. Anyone can visit the website and easily register themselves for donating blood in need. Hospitals and patients can search for donors in their desired location by typing in a landmark as a keyword. This system is very User-friendly and interactive between the donor and the recipient. The system avoids wasting time for people to visit the hospitals during covid times and register themselves for blood donation. Records for hospitals and recipients are always effortlessly available. It is not always feasible for donors to be always available or lift the calls during emergency times. Our system allows the donor to know the emergency by sending a web notification to the recipient. If there are no donors available at the emergency hour at the nearest area, the patient/hospital can send the urgency through a group that consists of all the same blood type donors from the same city. This enables the hospitals to get in contact with the donors who do not live in the same area but are ready to donate. Provides security to data through authorization.

4.1 System functions and requirements

The system requirements are described in this chapter. Functional and non-functional requirements may be found in the application requirements. The capabilities and duties that a system must be able to carry out successfully are defined by functional requirements. Non-functional requirements specify the characteristics that may be utilised to evaluate the system's performance.

4.1.1 Functional requirement

Functional requirements are described as a set of properties that specify consistent, clear, non-redundant, and non-contradictory external system output behaviour. The suggested system's functional requirements are as follows:

- Users must be able to sign up and login.
- If a login attempt fails, the system must display an error message.
- Users must be able to log out of the system at any moment.
- The system must be able to detect network changes and alert users.
- The system must be able to detect if the GPS system is enabled or disabled and alert the user.
- The system should be able to verify users through code verification which has been sent to their mail.
- Security
- Existing users must be able to log in to the system without having to register.
- The system should allow user-class blood banks to send notifications.
- The system should be able to enable users to view the locations of the donors on a map sheet when they perform a search for platelet donors.
- The system should be able to provide users with a unique ID.
- With their ID, donors should be able to schedule appointments at certain hospitals or blood banks for blood donations.
- The system should be able to provide medical assistants.

- Depending on the account type (donors, patients, or blood banks), the system should be able to identify users and grant them certain rights and privileges.

4.1.2 Non-Functional requirement

Non-functional requirements, such as system performance requirements, system external interface requirements, design specifications, and characteristics of software quality, specify how the system will work rather than what it will accomplish. The following lists the associated non-functional needs for the system:

- *Prominent Search Feature:*
The search feature of the system should be prominent and easy for users to use to find donors.
- *Access to Fine Permission and Coarse Permission (GPS Features):*
The application would require access to a precise location in order to use the phone's inbuilt GPS functions.
- *Access to Information Network State:*
The application would require access to the network state in order to determine and notify the user if their device is not connected to the internet.
- *Easy to Use:*
It should be simple to use the application. If any user does anything incorrect, he or she should be properly advised about what is incorrect. For the user to use this request, adequate instructions should be provided.
- The system will request a password for each user account.
- The system will show notification messages to the user in their mail.

4.2 Major components of the proposed system

- *React native with Android Studio*

React Native (also known as RN) is a popular JavaScript-based mobile app framework that allows you to build natively-rendered mobile apps for iOS and Android. The framework lets you create an application for various platforms by using the same codebase.

React Native was first released by Facebook as an open-source project in 2015. In just a couple of years, it became one of the top solutions used for mobile development. React Native development is used to power some of the world's leading mobile apps, including Instagram, Facebook, and Skype. We discuss these and other examples of React Native-powered apps further in this post.

- *Google maps API:*

The Maps JavaScript API lets you customize maps with your own content and imagery for display on web pages and mobile devices. A Google Maps API is an API (short for "application programming interface") that allows developers to access Google Maps data and functionality for their own projects.

4.3 Benefits of the proposed system

1. The proposed system will be able to save lives by helping patients find donors in their times of need.
2. The proposed system will be able to help hospitals and blood banks locate and increase the stock of blood in their banks.

4.4 Context diagram for ADMIN



Fig.4.4 Context diagram for admin

4.5 SELECTED METHODOLOGY OR PROCESS MODEL

1. *Project Identification and Selection:*
In this project, we aimed to develop an online blood bank system which will focus mainly on managing the donor's blood information. Anyone who is interested in blood donation can donate the blood at the hospital or blood donation centres.
2. *Project Initiation and Planning:*
To begin the project, we have gathered user requirement of this system and prepare the scope and objective. The results from this phase are scope and limitation, objectives, cost and benefits, feature of the proposed system and user interface design.
3. *Analysing System needs:*
We have studied and identified problems of existing system, then we develop data flow diagram for the existing system. We also develop data flow diagram (DFD) and entity relation diagram (E-R diagram) for the proposed system.
4. *Designing the Proposed System:*
Based on the analysis phase, we converted E-R diagram into relational database model and created data dictionary and DFD and user interface are designed in this process.
5. *Testing the Proposed System:*

This step is the process of testing whether the programming code will work correctly with the conditions in our system or not. In this phase, we will fix bugs in order to produce a system with maximum performance.

6. *Implementing the Proposed System:*

We wish to launch this system on the internet so that donors can view their blood donation records online and administrators can create, update, delete, and query records conveniently.

4.6 ARCHITECTURE OF THE PROPOSED SYSTEM

All required entities for system architecture for D2R: Smart Blood Donation are explained below:

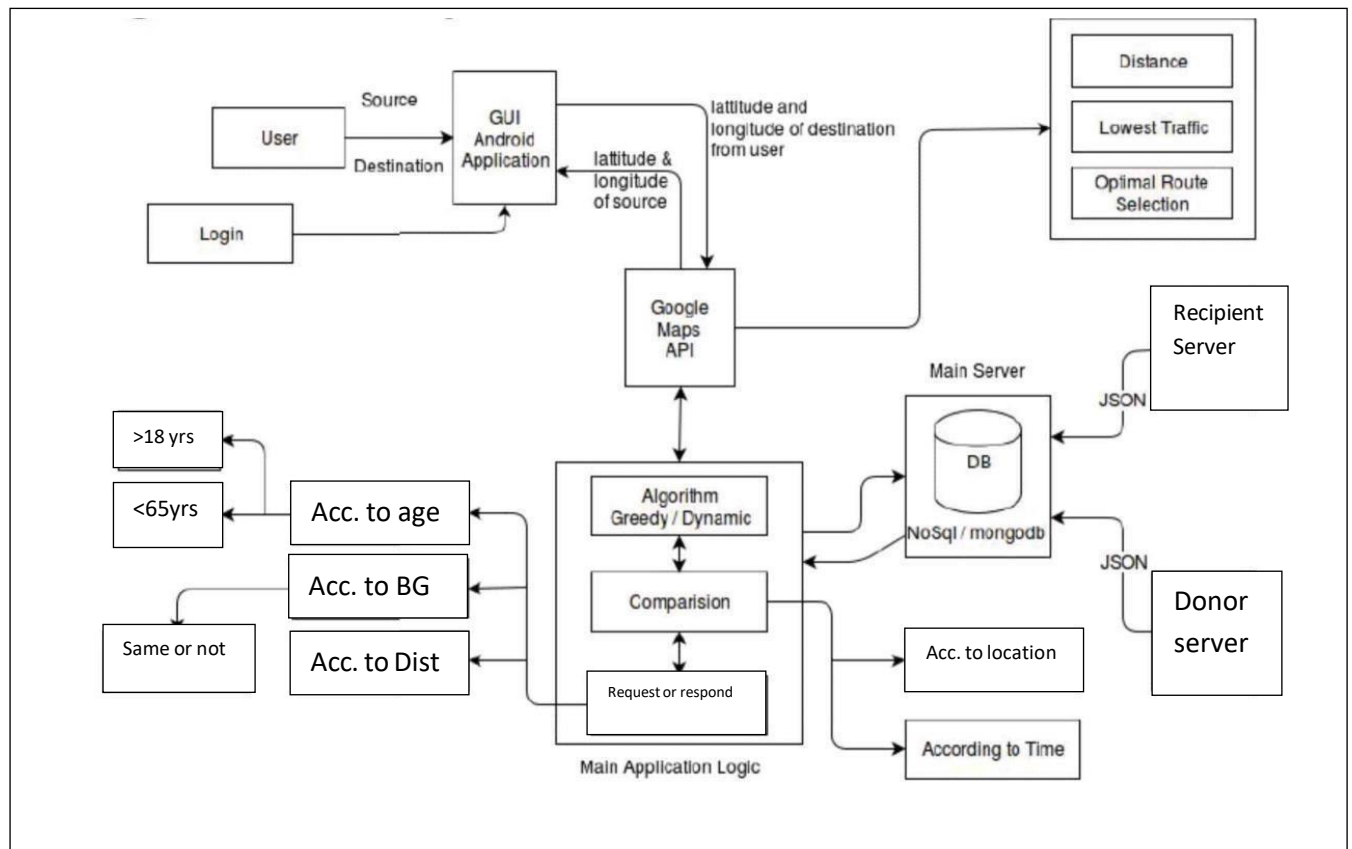


Fig.4.6 Architecture of proposed system

- User Login:** In this login the end user can login into the system via using his/her Google id or Facebook id and the user will be verified by Google and Facebook API respectively. After the verification, the user enters into the system and explores the application. This will reduce the load of storing the user information. This is done as everyone now a days have a Facebook and Google id, as this is the basic need in today's world. And they provide the accurate user authentication services.
- Google Maps API:** With Google maps, we can find the nearby locations of the donors. The user enters their current location of theirs, so they can find the donors as soon as possible.
- Information Service Server:** This module is about fetching the information for the users from their servers. Here the data that is been

fetches is in the JSON format and it is then stored in the database that is of NoSQL or Mongo DB format.

- d. **Booking Module:** After selecting the person the user, he further proceeds to donate. In this Blood donation part, many options will be provided to the user. The user can select the donor and the user can request the donor for donating his/her blood.
- e. **Algorithm:** Google maps already have features for finding the donor's nearby locations. Google maps do provide exact locations from their own API. In this project, the algorithms that may be used are Greedy method algorithm Advanced traveling salesman, etc..

4.7 Data Conversion

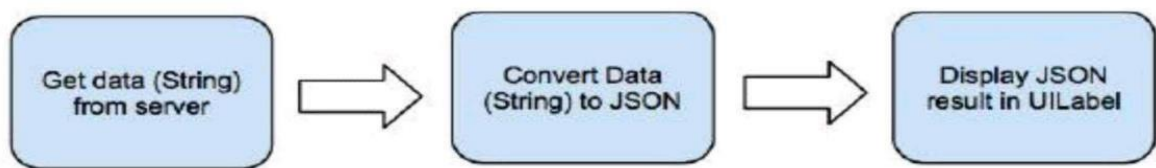


Fig.4.7 Data fetching, Storing and Displaying

- Data Fetching which it allows us to render your content in different ways, depending on your application's use case. These include pre-rendering with Server-side Rendering or Static Generation, and updating or creating content at runtime with Incremental Static Regeneration.
- String data can be easily converted to JSON using the stringify() function, and also it can be done using eval(), which accepts the JavaScript expression that you will learn about in this guide

4.8 Ideation Map:

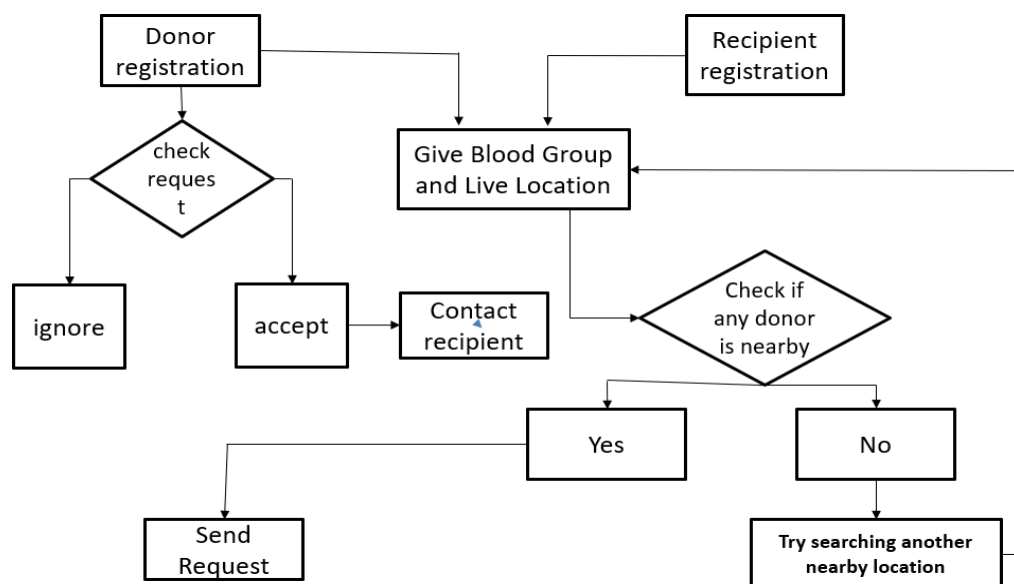


Fig.4.8 Ideation map

4.9 MODULE IMPLEMENTATION

In this project mainly 3 modules are there.

- User Registration Process
- Donors
- Receiver
- Send Request
- Receive Request

- **User Registration Process:**

- Manage Registration for user.
- Manage Blood bank information like (update, delete).
- Manage Donor Request for Donor.
- Manage patient Request for needy people.

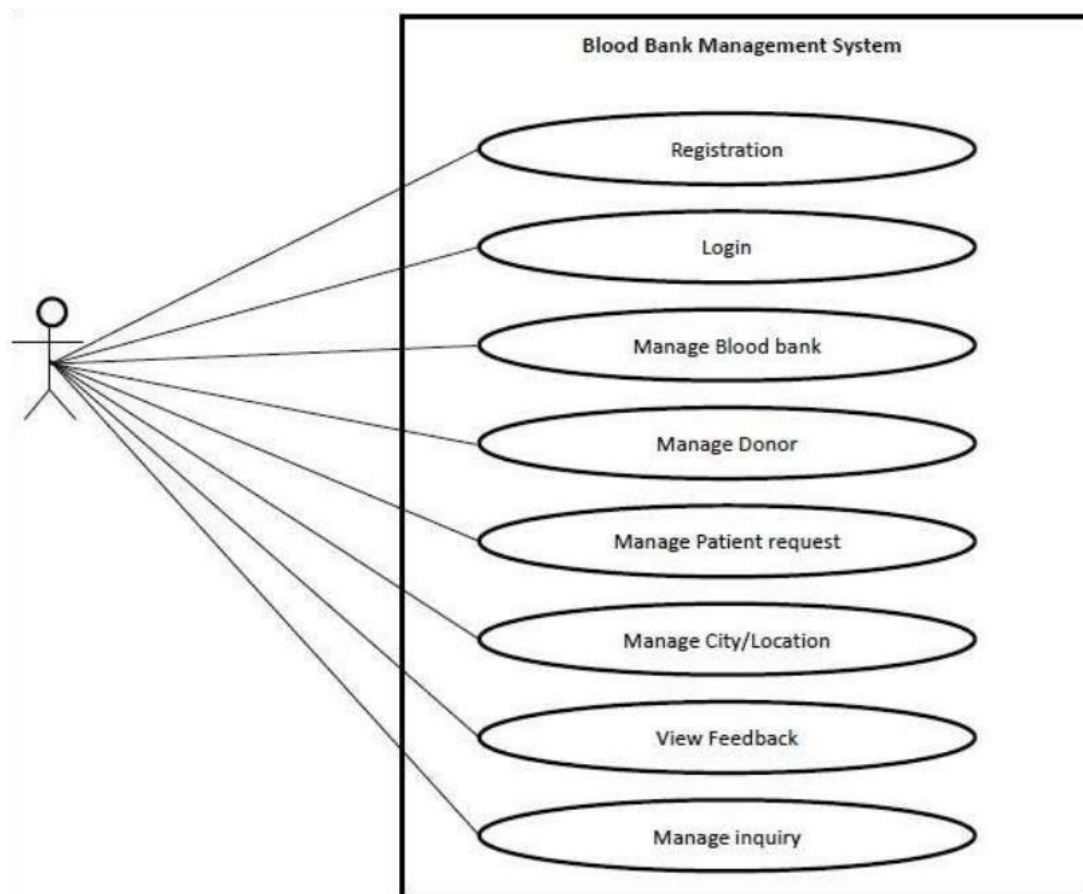


Fig.4.9.1 User registration process

- **DONOR:**

- From this module user can create their account, when user create his account, the user gets a user id and password, which identifies him uniquely.
- Manage Donor information(profile).
- Add new Donation for Blood.

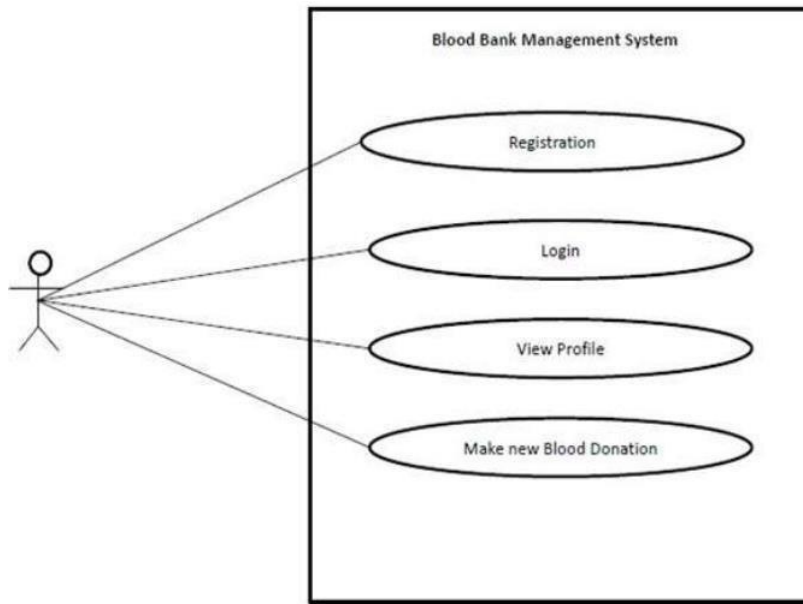


Fig.4.9.2 Donor

RECIEVER:

- This module helps user to find blood group. When user click on find a blood group system ask him to enter blood group, he/her wants to search. After entering the blood group, system search for the availability of the blood group and give him/her the list of the donors who has the same blood group.
- Manage acceptor information(profile).
- Give the Request for acceptor for blood.

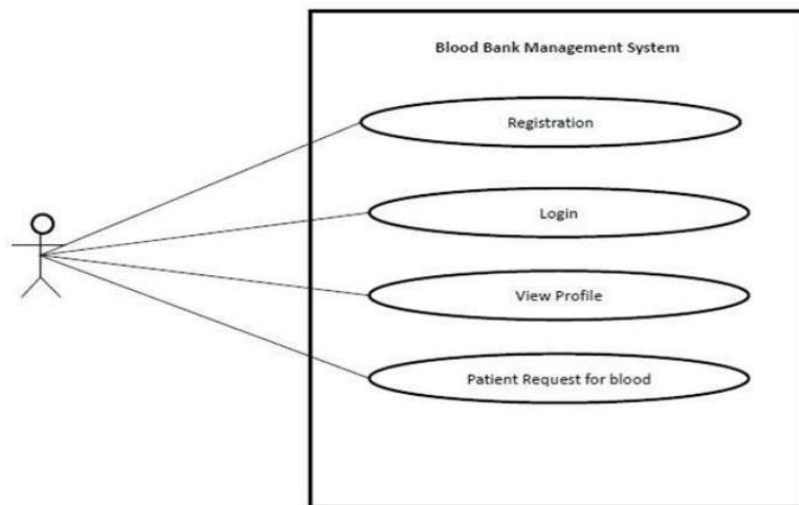
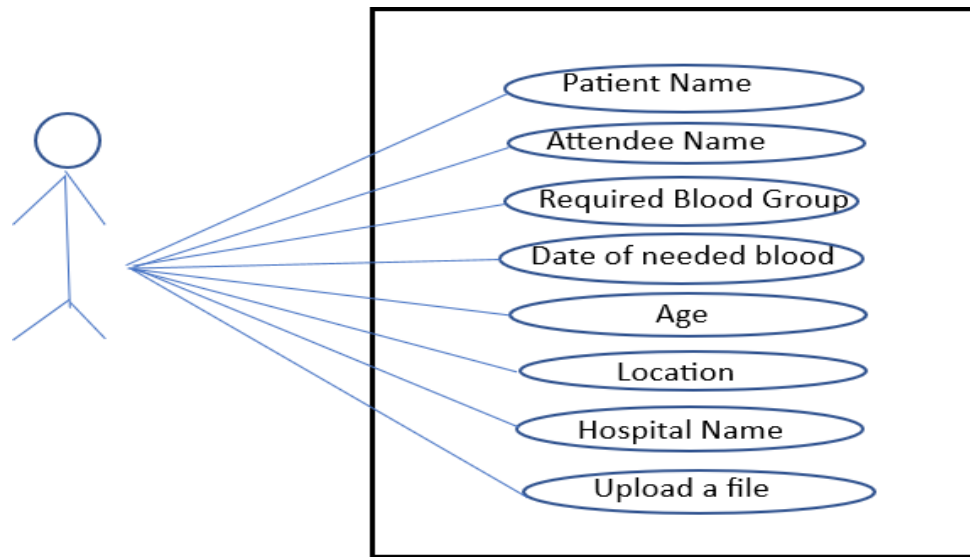


Fig.4.9.3 Reciever

SEND REQUEST:



- This button under Find donor module is used by the blood receiver/attendant to send a request to a donor asking their willingness.
- First, the receiver/attender needs to enter the address or hospital name where the blood donation is to be done.
- Thereafter the app prompts user to enter different particulars and requires uploading a file (i.e. Requisition) from doctor.
- Then after accepting checklist, user can send a donation request successfully.

Fig.4.9.4 Send Request

RECEIVE REQUEST:

- This button under Donate module is used by the blood donor to accept the request sent by donor and their willingness for donation.
- Upon clicking any received request, he/she can view different particulars of the patient.
- The donor can either accept/ reject the donation request after going through the details thoroughly.
- Before accepting, the donor even needs to complete a questionnaire.

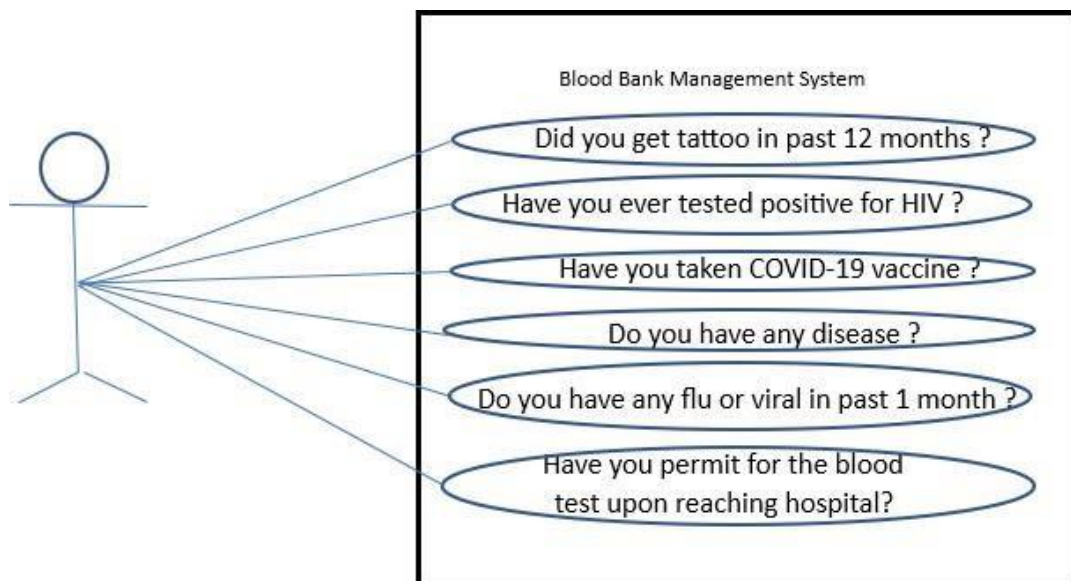


Fig.4.9.5 Receive Request

CHAPTER – 5

Implementation Details

5.1 Functional Processes of the Proposed System

- *Sign-up and login processes:*

The sign-up and login process of the system will enable users to login or register with their details and enable users to choose the type of account they want to sign up for (donor, patient, blood bank). The login process will provide an error message in the case of login failure.

- *Authentication using their mail ID:*

This process will authenticate users by sending an SMS one-time code to their mail ID to verify their identity.

- *Logout Feature:*

The logout feature of the app would enable users to log out and leave the app at any time.

- *Broadcast notification:*

Registered blood bank users are given admin rights to send notifications to all the other users of the application in case of any events or emergencies.

- *Notification Alert:*

This process will allow registered users to receive a notification. On their mail ID whenever notifications are sent by admin or blood banks.

- *Map View:*

Available platelet donors will be displayed on a map sheet.

- *Unique ID number:*

Every registered user will have a randomly generated unique ID for identification.

- *The system should be able to provide medical assistants 24/7:*

This functional process of the system would incentivize user-class donors with a medical assistant.

5.2 Flowchart of the system

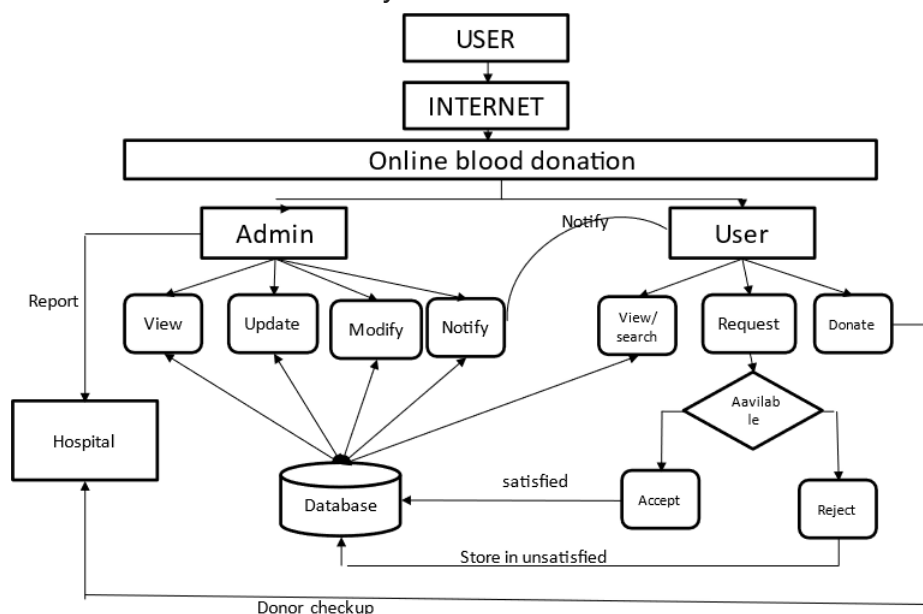


Fig:5.2. Flowchart of the system

5.3 Sequence Diagram:

The sequence diagram models the time sequence of objects cooperation. This demonstrates how, in a specific scenario, the objects communicate with others.

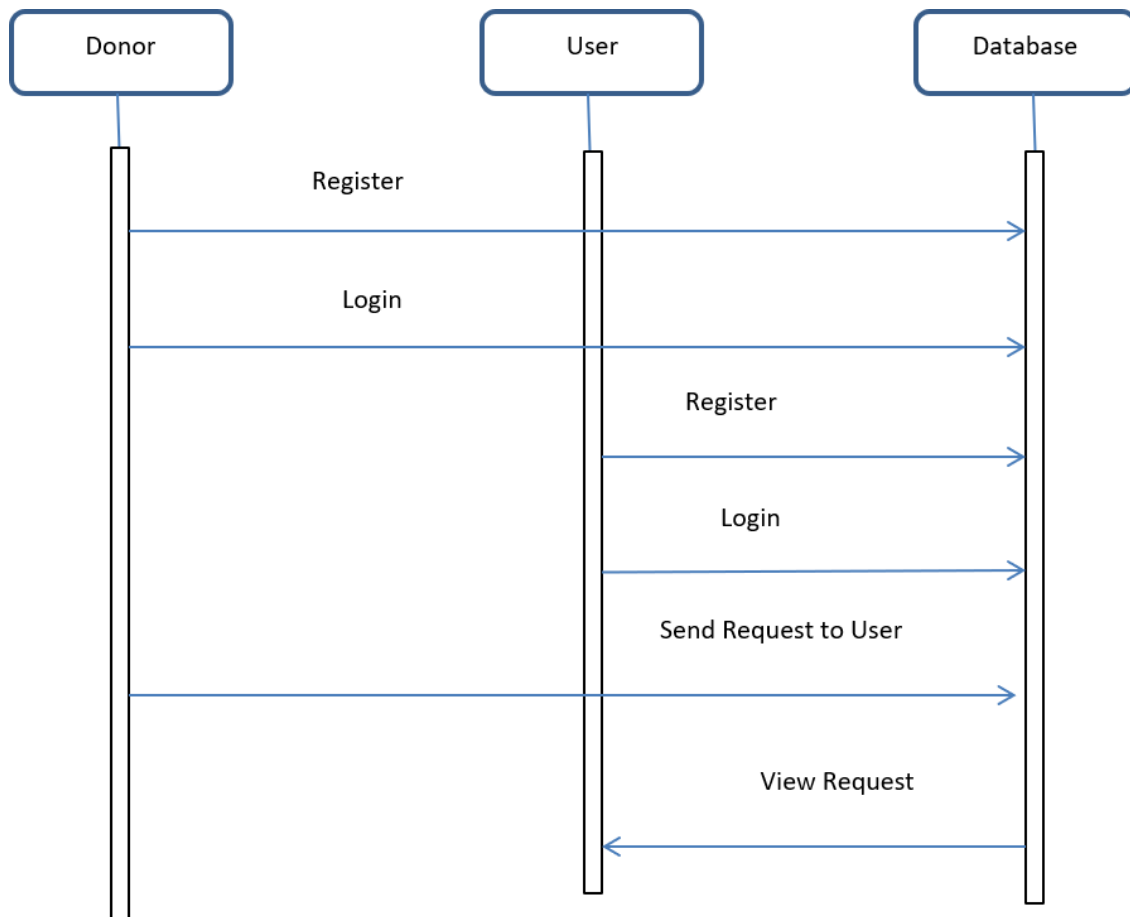


Fig:5.3 Sequence diagram

5.4 Dataflow Diagram:

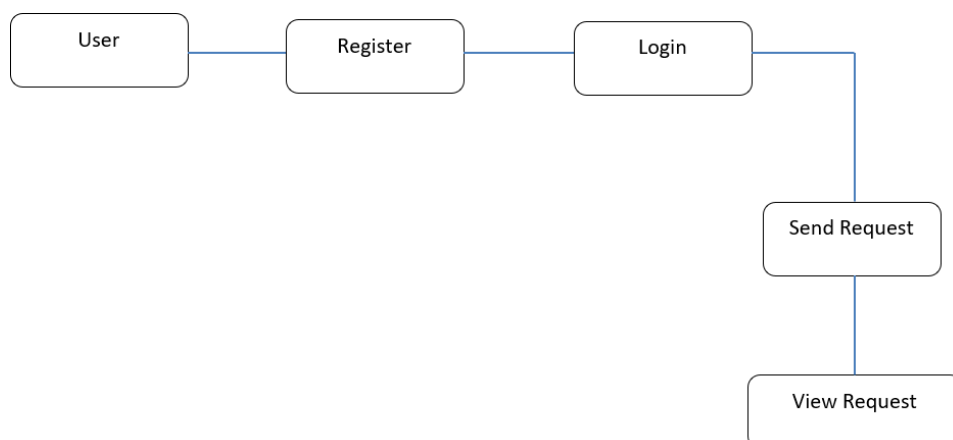


Fig:5.4 Dataflow diagram

5.5 Use case Diagram:

A use case diagram is at its simplest, it depicts the interaction of the user with the scheme and shows the requirements of a use-case. The distinct kinds of users and the way they communicate with the scheme can be represented in a utility diagram. Typically, this sort of diagram is used with the case for text use and is often accompanied by other kinds of diagrams.

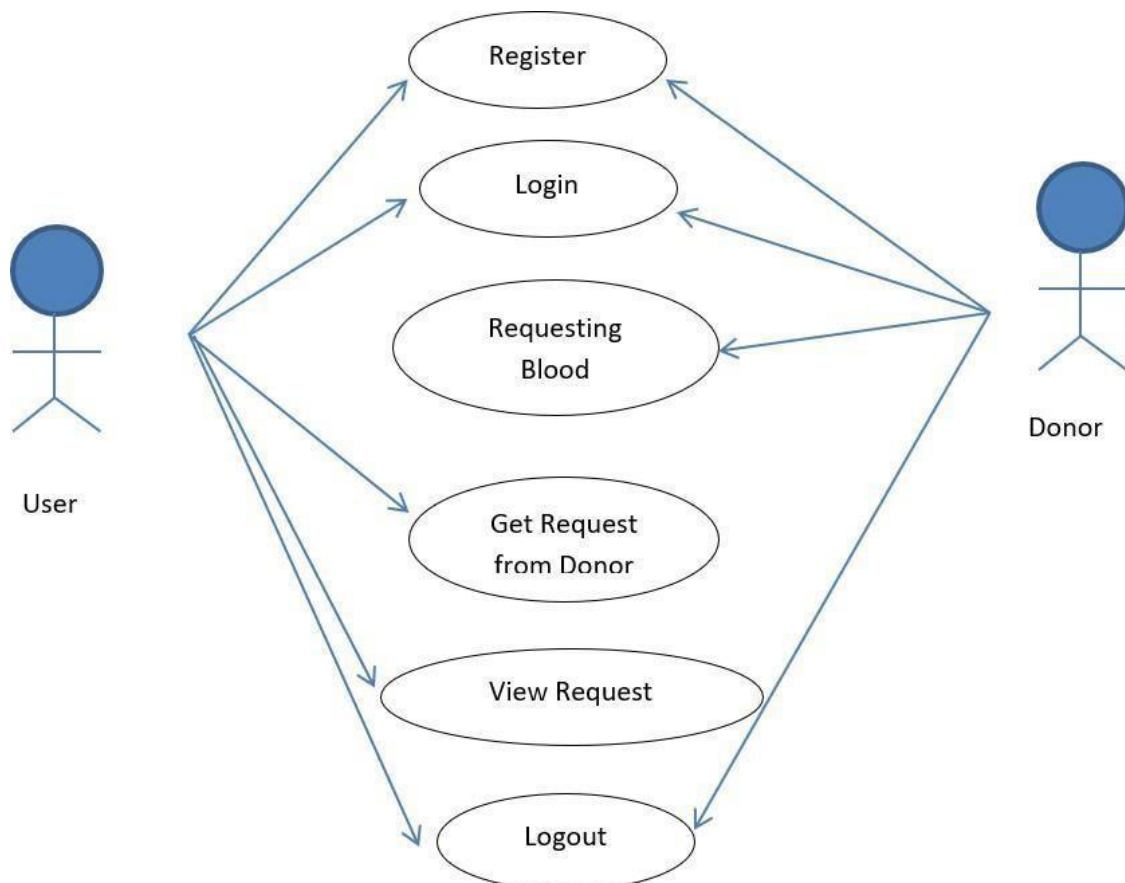


Fig:5.5 Use case diagram

CHAPTER - 6

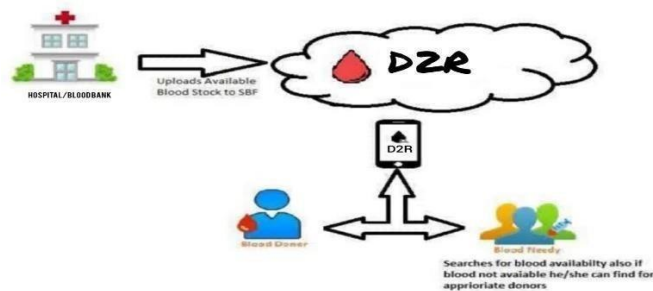
CONCLUSION AND FUTURE WORK

In recent days, it is noticed the increase in blood request posts on social media such as Facebook, Twitter, and Instagram. Interestingly there are many people across the world interested in donating blood when there is a need, but those donors don't have an access to know about the blood donation requests in their local area. This is because that there is no platform to connect local blood donors with patients. D2R solves the problem and creates a communication channel through authorized clinics whenever a patient needs blood donation. It is a useful tool to find compatible blood donors who can receive blood request posts in their local area. Clinics can use this application to maintain the blood donation activity. Collected data through this application can be used to analyse donations to requests rates in a local area to increase the awareness of people by conducting donations camps.

In this project, I described the design and execution of the mobile application, Blood Kin, through which the scheme offers an indirect solution in order to reach donors and solve donor shortages, as well as improving people's readiness and availability with the most prompt and reliable use of contemporary mobile and internet techniques. The system has been developed to be used during emergencies for people who need blood by using an alerting system and to also provide an opportunity for communication between the patients, blood bank centres, and the donors themselves.

FUTURE WORK

I recommended that in the future, the platform should be developed for iOS devices and migrated to a web application. This will help target more users. Also recommended is that the app be adopted and integrated by national blood services and Zipline Medical's drone services.



System details of Blood needy contacting Blood donor/ Blood Service Providers through proposed system.

REFERENCES

1. Blood Facts and Statistics, American Red Cross, 2016.
2. Smart Blood Finder Abhijeet Gaikwad, Nilofar Mulla, Tejashri Wagaj, Raviraj Ingale, Rijendra Gupta & Prof. Kamal Reddy
3. Blood Donation And Life Saver-Blood Donation App, Anish Hamlin M R1 2 Albert Mayan J P.G Student, Department of Computer Associate Professor, Department of Computer Science and Engineering, Sathyabama University
4. P. Priya¹, V. Saranya², S. Shabana³, Kavitha Subramani⁴, "The Optimization of Blood Donor Information and Management System by Technopedia". Department of Computer Science and Engineering, Panimalar Engineering College, Chennai, India, Volume 3, Special Issue 1, February 2014
5. TusharPandit, SatishNiloor and A.S. Shinde, "A Survey Paper on E- Blood Bank and an Idea to use on Smartphone". Dept. of I.T Sinhgad Academy of Engineering, Pune, India. Year 2015.
6. Narendra Gupta¹, Ramakant Gawande² and Nikhil Thengadi³, "MBB: A Life-Saving Application". Final Year, CSE Dept., JDIET, Yavatmal, India.VOLUME-2, SPECIAL ISSUE-1, MARCH2015.
7. VikasKulshreshtha, Dr. SharadMaheshwari, "Blood Bank Management Information System in India". International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 Vol. 1, Issue 2, pp.260-263.
8. Sultan Turhan, "AN ANDROID APPLICATION FOR VOLUNTEER BLOOD DONORS".
9. T.HildaJenipha^{*1} R.Backiyalakshmi^{*2}, "Android Blood Donor Life Saving Application in Cloud Computing". Department of Computer Science and Engineering, PRIST University, Puducherry, India. e-ISSN: 2320-0847 p-ISSN: 2320-0936 Volume03, Issue-02, pp-105-108. Year 2014.
10. N. Adarsh, J. Arpitha, M. D. Ali, N. M. Charan, and P. G. Mahendrakar. Effective blood bank management based on RFID in real time systems. In Embedded Systems (ICES), 2014 International Conference on, pages 287-290. IEEE, 2014.
11. E. Ekanayaka and C. Wimaladharma. Blood bank management system. Technical Session-Computer Science and Technology & Industrial Information Technology, page 7, 2015.
12. SedaBaşYeditepe, GiulianaCarello (Politecnico di Milano University), Management of Blood Donation System: Literature Review and Research Perspectives.
13. Sibinga CT. Existing and recommended legislative framework for a national blood transfusion policy. Global Journal of Transfusion Medicine. 2017 Jul 1;2(2):89.
14. Sinha S, Seth T, Colah RB, Bittles AH. Haemoglobinopathies in India: estimates of blood requirements and treatment costs for the decade 2017-2026. Journal of community genetics. 2020 Jan;11(1):39-45.

15. Kulshreshtha V, Maheshwari DS. The blood donation centre Management Information System in India. international Journal of Engineering Research & Android applications (IJERA) SSN.:2248-9622.
16. Priya P, Saranya V, Shabana S, Subramani K. The optimization of blood donor information and management system by Technopedia. International Journal of Innovative Research in Science, Engineering and Technology. 2014 Feb;3(1).
17. Kulshreshtha V, Maheshwari S. Benefits of management information system in blood bank. International Journal of Engineering and Science. 2012 Dec;1(12):5-7.
18. "Android Blood Bank" by Prof. Snigdha¹, Varsha Anabhavane², Pratiksha lokhande³, Siddhi Kasar⁴, Pranita More⁵ Lecturer, Information Technology, Atharva College of Engineering, Mumbai, India 1 Student, Information Technology, Atharva College of Engineering, Mumbai, India 2,3,4,5
19. "A Study on Blood Bank Management System" by A. Clemen Teena, K. Sankar and S. Kannan, Department of MCA, Bharath University, Selaiyur, Chennai-73, Tamil Nadu, India
20. Gupta N, Gawande R, Thengadi N. MBB: A Life Saving Application. International Journal For Research in Emerging Science And Technology. 2015 Mar;2(1):326-30
21. R. S. Ali, T. F. Hafez, A. B. Ali and N. AbdAlsabour, "Blood bag: A web application to manage all blood donation and transfusion processes," 2017 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), 2017, pp. 2125-2130, doi: 10.1109/WiSPNET.2017.8300136.
22. M. Fahim, H. I. Cebe, J. Rasheed and F. Kiani, "mHealth: Blood donation application using android smartphone," 2016 Sixth International Conference on Digital Information and Communication Technology and its Applications (DICTAP), 2016, pp. 35-38, doi: 10.1109/DICTAP.2016.7543997.
23. A. Meiappane, K. Logavignesh, R. Prasanna and T. Sakthivel, "D'WORLD: Blood Donation App Using Android," 2019 IEEE International Conference on System, Computation, Automation and Networking (ICSCAN), 2019, pp. 1-5, doi: 10.1109/ICSCAN.2019.8878830.
24. M. R. A. Brislin, J. A. Mayan, R. A. Canessane and M. R. A. Hamlin, "Blood donation and life saver app," 2017 2nd International Conference on Communication and Electronics Systems (ICCES), 2017, pp. 446- 451, doi: 10.1109/CESYS.2017.8321318.
25. F. Alharbi, "Progression towards an eManagement Centralized Blood Donation System in Saudi Arabia," 2019 International Conference on Advances in the Emerging Computing Technologies (AECT), Al Madinah Al Munawwarah, Saudi Arabia, 2020, pp. 1- 5, doi: 10.1109/AECT47998.2020.9194178.
26. M. R. A. Hamlin and J. A. Mayan, "Blood donation and life saver-blood donation app," 2016 International Conference on Control, Instrumentation, Communication and Computational Technologies (ICCICCT), Kumaracoil, India, 2016, pp. 625-628, doi: 10.1109/ICCICCT.2016.7988025.

27. Mandale, Monika et al. "Implementation of Blood Donation Application using Android Smartphone." *International Journal of Advance Research, Ideas and Innovations in Technology* 3 (2017): 876-878.
28. Dombe, Anay et al. "Prototype Design of Android App for Blood Donation." (2021).
29. Suryatiningsih, Yahdi Siradj and Ruli Hakim Cahyono. "Prototype of We Share Blood an App for Searching Blood Donation based on Android Platform." (2019).
30. T., S. P. et al. "Blut: Blood Donation Application." (2021).
31. Oloruntoba, Samson and John Akinode. "DEVELOPMENT OF A BLOOD BANK INFORMATION RETREIVAL SYSTEM USING ANDROID APP." (2020).
32. Sardi, Lamyae et al. "Gamified Mobile Blood Donation Applications." *International Work-Conference on Bioinformatics and Biomedical Engineering* (2017).
33. VikasKulshreshtha, Dr. SharadMaheshwari, "Blood Bank Management Information System in India". *International Journal of Engineering Research and Applications (IJERA)* ISSN: 2248-9622 Vol. 1, Issue 2, pp.260-263.
34. TusharPandit, SatishNiloor and A.S. Shinde, "A Survey Paper on E- Blood Bank and an Idea to use on Smartphone". Dept. of I.T Sinhgad Academy of Engineering, Pune, India. Year 2015

APPENDIX

A. Sample Code:

```
<?php

/**
 * PHPMailer - PHP email creation and transport class.
 *
 * PHP Version 5
 *
 * @package PHPMailer
 */

class PHPMailer
{

    public $Version = '5.2.27';

    /**
     * Email priority.
     *
     * Options: null (default), 1 = High, 3 = Normal, 5 = low.
     *
     * When null, the header is not set at all.
     *
     * @var integer
     */
    public $Priority = null;

    /**
     * The character set of the message.
     *
     * @var string
     */
```

```

public $CharSet = 'iso-8859-1';

/**
 * The MIME Content-type of the message.
 * @var string
 */
public $ContentType = 'text/plain';

/**
 * The message encoding.
 * Options: "8bit", "7bit", "binary", "base64", and "quoted-printable".
 * @var string
 */
public $Encoding = '8bit';

/**
 * Holds the most recent mailer error message.
 * @var string
 */
public $ErrorInfo = "";

/**
 * The From email address for the message.
 * @var string
 */
public $From = 'root@localhost';

```

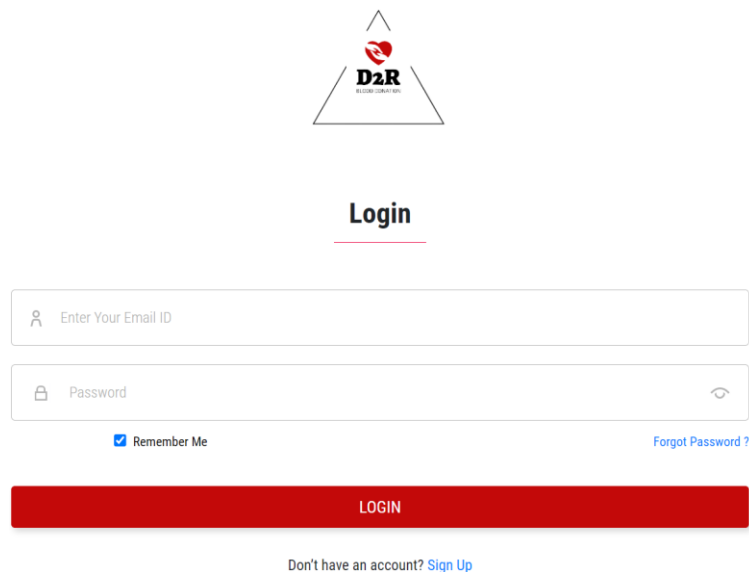
B.SCREENSHOTS

MODULE -1:

Steps for Sign up:

Before log in to D2R Blood Donation site, user should be sign up with valid credentials

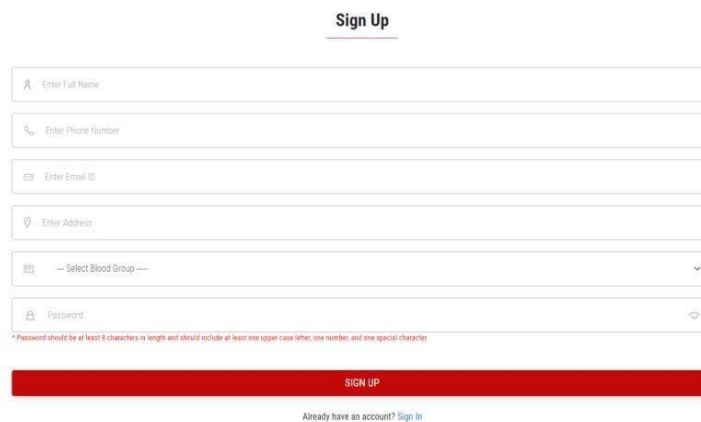
1. Open "<https://thihomehealthcare.com/blood>" in your browser. Click the " Sign up " link after the browser has launched.



The screenshot shows the D2R Blood Donation site's Login page. At the top is the D2R logo, which consists of a triangle containing a heart and the text 'D2R BLOOD DONATION'. Below the logo is the word 'Login' in bold, underlined. The login form includes two input fields: 'Enter Your Email ID' and 'Password'. There is a 'Remember Me' checkbox and a 'Forgot Password ?' link. A red 'LOGIN' button is at the bottom of the form. Below the button is a link that says 'Don't have an account? Sign Up'.

2. Once the user will click on “Sign up “ link , user will navigate to another link considering “https://thihomehealthcare.com/blood/new_user” .

Fil all the required fields like Name, Phone no, Gmail, Address, Blood group and password which contains “ at least 8 characters in length and should include at least one upper case letter, one number, and one special character.”



The screenshot shows the D2R Blood Donation site's Sign Up page. At the top is the word 'Sign Up' in bold, underlined. The sign up form includes several input fields: 'Enter Full Name', 'Enter Phone Number', 'Enter Email ID', 'Enter Address', and a dropdown menu for 'Select Blood Group'. There is also a 'Password' field with a note below it: '* Password should be at least 8 characters in length and should include at least one upper case letter, one number, and one special character'. A red 'SIGN UP' button is at the bottom of the form. Below the button is a link that says 'Already have an account? Sign In'.

3. After input all the fields with valid credentials , click on “Sign up” button.

Sign Up

The Sign Up form consists of the following fields:

- Name:** Lakku Snehalatha Reddy
- Phone:** 7995781735
- Email:** Snehalathalaku2002@gmail.com
- Address:** plot 202 flat 791 & 792 ikeaya residence ,Hafeezpet,Miyapur
- Blood Type:** A+ (with a dropdown arrow)
- Password:** A masked field with 8 dots and an eye icon to toggle visibility.

* Password should be at least 8 characters in length and should include at least one upper case letter, one number, and one special character.

SIGN UP

4. The user's Gmail account receives a 4 digit OTP after clicking the "Sign up" button.

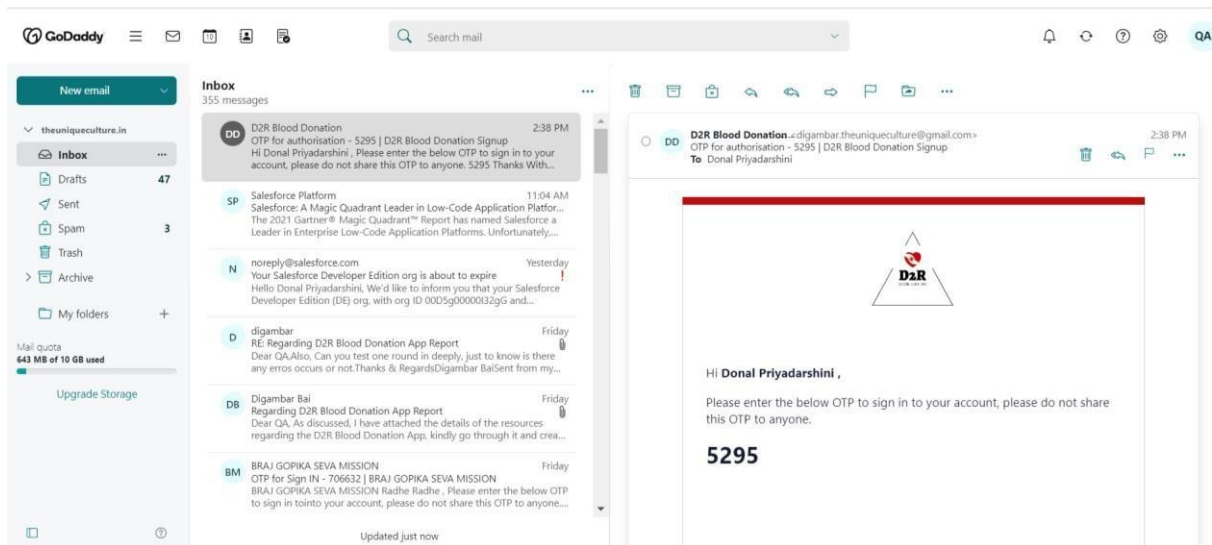
The OTP Verification screen includes the following elements:

- Header:** A grey bar with a back arrow and the text "OTP Verification".
- Logo:** The D2R logo, featuring a triangle with a heart and the text "D2R BLOOD DONATION".
- Title:** "Verify OTP"
- Instructions:** "Please check your email. We just sent a verification code on your Email ID **Snehalathareddy9730@gmail.com** [Change](#)"
- Input:** A field for a 4-digit code, represented by four dashes " _ _ _ _".
- Footer:** A link "Didn't get a code? [Try Again](#)"
- Action:** A large red button labeled "VERIFY".

5. User will receive a 4 digit code (OTP) to the Gmail with message like •

“ Hi Username,

Please enter the below OTP to sign in your account, please do not share this OTP to anyone. “



6. Copy OTP from Gmail and Enter the 4 digit OTP, and click on “ verify “ button to verify account.

← **OTP Verification**



Verify OTP

Please check your email.
We just sent a verification code on your Email ID
-qa@theuniquculture.in [Change](#)

5 2 9 5

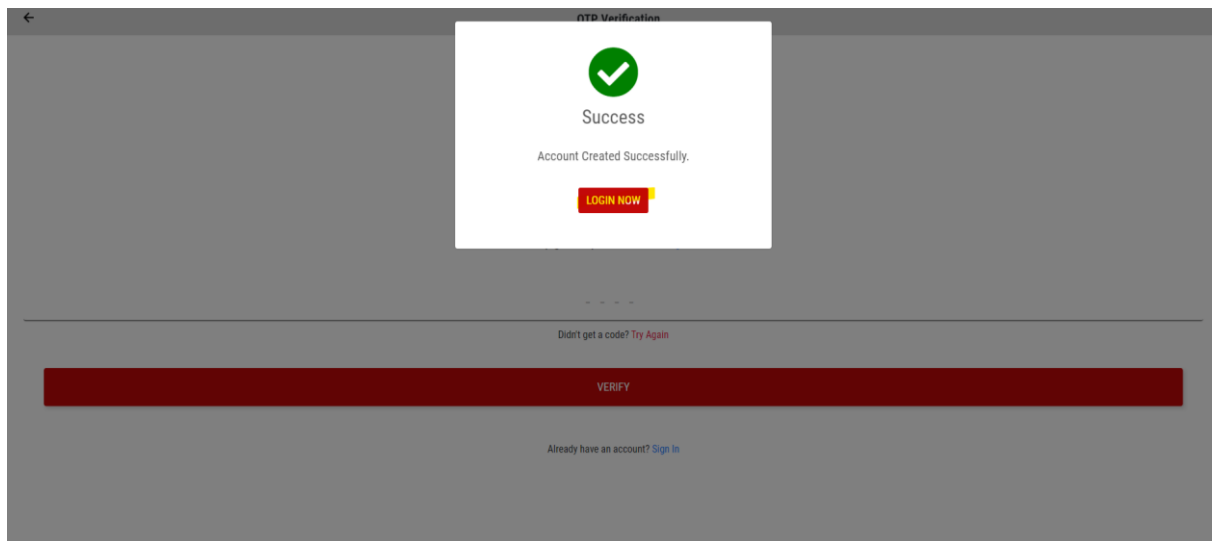
Didn't get a code? [Try Again](#)

VERIFY

Already have an account? [Sign In](#)

7.a. Once user enter OTP and clicked on “Verify”, user will get a “ success” pop up with notificationlike “ Account Created Successfully “.

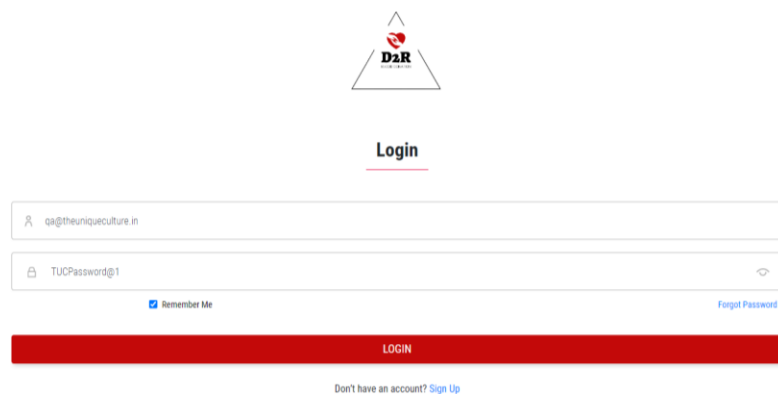
b. Click on “Login now “ button to login to the site .



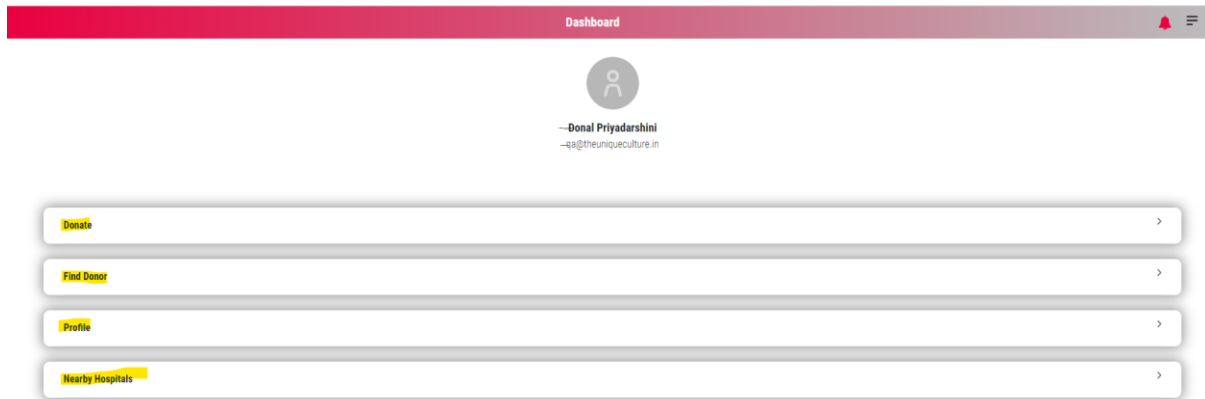
MODULE -2:

Steps for Log in:

1. a. After click on “Login now” button, user will navigate to login Page.
- b. Enter registered Email id and Password.
- c. Click on “Remember me “checkbox for future login. Click on “LOGIN” button.



2. Once user login to the application, user will navigate to “ Dashboard” .



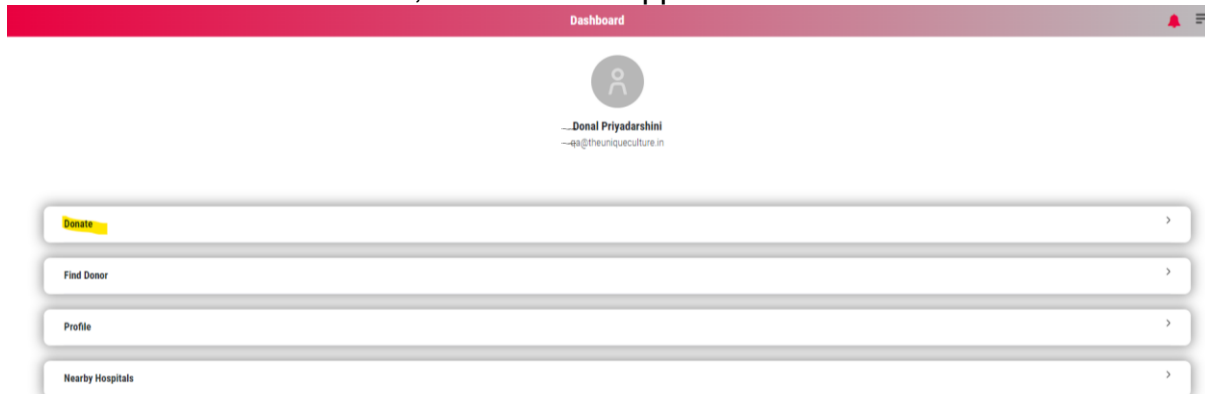
MODULE -3 :

Steps of Dashboard:

1. On the Dashboard , user could see following sections including :

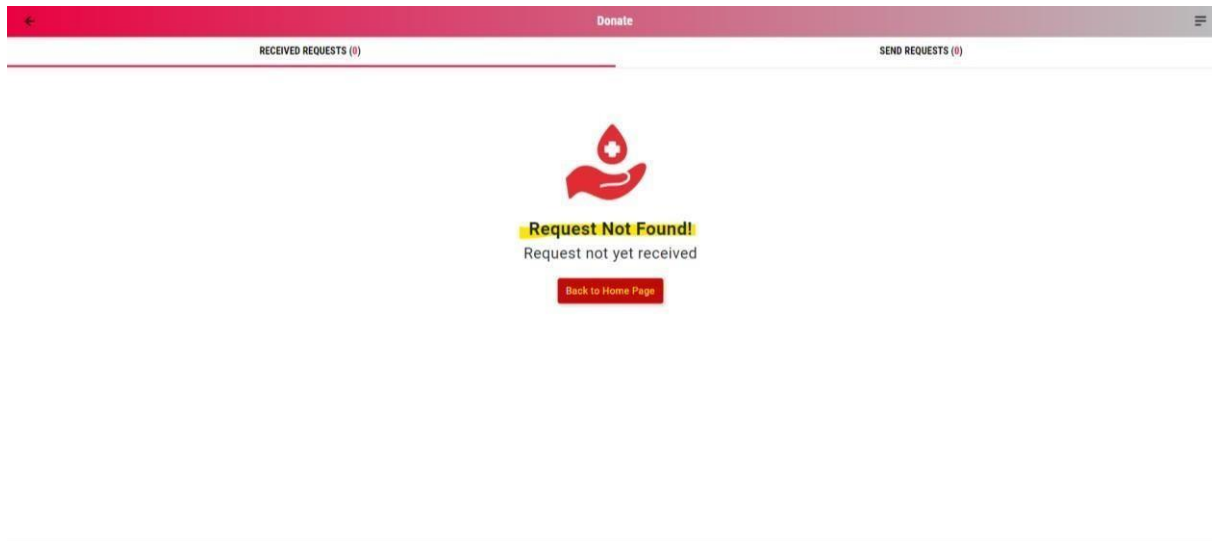
- a.Donate
- b.Find Donor
- c.Profile
- d.Nearby Hospitals

2A e the user clicks "Donate," two sections appear:

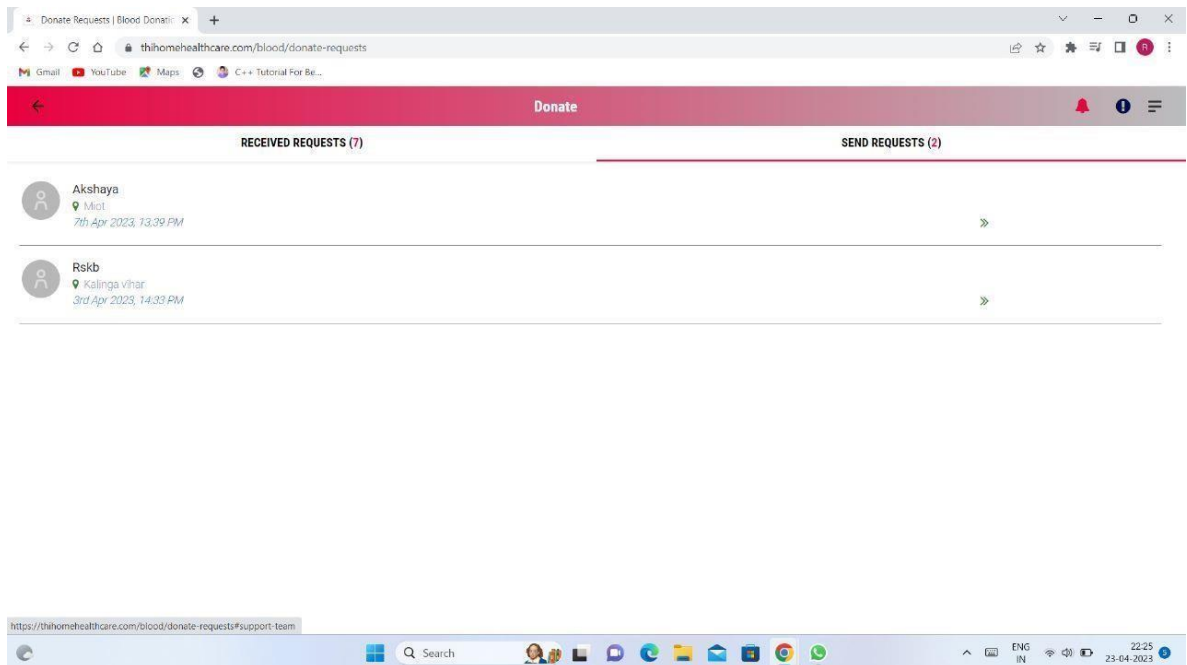


B.

- Received Requests
- Send Requests



B. If there is no request found , user can click on “ Back to home page ” button to navigate to home page .



C. If you received any requests, then you can accept or reject it.

Donate Requests | Blood Donations

thihomehealthcare.com/blood/request-details?req_no=9601535086

Profile Details

Request ID	9601535086
Name	Rskb
Phone Number	7749807195
Email ID	patnaik.praneet@gmail.com
Patient Name	Ram
Attendee Name	Shyam
Required Blood Group	AB-
Date of needed blood	24th Apr 2023
Age	23 Age
Location	Chennai
Hospital Name	MIOT International
Requisition from doctor File	View Download
Requested On	23rd Apr 2023, 21:59 PM

* Note If you once Reject then later you can't accept this request.

Request Pending Since 23rd Apr 2023, 21:59 PM

[ACCEPT REQUEST](#) [REJECT REQUEST](#)

D. In order to accept request, you need to answer the following questions.

Accept Request Details | Blood Donations

thihomehealthcare.com/blood/request-accept-details?req_no=9601535086

Q1. Did you get tattoo in the past 12 months?*

☐ Yes ☐ No

Q2. Have you ever tested positive for HIV?*

☐ Yes ☐ No

Q3. Have you taken COVID-19 vaccine?*

☐ Yes ☐ No

Q4. Do you have any disease? *

☐ Yes ☐ No

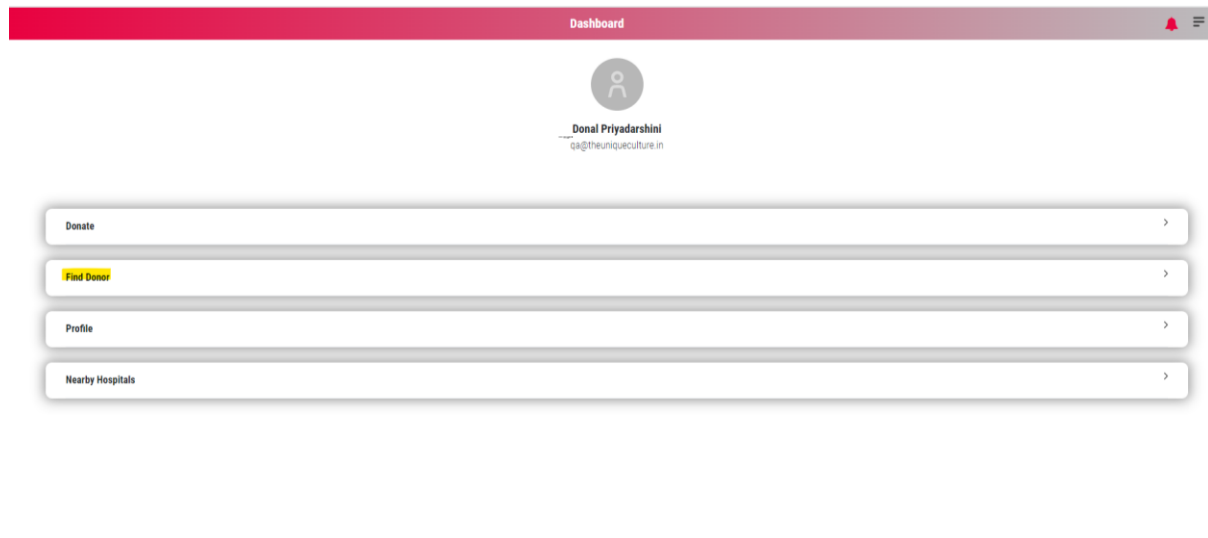
Q5. Do you have any flu or viral in past one month ? *

☐ Yes ☐ No

Q6. Have you permit for the blood test upon reaching the hospital ? *

☐ Yes ☐ No

[ACCEPT REQUEST](#)



3.

- A. Once user click on “ Find Donor “ , user will navigate to particular page where we are getting 1 text box and 1 dropdown :
- Enter Address/ Hospital Name (Textbox)
 - Enter blood group (Dropdown)

Find Donor

Enter Address/Hospital Name

Select Blood Group

SEARCH

B. Enter Address/ Hospital name and blood group from dropdown , once select these options , then click on “ Search” button.

Find Donor

Bhubaneswar, Odisha, India

Select Blood Group

SEARCH

C. User will get all the nearby hospitals along with Address.

Donor Details

DONOR DETAILS

1. Hello Name 7898765615 Registered Address: Kalinga Vihar, Bhubaneswar	digambarbai97@gmail.com	View Details
2. Some Name 9878765654 Registered Address: Tambaram, Chennai	digambar.theuniqueculture@gmail.com	View Details

D. User can see “ details “ after click on “ View Details”.

Donor Details

DONOR DETAILS

1. Hello Name 7898765615 Registered Address: Kalinga Vihar, Bhubaneswar	digambarbai97@gmail.com	View Details
2. Some Name 9878765654 Registered Address: Tambaram, Chennai	digambar.theuniqueculture@gmail.com	View Details

E. Click on “ Send a Request”.

Donor Details

Hello Name
@pancartw97@gmail.com

PROFILE DETAILS

ID	U8976d37273
Name	Hello Name
Phone Number	7896765615
Email ID	@pancartw97@gmail.com
Registered Address	Kalinga Vihar, shubaneswar
Blood Group	B+
Date of birth	01-02-1995
Last Donated On	12th March 2023, 10:00 AM

SEND A REQUEST ▶

Send A Request

REQUEST DETAILS

Patient Name *

Enter Patient Name

Required Blood Group *

B+

Age *

Enter Age

Hospital Name *

Enter Hospital Name

Attendee Name *

Enter Attendee Name

Date of needed blood *

dd-mm-yyyy

Location *

Enter Location

Upload a file (Requisition from doctor) *

Choose file

No file chosen

I have read and agreed to these Terms & Conditions and Privacy Policy.

SEND REQUEST

Send A Request

REQUEST DETAILS

Patient Name *

Donal priyadarshini

Attendee Name *

Alok jena

Required Blood Group *

B+

Date of needed blood *

dd-mm-yyyy

Age *

25

Location *

Bhubaneswar

Hospital Name *

Sum

Upload a file (Requisition from doctor) *

Choose fileNew bug1.jpg

☒ I have read and agreed to these Terms & Conditions and Privacy Policy.

SEND REQUEST

H. user will get “ success” notification pop up .

The screenshot shows a web form titled "Send & Request" with a "REQUEST DETAILS" section. The form includes fields for "Patient Name", "Required Blood Group" (with a dropdown showing "B+"), "Age", "Hospital Name", "Enter Location", and "Upload a file (Requisition from doctor)". There is a checkbox for "I have read and agreed to these Terms & Conditions and Privacy Policy." and a "SEND REQUEST" button. A success notification pop-up is displayed in the center, showing a green checkmark, the word "Success", the message "Request has been sent successfully.", and a "Close this window" button.

I : User can see the send request field .

The screenshot shows a user profile dashboard with a header bar containing "Donate" and a notification bell. Below the header, there are two tabs: "RECEIVED REQUESTS (0)" and "SEND REQUESTS (1)". The "SEND REQUESTS (1)" tab is active, showing a list of requests. The first request is from "Hello Name" with a location pin icon and the text "10th Apr 2023, 17:35 PM".

4. Click on “ Profile “ .

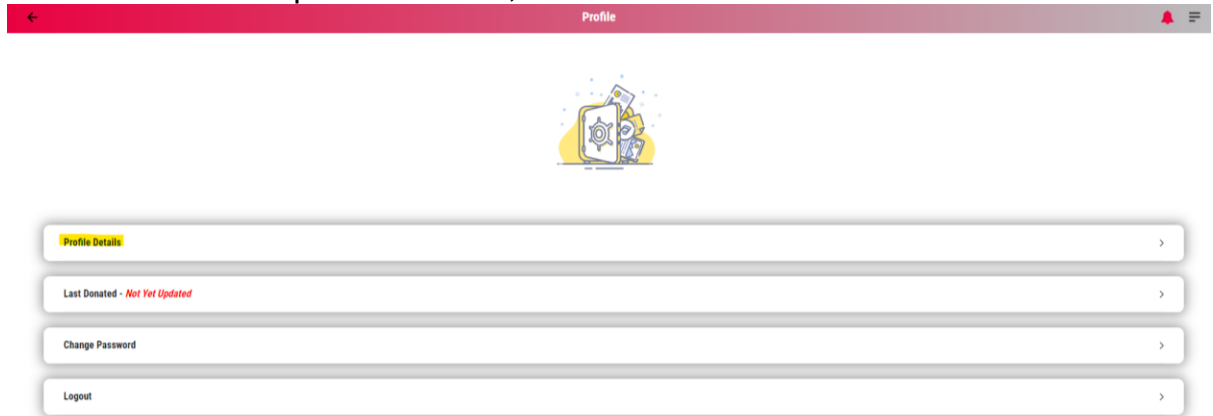
The screenshot shows a user profile dashboard with a header bar containing "Dashboard" and a notification bell. Below the header, there is a user profile section with a circular profile picture and the name "Donal Priyadarshini" with the email "qp@theuniqueculture.in". Below the profile section, there is a list of options: "Donate", "Find Donor", "Profile" (highlighted in yellow), and "Nearby Hospitals". Each option has a right-pointing arrow.

Once user click on profile , user will see the following sections including :

- Profile Details
- Last Donated
- Change Password
- Logout

a. Profile Details :

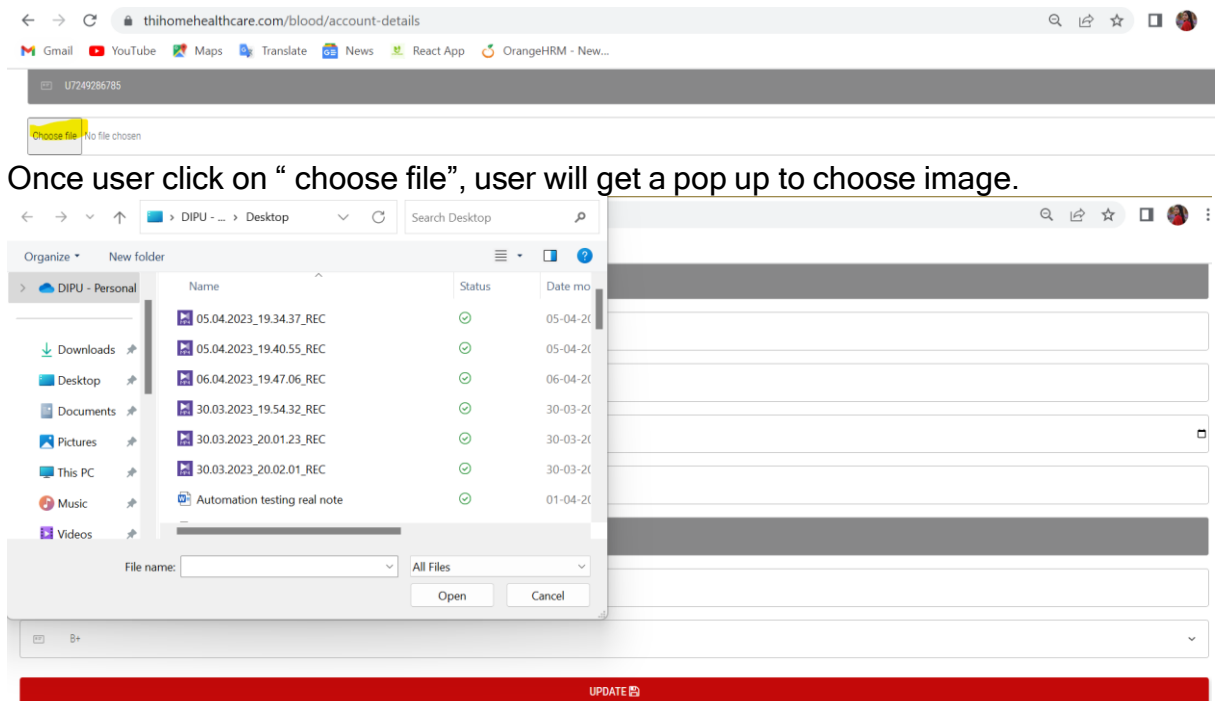
Once user click on “ profile details “ , user can see all the details .



User can see the following details :

A screenshot of the 'Profile Details' form within the application. The form is set against a light gray background. At the top, there is a circular profile picture placeholder with a person icon, followed by the name 'Donal Priyadarshini' and the email 'qa@theuniqueculture.in'. Below this is a series of input fields: a dark gray field for the ID 'U7249286785', a 'Choose file' button next to 'No file chosen', a text field for the name 'Donal Priyadarshini', a date field 'dd-mm-yyyy' with a calendar icon, a text field for the phone number '7008167476', a dark gray field for the email 'qa@theuniqueculture.in', and a text field for the address 'kaling vihar'. The form is repeated once more. At the bottom of the form is a red bar with the text 'UPDATE' and a refresh icon.

User can upload picture by clicking on “ Choose file “ option.



Once user click on “ choose file”, user will get a pop up to choose image.

User can edit name, phone number, Address, Blood group and DOB.

U7249286785

Choose file No file chosen

Donal Prasadathem

01-01-2023

9006147476

qa@theuniqueculture.in

123456789

123456

UPDATE

After edit click on “ Update” so that profile will be updated and user get notification “Account details updated Successfully”.

The screenshot shows a mobile application interface for a 'Profile' page. At the top, there is a pink header bar with a back arrow on the left, the word 'Profile' in the center, and a notification bell and menu icon on the right. Below the header, a user profile card displays a grey circular placeholder for a profile picture, the name 'Donal Priyadarshini', and the email 'qa@theuniqueculture.in'. A green banner below the profile card states 'Account Details Updated Successfully'. The main content area contains several input fields: a grey field with the text 'U7249286785', a 'Choose file' button next to 'No file chosen', a text field with the name 'Donal Priyadarshini', a date field with the placeholder 'dd-mm-yyyy', a text field with the phone number '7008167476', and a grey field with the email 'qa@theuniqueculture.in'.

b. Last Donated:

Once user click on “ last donate “, user will navigate to a page which includes • User ID along with last donation date .

The screenshot shows a mobile application interface for an 'Update Profile' page. The pink header bar contains a back arrow, the text 'Update Profile', and a notification bell and menu icon. Below the header, the text 'UPDATE PROFILE DETAILS' is displayed. The main content area features two input fields: one labeled 'User ID' with the value 'U7249286785' and another labeled 'Last Donated Date' with the value '14-10-2022'. At the bottom of the form is a prominent red button with the text 'UPDATE' and a small refresh icon.

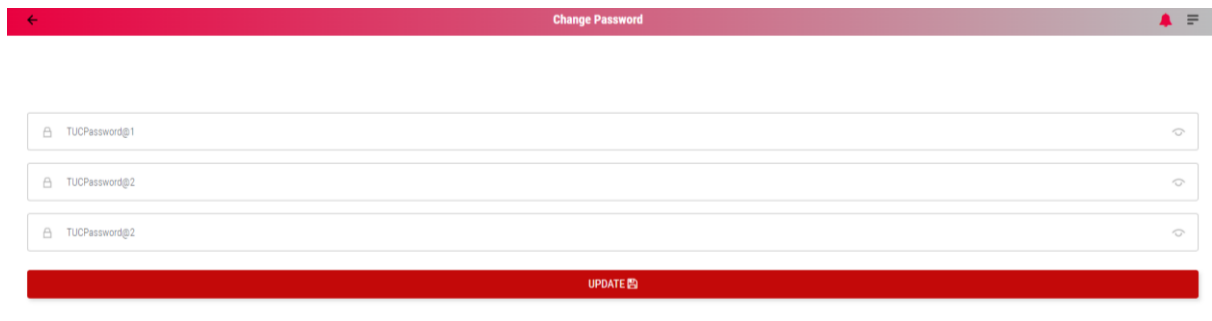
If user wants to update , user can click on “ update” button, profile will be updated.

C. Change Password :

User will get 3 textboxes including • Enter old password, Enter New password, Enter Confirmpassword.

The screenshot shows a mobile application interface for a 'Change Password' page. The pink header bar contains a back arrow, the text 'Change Password', and a notification bell and menu icon. Below the header, the text 'CHANGE PASSWORD' is displayed. The main content area contains three password input fields, each with a lock icon and a placeholder text: 'Enter Old Password', 'Enter New Password', and 'Enter Confirm Password'. At the bottom of the form is a prominent red button with the text 'UPDATE' and a small refresh icon.

After fill all the required textboxes , user can click on “ Update” . New password will be updated.



Change Password

TUCPassword@1

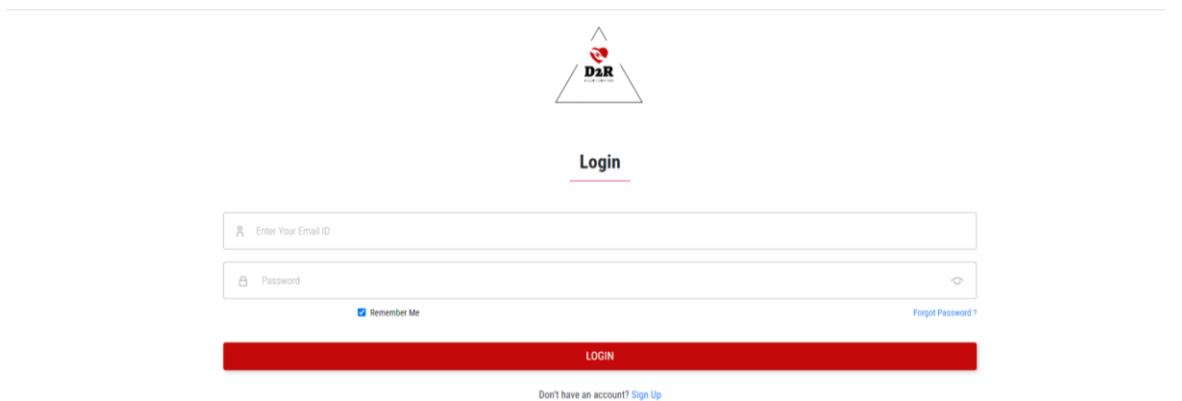
TUCPassword@2

TUCPassword@2

UPDATE

d. Logout:

Once user click on “ Logout” , user will get a small pop up asking •Yes logout now or No, not now. If user will click on “ Yes logout now “ , then user will logged our from site .





Login

Enter Your Email ID

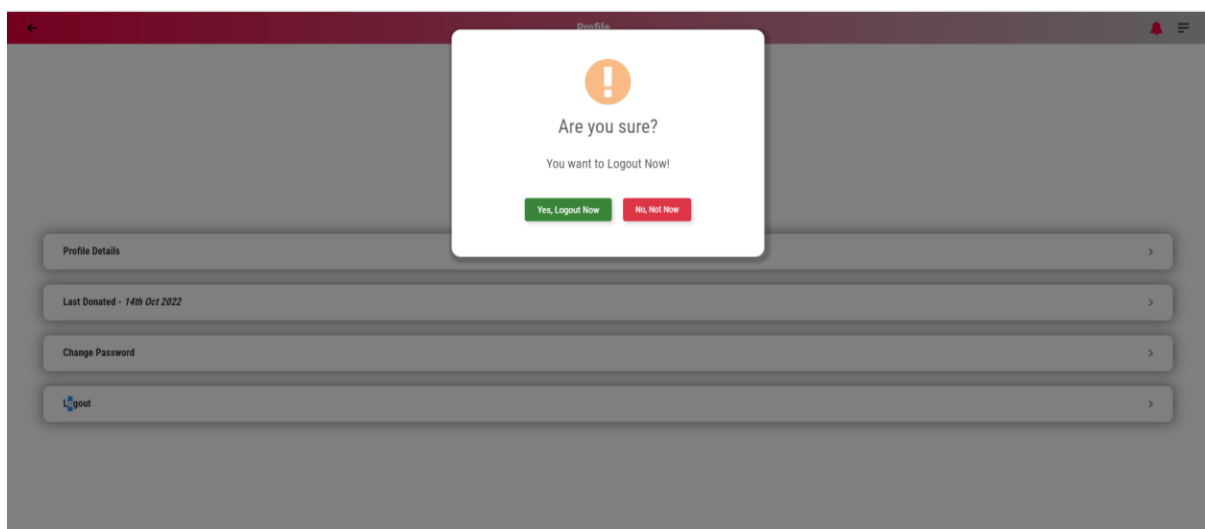
Password

☒ Remember Me [Forgot Password ?](#)

LOGIN

Don't have an account? [Sign Up](#)

If user will click on “ Not now “ user will stay on this page.



Are you sure?

You want to Logout Now!

[Yes, Logout Now](#) [No, Not Now](#)

Profile Details

Last Donated - 14th Oct 2022

Change Password

Logout

- Once user click on “ Nearby “ option user will get nearby hospitals along with the address .

Nearby Hospitals

1. Morgue, NRSMCH

5.0 ★★★★★ [3 reviews](#)

Hospital

📍 138, Acharya Jagadish Chandra Bose Rd, Sealdah, Raja Bazar, Kolkata, West Bengal 700014, India

📍 LOCATE NOW

2. B. R. Singh Hospital (Eastern Railway)

3.7 ★★★★☆ [527 reviews](#)

Hospital

📍 H98C+889, Bepin Behari Ganguly St, Sealdah, Raja Bazar, Kolkata, West Bengal 700014, India

📍 LOCATE NOW

3. Dr Lal PathLabs – Patient Service Centre

3.8 ★★★★☆ [4 reviews](#)

Hospital

📍 7, 1, Narkeldanga Main Rd, Raja Bazar, Kolkata, West Bengal 700011, India

📍 LOCATE NOW

4. Nil Ratan Sircar Medical College and Hospital

4.2 ★★★★☆ [1408 reviews](#)

Hospital

📍 138, Acharya Jagadish Chandra Bose Rd, Sealdah, Raja Bazar, Kolkata, West Bengal 700014, India

📍 LOCATE NOW

5. ESI Institute of Pain Management

4.4 ★★★★☆ [11 reviews](#)

Hospital

📍 Sealdah ESI Hospital, Raja Bazar, Kolkata, West Bengal 700009, India

MODULE -4 :

Steps of Forgot Password:

- If user not remembered Email id or password, click on “ forgot password”.

D2R

Login

📧 Enter Your Email ID

🔑 Password

☒ Remember Me

[Forgot Password?](#)

LOGIN

[Don't have an account? Sign Up](#)

- Enter your email id and click on continue button.

D2R

Forgot Password

📧 [48@theuniqueculture.in](#)

[Login Now ?](#)

CONTINUE →

[Don't have an account? Sign Up](#)

- User will get a notification like “ Password has been sent to email id , login now” .

53



Forgot Password

▲ Password has been sent to qa@theuniqueculture.in, [login here](#)

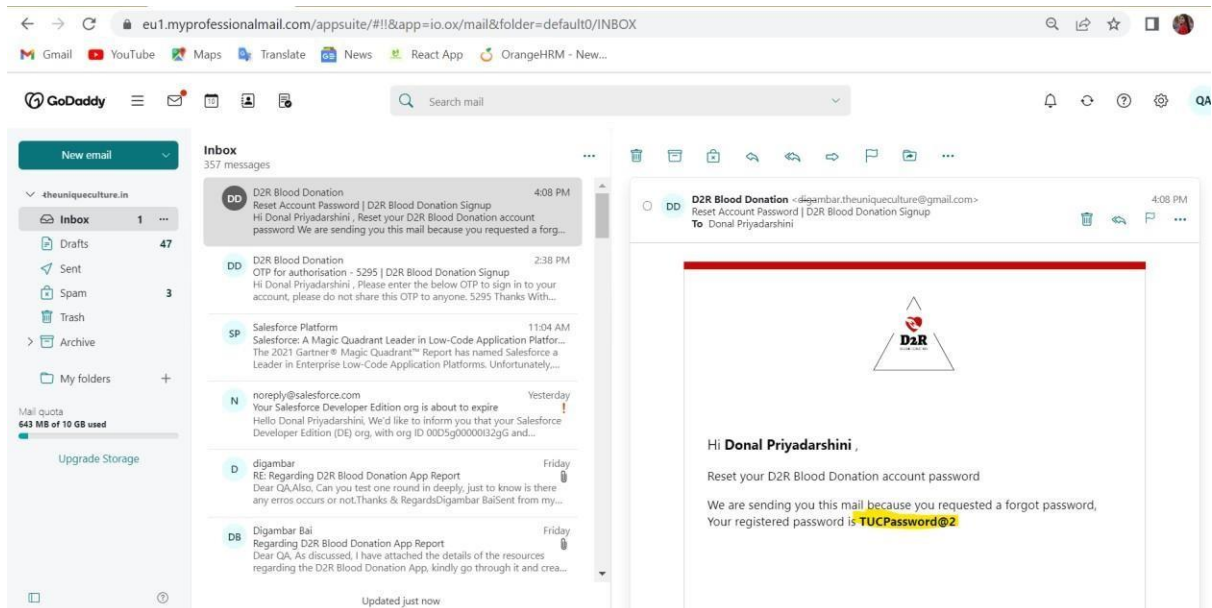
Enter Your Email ID

[Login Now ?](#)

CONTINUE →

Don't have an account? [Sign Up](#)

4. User will get email from D2R blood donation site along with password.



5. Now user user can login to site with email id and password.



Login

qa@theuniqueculture.in

TUCPassword@2

☒ Remember Me

[Forgot Password ?](#)

LOGIN

Submission Summary

Conference Name

4th International Conference on Data Science and Applications

Paper ID

138

Paper Title

D2R Blood Donation App

Abstract

The main purpose of this Android application is to enable social location-based services for locating blood donors. Blood is the source of life, and despite technological and medical improvements, a blood substitute, and blood constituents or products made from blood have not yet been identified. Living donors are the only ones capable of supplying blood. The hospitals and clinics, particularly those in our neighborhood, are made aware of how difficult it is to find blood donors and to rapidly collect blood, particularly negative blood, and uncommon types. This application has been created because many hospitals experience blood shortages during COVID. Countless people had perished, and there was

enough blood. During COVID, many people experienced severe suffering. When lives are lost as a result of inadequate blood supplies, the problem becomes more serious. To remedy this, many authors have suggested a few schemes a few organizations or blood donation centres keep the contact information for blood donors kept up-to-date. These in which solutions, however, fell short since they only offered a list of donors based on the fixed contact information that donors had provided upon registering. The technology uses the Global Positioning System (GPS) to track the region of donors (volunteers) and gives the requestor or healthcare facilities the information they need to locate the closest donors based on their precise location at the crucial time. Particularly in places with very few blood banks or the donors, this proposed system offers a reliable method for finding blood donors. This software assists users in finding the closest blood donor.

Centre and donors, learning their eligibility to donate blood, receiving notifications when an urgent blood donation call comes in.

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D2R Blood Donation App

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Abstract. The main purpose of this Android application is to enable social location-based services for locating blood donors. Blood is the source of life, and despite technological and medical improvements, a blood substitute, and blood constituents or products made from blood have not yet been identified. Living donors are the only ones capable of supplying blood. The hospitals and clinics, particularly those in our neighbourhood, are made aware of how difficult it is to find blood donors and to rapidly collect blood, particularly negative blood, and uncommon types. This application has been created because many hospitals experience blood shortages during COVID. Countless people had perished, and there was not enough blood. During COVID, many people experienced severe suffering. When lives are lost as a result of inadequate blood supplies, the problem becomes more serious. To remedy this, many authors have suggested a few schemes in which a few organizations or blood donation centres keep the contact information for blood donors kept up-to-date. These solutions, however, fell short since they only offered a list of donors based on the fixed contact information that donors had provided upon registering. The technology uses the Global Positioning System (GPS) to track the region of donors (volunteers) and gives the requestor or healthcare facilities the information they need to locate the closest donors based on their precise location at the crucial time. Particularly in places with very few blood banks or the donors, this proposed system offers a reliable method for finding blood donors. This software assists users in finding the closest blood donation Centre and donors, learning their eligibility to donate blood, receiving notifications when an urgent blood donation call comes in.

Keywords: Blood group, Emergency, Smart phone, GPS, Donor

I. INTRODUCTION

D2R Blood Donation application, which will help the people find nearby donors. It enables individuals to monitor their donors who are available in a nearby area, and they will be contacting the person by sending a message.

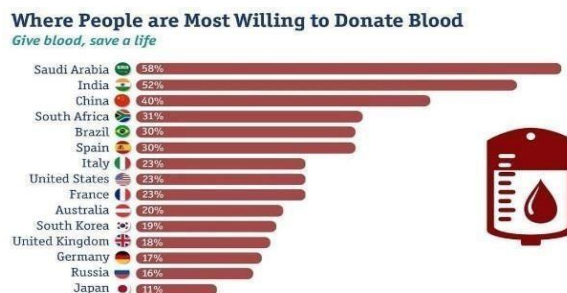
Blood donations are employed in medical research as well as in the treatment of sick or injured patients. A patient seeking blood often has to get in touch with a blood bank or a blood group-appropriate donor from their network of friends, family, and neighbours. Finding a suitable donor in a short period of time from a limited group of people is difficult, though. Moreover, blood banks cannot ensure that they will have the right blood types available. On social networking websites (such as Facebook, WhatsApp, Twitter, etc...), posts asking for blood donations have been steadily rising. These problems can be solved by the D2R application, which quickly connects patients with a huge pool of local donors through an approved clinic. The hospital may utilise this application to identify and track down blood donors in the patient's neighbourhood or adjacent city when they need to transfuse a patient (when the patient is hospitalised). The need for blood donations at a specific clinic where registered donors, can donate will be made known to them. Additionally, procedures for collecting, storing, and inventorying blood bags will be systematized and structured, which will enhance healthcare administration.

This application also has features like a login page where users must sign up and look for donor, who is willing to donate blood. The primary goal of the login page is to restrict login to the registered user in order to prevent unauthorised access. Because this application needs internet connectivity, losing internet access is a drawback. Thus, using medical information and blood group information, this tool aids in quickly choosing the appropriate donor online. The main reason for creating this application was to cut down on the amount of time and money needed to find the ideal donor. Additionally, this application will give users a platform for direct communication via messaging services between the ready donor and the blood finder. As a result, our application quickly provides the needed information while also helping in decision making.

People's difficulty in searching for blood during emergencies served as the primary impetus for designing this programme. When emergency blood is needed, individuals currently panic and call every single friend and relative asking them to donate. This programme was developed as a result of the numerous emails that were sent to institutions like colleges and universities asking for blood donors, as well as posts on social media

requesting blood donors. The proposal aims to establish a fresh method of finding blood donors. Smart phones are being used by an increasing number of individuals as a result of modernization, and they are now commonplace.

Fig.1



II. LITERATURE SURVEY

The purpose of this “Blood bag : A web application to manage all blood donation and transfusion processes ” by R.S.Ali, Tamer F.Hafez, Ali Badawey Ali,Nadia Abd-Alsabour et.al [1] proposed the web application to collect and arrange the information from all blood banks and blood donation campaigns, which is tied to a central database. The suggested application coordinates and manages all crucial steps involved in blood donation, including bag testing, storage, and delivery to the patient.

In this “M B B : A Life Saving Application”by Narendra Gupta et.al [2] proposed a process for developing an android application-based website. They have recommended using a Geographic Information System (GIS) to track donors in their application (GIS). Their website serves to upgrade their current system, which restricts access to data to authorized users. They include two different types of devices:1) Android phone with android OS, 2) The database and website are both run on computers, and the donor data is stored there.

The purpose of “mHealth: Blood Donation Application using Android Smartphone” by Muhammad Fahim, Halil Ibrahim Cebe, Jawad Rasheed, Farzad Kiani et.al [3] proposed new possibilities for healthcare that make use of communication and mobile technology. Donating blood is a labor-intensive and challenging operation in the medical industry. a few donors whose blood types match those of the patient. To connect the requester and the donor wherever they are at any time, we created an Android-based blood donation application.

In this “Research Paper on Blood Bank Donation and Management using Django” by Shravani BS, Raghavendra. R et.al [4] it will have three different sorts of users: patients or users who require blood, donors who will provide blood, and hospitals who can act as a middleman to handle communication between patients and donors

The purpose of “ D ’ WORLD : Blood Donation App Using Android ” by A.Meiappane, K.Logavignesh, R.Prasanna, T.Sakthivel et.al [5] proposed to supply blood so as to save people's lives. To enable users to view information about nearby Donors, a blood donation search app for Android has been developed. Their task is designed from two perspectives, such as those of the patient and the beneficiary.

The “Rapid link - The GPS integrated life saver” by J Julie, Harini.K,DineshKumarS et . al [7] it is which reduce the amount of time lost during accident and trauma care, and expedites blood donation during critical times to save the patient from certain death. Thus, it not only lessens the misery and anxiety experienced by individuals who need blood donors but also spares the time and energy of everyone who is assisting their fellowcitizens, whether they are family members, friends, or complete strangers.

In “BLOODR: blood donor and requester mobile application - PMC” by Vamsi Krishna Tatikonda and Hosam EI-Ocla et.al [8] has proposed To connect nearby blood donors with patients, the application offers a dependable

platform. Anytime a patient needs blood donation, it opens a line of communication through verified clinics. Finding appropriate blood donors in your area who can respond to blood request posts is made easier with the help of this valuable tool.

In “Web based online blood bank management system” by Nandu , Ramakrushna , Bhanuprakash , Upendar et.al [9] in this project they won't store the blood, ensuring that the project is unhampered. The patient must request the blood they need, and they provide the donor's information. Whether they are available or not, the donors can adjust their availability status.

In “A Review Paper on Blood Bank Management System” by Rohit S. Remella , Shubham Tomer , Saurav Tomer et.al [10] it is utilized in any clinic, hospital, lab, or emergency circumstance that necessitates the use of blood units. When a blood transfusion is necessary, their technology can be used to locate the necessary volume of blood from blood banks or even from donors.

In “Online blood bank management system” by Chetan Masram, Arshad Mulani, Rasika Bhitale, Jidnesh Koli et.al [11] it is which to offer the public a single clickable solution to all the issues related to blood donation and donation of blood. The website will feature everything, making it convenient and time-saving for people to register to donate blood online and search for nearby blood banks to see whether any blood is available.

In “An Android Application for Blood Finding and Information Management System” by Tashi Wangchuk, Passang Gyem, Kinley Wangmo, Ugyen Wangchuk, Parshu Ram Dhungyel et.al [12] proposed the method used to locate a blood donor in an emergency is highly connected with that method. Recognizing the challenge of locating the ideal blood donor around the world. This reveals that people frequently turn to social media in times of need to find blood donors.

Inference from Literature Survey:

According to the general overview, "blood is a basic need for every human being." Nobody can survive in this world without blood. In the event of an emergency, the clinicians will inquire at a hospital or blood centre if the patient needs blood. We can employ this kind of application if blood is not readily available. Anyone who wants to donate blood can sign up with this app using their details. In an emergency, the patient might not get blood right away, but after we enter the blood type we need, it will show blood donors in the area who are eager to donate. Following the blood donation, the donor's details will be hidden for three months.

III. D2R: BLOOD DONATION APPLICATION

a. EXISTING SYSTEM

There is no sufficient treatment for persons who, under the existing method, donate blood to patients. Moreover, there is no verification of the contributors and recipients accounts or the facts disclosed. It might be risky if a donor visits a patient to give blood and has or has ever had a medical condition. As a result, the donor's medical history should be updated.

Medical background would be like:

- Between the ages of 18 and 60.
- They should weigh at least 50 kg.
- The Covid 19 vaccination is required.
- Just once every three months is when blood is donated.
- Cannot give when suffering from a cold, sore throat, the flu, a stomach illness, or any other ailment.
- Donating blood by women who are pregnant or nursing is not advised.

The accompanying explanations are hence not modified in the existing system: The current system does not offer this kind of information, which might lead to death on a person. The donor and recipient body conditions will not always match.

DISADVANTAGES

- Given the major cities are rural and agricultural areas, the availability of blood was not a serious issue.
- For those who live in poverty, data connections are not economically viable.

- In an emergency, it may be difficult for hospitals and patients to reach registered donors since they may not be able to pick up the phone.
- For registered contributors, there is no suitable centralized database.

b. PROPOSED SYSTEM

It is proposed that you develop an application where blood donors may sign up, conveniently accessible at the desired location and time. While searching for blood donors, only those who have registered with this application will be displayed. The Geospatial Information System (GIS) keeps track of the contributors, who are all near one another. When receivers require blood, they may quickly look for it by entering their location and blood group. After locating the ideal donor, recipients must input a few data and upload a doctor-verified prescription from the appropriate hospital.

This application objective is to facilitate emergency blood donation. Anyone who is interested in donating blood can register using this app, which also offers a variety of information about doing so.

i. System performance:

The system offers authorized features to ensure that only the authorized user has access to confidential and sensitive information.

- To maintain track of the blood supply, each donor's information will be stored by the system.
- The D2R application will keep updating the data.

Through mobile devices, people can communicate at any time, from anywhere. This app's goal is to help users locate blood donation centres and maintain a database of donors so that blood may be easily distributed across the nation. The system includes an Android-powered smartphone. Information about the blood is stored using the advanced system. The D2R application primarily consists of database, donor, application, user, and patient information.

ii. Types of blood group

The presence or nonappearance of antigens, which are atoms that could set off a resistant reaction assuming they are unfamiliar to the human body, characterizes the eight essential normal blood classifications. Safe blood bondings rely upon thorough blood composing and cross-matching since certain antigens might set off a patient's insusceptible framework to go after bonded blood. One of the four significant blood not entirely set in stone by the presence or nonattendance of two antigens (An and B) on the outer layer of red platelet.

Table.1: Blood groups

<i>Blood Type</i>	<i>Gives to those groups</i>	<i>Receives from these group</i>
A+	AB+, A+	A-, A+, O-, O+
A-	A-, A+, AB-, AB+	O-, A-
O+	O+, AB+, A+, B+	O-, O+
O-	Everyone	O-
B+	AB+, B+	B+, B-, O+, O-
B-	B+, B-, AB-, AB+	B-, O-
AB+	AB+	Everyone
AB-	AB-, AB+	AB-, B-, O-, A-

While delivering or receiving blood transfusions, ABO blood group are essential because red blood cell clumping with a variety of disorders can be caused by blood group incompatibilities. When transfusing blood, It is essential that the donor and receiver are compatible or that the blood cells match. Since blood type A does not contain any antibodies against blood groups A or O, it is possible for a person of blood group A to accept blood from either group.

Advantages of proposed system:

- Provides real time data
- Makes the search faster and more reliable
- Helpful in case of emergencies
- Finding the donors.
- Safer option in case of situations like Covid

Disadvantages of proposed system:

- Location required
- Active internet connection required
- Less scalable
- Notification access should be given

IV. DESIGN IMPLEMENTATION

APPLICATION

This application is used to find blood donors in an emergency. The GIS keeps track of accepted donations. In order to map donations, mobile applications use the GIS. The proposed system describes its operation starting with the launch of the smartphone application. The user can choose between signing up and logging in. If the user has previously signed up, the admin will provide them access to their database-saving information. A user must register if they have not already done so before providing any personal data. The administration of this occurs both before and after blood donation. The administration regularly verifies if the information provided by the contributor is accurate. The application keeps track of user information, blood transfusions, and other things. This proposed approach can aid those who require blood anytime and anywhere. The information presented to the user is correct since only blood donors who are prepared to donate blood enter their information.

USER

The administrator assigns each member a user ID and password so they may be recognized separately. The administrator has access to update, maintain donor private information, and change password. The administration will frequently verify the blood's expiration date and ask the donor who did not provide the blood to provide new blood.

Fig.2



DONOR

A unique ID and password are provided to each donor, which they can use to log in to. They have unique identifiers. Many options are available given to donors, including logging out, determining blood type, both certificates and achievements. Utilizing the database, the patient's and blood donor's information should be saved as well as information.

PATIENT

They can use this application to request blood in case of any emergency. Any user who has registered with this app is eligible to apply and request a blood transfusion. D2R offers a dependable platform for matching nearby blood donors with recipients.

Fig.3

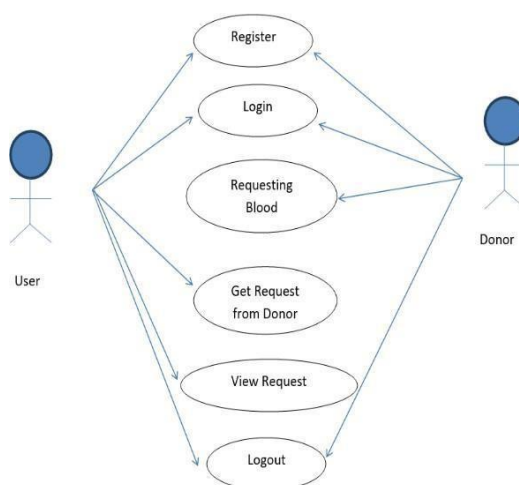
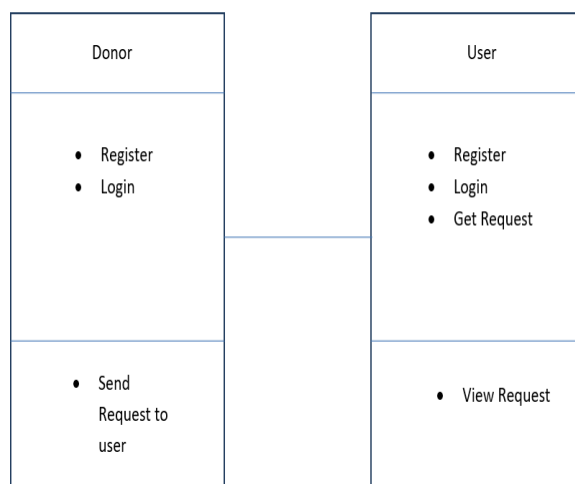


Fig.4



V. RESULT AND DISCUSSIONS

He / she can login if they have already registered with our app. If not, they need to register first. They can sign up by clicking "sign up now," or they can login by linking their Google or Facebook account to it.

They can sign up by entering their name, phone number, Email ID, Address, Blood group, password. Your account will be created once all of these details have been entered. After signing up, they will receive an OTP to authenticate their account. Home page shows the following options:

- Donate
- Find donor
- Nearby Hospitals
- Profile
- Menu bar

The details will be displayed of the requested donors who are in need of blood.

The donor who are in need of blood they can find donor details After searching the details had been enter. The list of donors who are in the location will be provided. After the donor search the particular area, the list of hospitals will be displayed. It will assist the user in locating nearby donors. When a user types in a specific location where they need blood, a few results will be displayed on the map. Then the user can pick one user and contact them by sending a message.

Profile page shows the following options: Profile details

- Last donated date
- Change password
- Logout

Last donated: It is an achievement page that displays the user's ability to donate blood after 3 months, until that user cannot donate. It also displays the most recent donation date, and the information is updated on daily basis. And, it shows the total donations received to date.

Fig.5



The existing problem of inaccurate information being communicated to other parties and the abuse of details is resolved by using this application

VI. CONCLUSION

Posts requesting blood have been more prevalent recently on sites on social media like WhatsApp, Facebook, etc.. Unexpectedly, there are a lot of individuals who want to donate blood when there is a need, but they lack access to information about blood donation requests in their neighbourhood. This is due to the absence of a mechanism that connects recipients with nearby blood donors. D2R handles the issue and creates a communication path through accredited clinics and hospitals when a patient needs blood donation. Finding appropriate blood donors who can reply to blood request posters in their region using this resource is beneficial. Clinics may utilise this application to carry on with the blood transfusion procedure. To increase public awareness through donation camps, data gathered through this application may be utilised to assess donation rates in the neighbourhood.

We provide a use case for a social location-based service to locate blood donors in this article. The system's objectives include expediting and automating the blood-finding procedure in an emergency and keeping track of local blood supplies, receivers, and donors.

References

- [1] R. S. Ali, T. F. Hafez, A. B. Ali and N. AbdAlsabour, "Blood bag: A web application to manage all blood donation and transfusion processes," 2017 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), 2017, pp. 2125-2130, doi: 10.1109/WiSPNET.2017.8300136.
- [2] M. Fahim, H. I. Cebe, J. Rasheed and F. Kiani, "mHealth: Blood donation application using android smartphone," 2016 Sixth International Conference on Digital Information and Communication Technology and its Applications (DICTAP), 2016, pp. 35-38, doi: 10.1109/DICTAP.2016.7543997.
- [3] M. R. A. Brislin, J. A. Mayan, R. A. Canessane and M. R. A. Hamlin, "Blood donation and life saver app," 2017 2nd International Conference on Communication and Electronics Systems (ICCES), 2017, pp. 446-451, doi: 10.1109/CESYS.2017.8321318.
- [4] F. Alharbi, "Progression towards an eManagement Centralized Blood Donation System in Saudi Arabia," 2019 International Conference on Advances in the Emerging Computing Technologies (AECT), AlMadinah Al Munawwarah, Saudi Arabia, 2020, pp. 1- 5, doi: 10.1109/AECT47998.2020.9194178.
- [5] M. R. A. Hamlin and J. A. Mayan, "Blood donation and life saver-blood donation app," 2016 International Conference on Control, Instrumentation, Communication and Computational Technologies (ICCICCT), Kumaracoil, India, 2016, pp. 625-628, doi: 10.1109/ICCICCT.2016.7988025.
- [6] Mandale, Monika et al. "Implementation of Blood Donation Application using Android Smartphone." *International Journal of Advance Research, Ideas and Innovations in Technology* 3 (2017): 876-878.
- [7] Dombe, Anay et al. "Prototype Design of Android App for Blood Donation." (2021).
- [8] Suryatiningsih, Yahdi Siradj and Ruli Hakim Cahyono. "Prototype of We Share Blood an App for Searching Blood Donation based on Android Platform." (2019).
- [9] T., S. P. et al. "Blut : Blood Donation Application." (2021).
- [10] Oloruntoba, Samson and John Akinode. "DEVELOPMENT OF A BLOOD BANK INFORMATION RETREIVAL SYSTEM USING ANDROID APP." (2020).
- [11] Sardi, Lamyae et al. "Gamified Mobile Blood Donation Applications." *International Work-Conference on Bioinformatics and Biomedical Engineering* (2017).
- [12] VikasKulshreshtha, Dr. SharadMaheshwari, "Blood Bank Management Information System in India". *International Journal of Engineering Research and Applications (IJERA)* ISSN: 2248-9622 Vol. 1, Issue 2, pp.260-263.
- [13] TusharPandit, SatishNiloor and A.S. Shinde, "A Survey Paper on E-Blood Bank and an Idea to use on Smartphone". Dept. of I.T Sinhgad Academy of Engineering, Pune, India.