



BIBO – Blood Bank Management System

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Abstract : A normal hospital management application is used in various stages by a hospital. It is used as an information managing system, a diagnosis system and for making appointments. As these are a few important functions of a hospital, Donation can also be said as one. Any kind of donation whether it is blood, plasma, organs, bone marrow, biospecimens or even volunteering plays a major role in a hospital. Giving is an important trait that must be embedded in human hearts. This application can act as a doorway to improve this emotion and to make people donate more. Unlike other hospital management applications that focus on information management and diagnostics this application focuses on donating blood, plasma and others. It helps a hospital to connect with the donors directly. It mainly focuses on donor's and patient's data privacy. Using different online applications for blood donation, plasma, organ donation or whatsapp and other media to share patient's information increases risk. So, this app tends to cover that loophole by connecting the donors directly with the Hospital that houses the patient. If the request is made by the hospital, any volunteer can choose to accept based on his availability. As such data obtained from this app can be used as record evidence of blood group donation and its usage hands is making it full proof and also to analyze the people who find that doing in that particular environment. This application uses various recent technologies like flutter and node js that helps the user to have a smooth experience

IndexTerms – Donation, Blood Donation, Data privacy

I. INTRODUCTION

A blood bank management system is a software application that is designed to automate and streamline the management of blood banks or blood centres. The system typically includes features for managing donor registration and screening, blood collection and processing, testing, storage, inventory management, and distribution. Blood bank management is the process of efficiently managing the collection, testing, storage, and distribution of blood and blood products in a blood bank or blood center. It is a critical component of the healthcare system as blood and blood products are essential for medical procedures, surgeries, and emergency situations. The blood bank management system is intended to improve the efficiency, accuracy, and safety of blood bank operations. The system can help blood banks maintain detailed records of blood and blood product inventory, track donor information, and ensure that all regulatory requirements are met. The blood bank management system involves a range of activities, including donor recruitment and screening, blood collection and processing, component preparation, blood testing, storage, inventory management, and distribution. The management of blood banks also involves ensuring the safety and quality of the blood and blood products and complying with regulatory requirements. The blood bank management system can also help to ensure that the blood and blood products are of high quality and safe for transfusion. The system typically includes features for tracking the temperature and storage conditions of blood and blood products, as well as tools for managing the testing and screening processes. Effective blood bank management requires advanced technology and skilled personnel who can perform the necessary procedures and maintain accurate records. Automated systems have been developed to help streamline blood bank operations, reduce errors, and ensure efficient use of resources. Overall, blood bank management is critical to ensure that an adequate supply of safe blood and blood products is available to meet the needs of patients in need. A blood bank management system is essential to ensuring that blood banks can operate efficiently, maintain accurate records, and ensure that blood and blood products are available to meet the needs of patients when they are needed. The purpose of a blood bank management app is to improve the efficiency, safety, and effectiveness of bloodbank operations by providing a comprehensive solution for managing blood and blood products.

II. PROBLEM STATEMENT

Blood banks are essential in ensuring a reliable and sufficient supply of blood for transfusions, emergencies, and medical procedures. However, managing the operations of a blood bank can be a challenging task, especially when it involves handling different types of blood products, tracking blood donations, and ensuring the safety and quality of blood products. A blood bank management system can help simplify and streamline the processes involved in managing a blood bank. The system should be designed to manage the entire life cycle of blood products, from donation to distribution, while adhering to regulatory and safety standards.

III. METHODOLOGY

The percentage of people donating blood is increasing day by day due to awareness to donate blood for those needed. The blood received has to be managed thoroughly so that there will be no negative effect on the blood receiver once they receive blood.

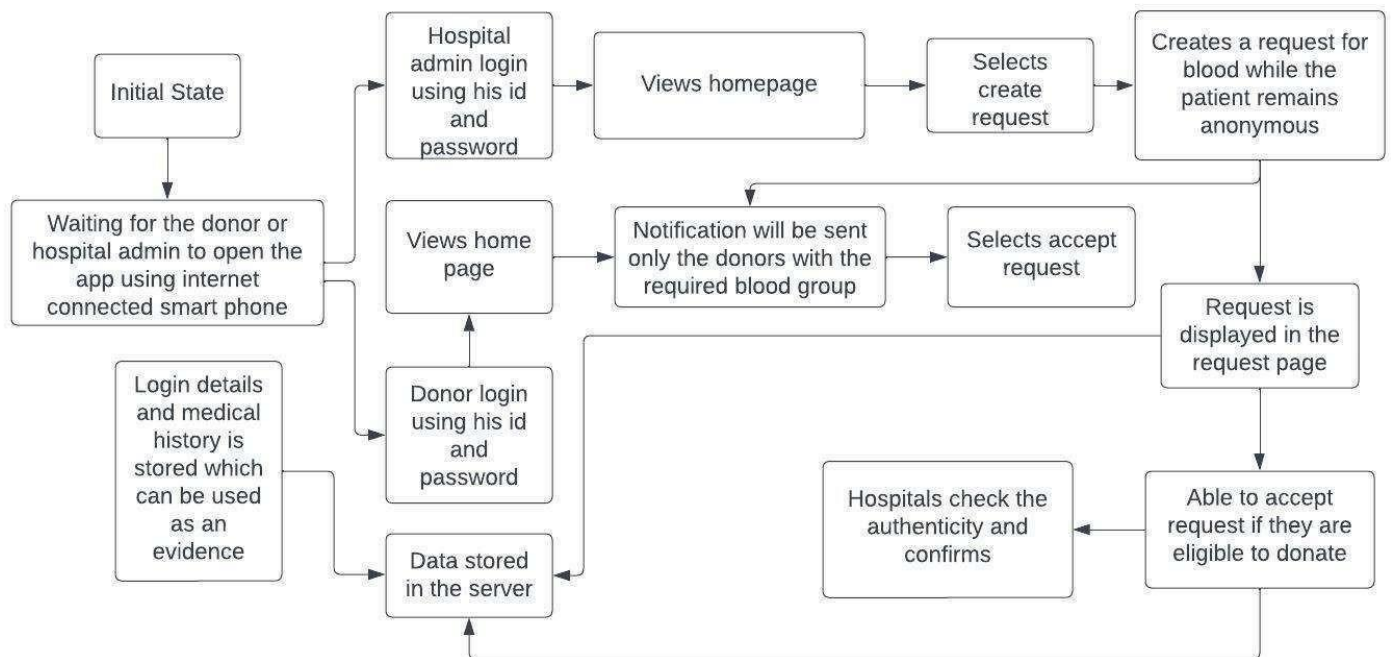


Figure 1: Data Flow Diagram

Hospitals rely on blood banks, which serve as collection centers for storing and preserving blood bags for future use in transfusion services. Unfortunately, many blood banks still use manual processes, which result in inefficiencies due to their reliance on paper-based systems for collecting donor information, tracking inventories, and managing transfusion services. This lack of documentation can pose a risk to patients' health, potentially leading to the use of contaminated blood bags. Such contamination can occur when there are incomplete medical history records for donors, and when the shelf life of blood bags is not properly monitored.

To address these issues and ensure safe blood transfusions, a web-based blood bank management system may be necessary. This system would require a unique hospital ID registered in the hospital's database to ensure that only valid requests are considered. Patients would also be able to check the availability of blood of all blood groups in all the registered blood banks to ensure that their request is fulfilled efficiently. The request process would involve several steps, including validation, checking the hospital's database for availability, and requesting blood from other banks and registered donors who are available for further contact.

To expand the functionality of the system, we have added a new feature for plasma donation, which is vital for saving lives. This feature includes a dashboard, blood group list, donors list, and options for managing contact information, pages, and queries. The module also includes a donor information update feature, password reset, and request received by the donor. The system maintains a donor list, which undergoes various tests, including diabetes mellitus, Hepatitis B – HBsAg, Human immunodeficiency virus – anti-HIV 1 and 2 and HIV NAT (nucleic acid testing), and Hepatitis C – anti-HCV and HCV NAT, to ensure the safety of blood bags. Overall, the proposed system aims to improve the efficiency of blood banks, safeguard patient health, and streamline the blood transfusion process.

IV. PROPOSED SYSTEM

In our proposed system, we aim to have the following specifications namely:

1. Enable both hospitals and donors to be registered and log in successfully.
2. When needed, the hospital admin would be able to upload a request on behalf of the patients.
3. As the request is handled by the hospital it ensures the patient's data privacy.
4. A donor would be able to accept the request and come in direct contact with the hospital.
5. This also ensures donor data privacy.
6. Once the hospital receives the required blood units the request will be closed and the donors the status will change to 'unavailable' for the next three months.
7. The hospital will also be able to see the available donors based on area and by blood groups.
8. Users can view all Blood bank information location-wise.

V. IMPLEMENTATION

The blood donors can login into the app with their credentials. When the donor visits the requests, he/she can accept it. Here the request will be made by the admin. Phonenummer and other details of the donor can only be viewed bythe admin, so data privacy is maintained here. Theadministrator retrieves the details of the patient from the database and the notification will be sent to the donor'smobile app when the admin creates a request. Once the donoraccepts the request, the admin will get in contact with him/her. Then the status of the request will be changed to accepted or removed by the admin.

5.1 Hospital module

In this module, a government hospitalwill be able to create a request based on demands and work accordingly. The features available in this moduleare : Able to log in successfully. Any number of hospitals can register and use this application. Able to view past donation history. The dashboard page contains options like make the request, view request, Donor list, andlogout. By clicking make the request a hospital cancreate a request for any donation (either blood, plasma, platelets, or bone marrow). They can viewthe accepted donors in the donor list.

5.2 Donor module

In this module, a verified registereddonor will be able to view a request for a donation and can accept it. The features of this module are as follows:Able to log in successfully. Any number of donors can register and use this application. Able to view past donation history. Receives a notification when a new request is updated according to their blood type and preferences.Able to view the request page uploaded by the hospital. After accepting the request the donor will be able to come in direct contact with the hospital representatives. If they are unable to arrive at the right time or they don't pass the tests the donors on the list will be contacted

5.3 Admin module

In this module, the administrator willbe able to maintain the database of the application. The features of this module are: Manage the whole database.Manages the list of verified donors. Updates the requests.Updates the donor information. Updates the donation information.

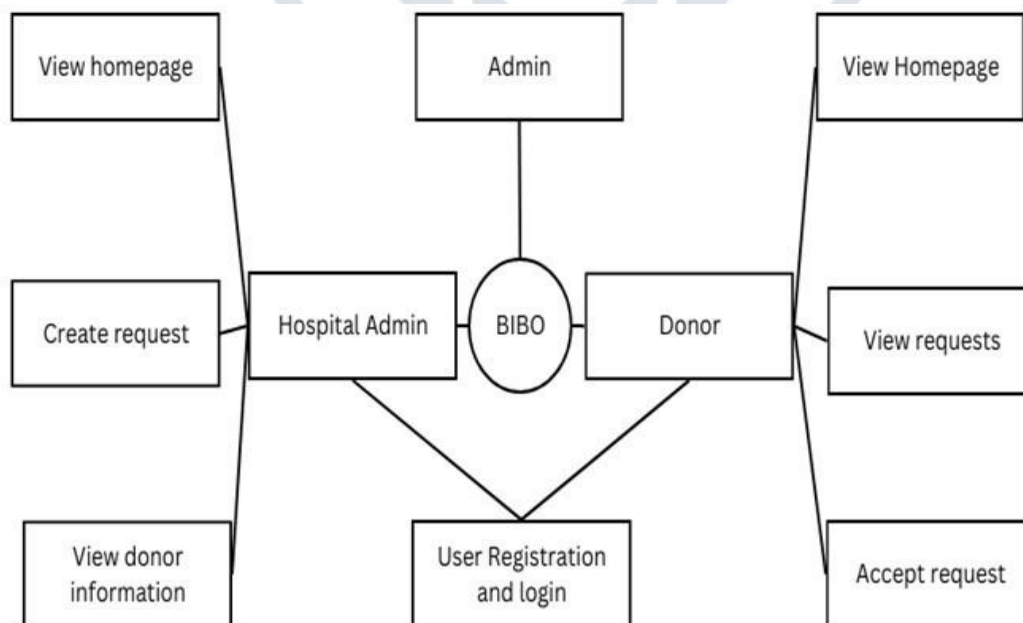
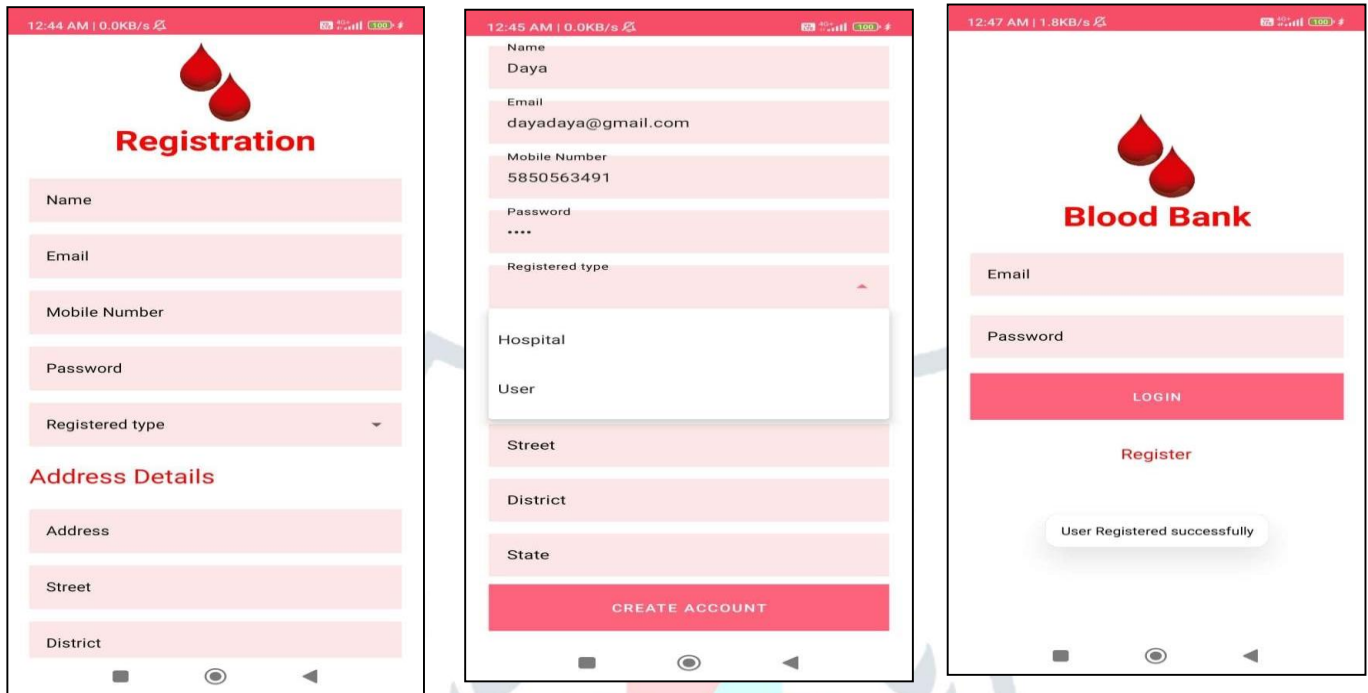


Figure 2: System Design

VI. RESULTS AND DISCUSSION

It is convenient for the hospital to request blood for patients. The system contains four major components:

1. Database which contains the donor lists with their details like blood group, mobile number and address.
2. Able to request for plasma, platelets and organs too.
3. Display notification on the screen when a request is created by the admin.
4. Admin can create requests and delete requests.



Figure(s) 2: Registration Page

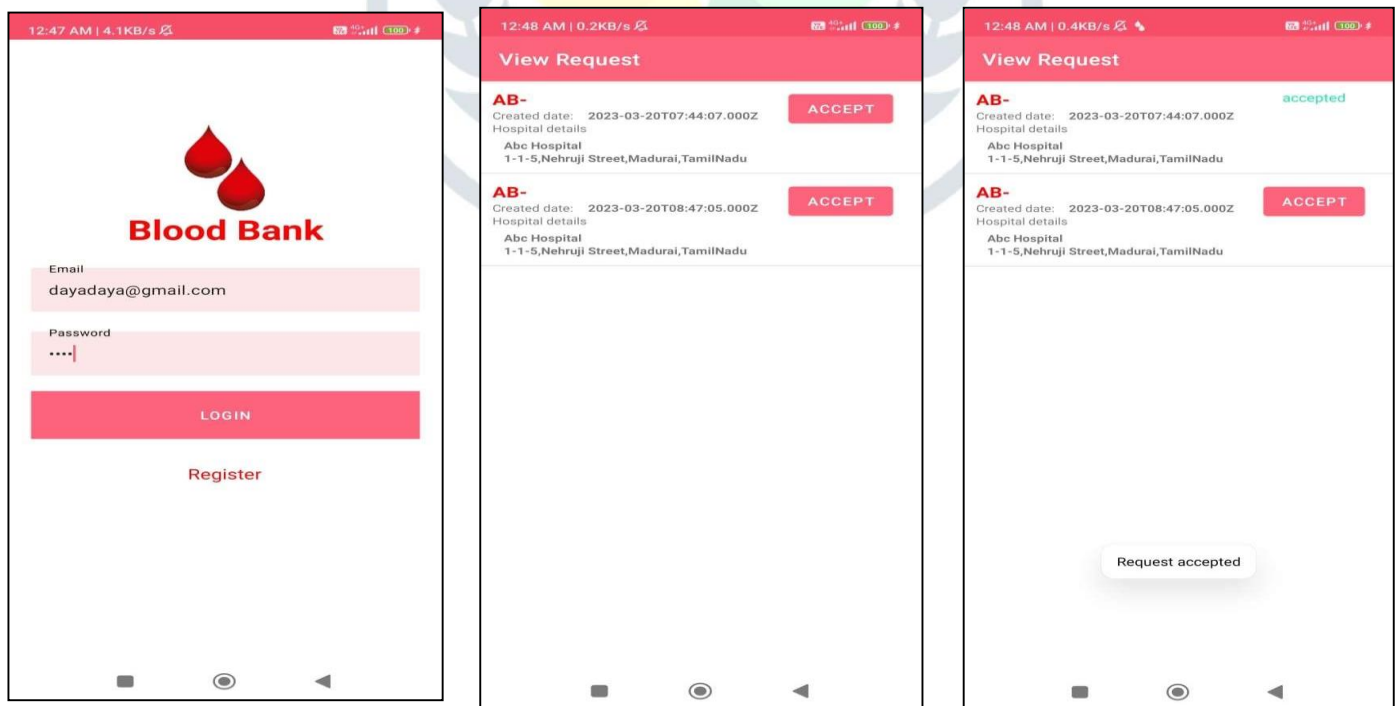
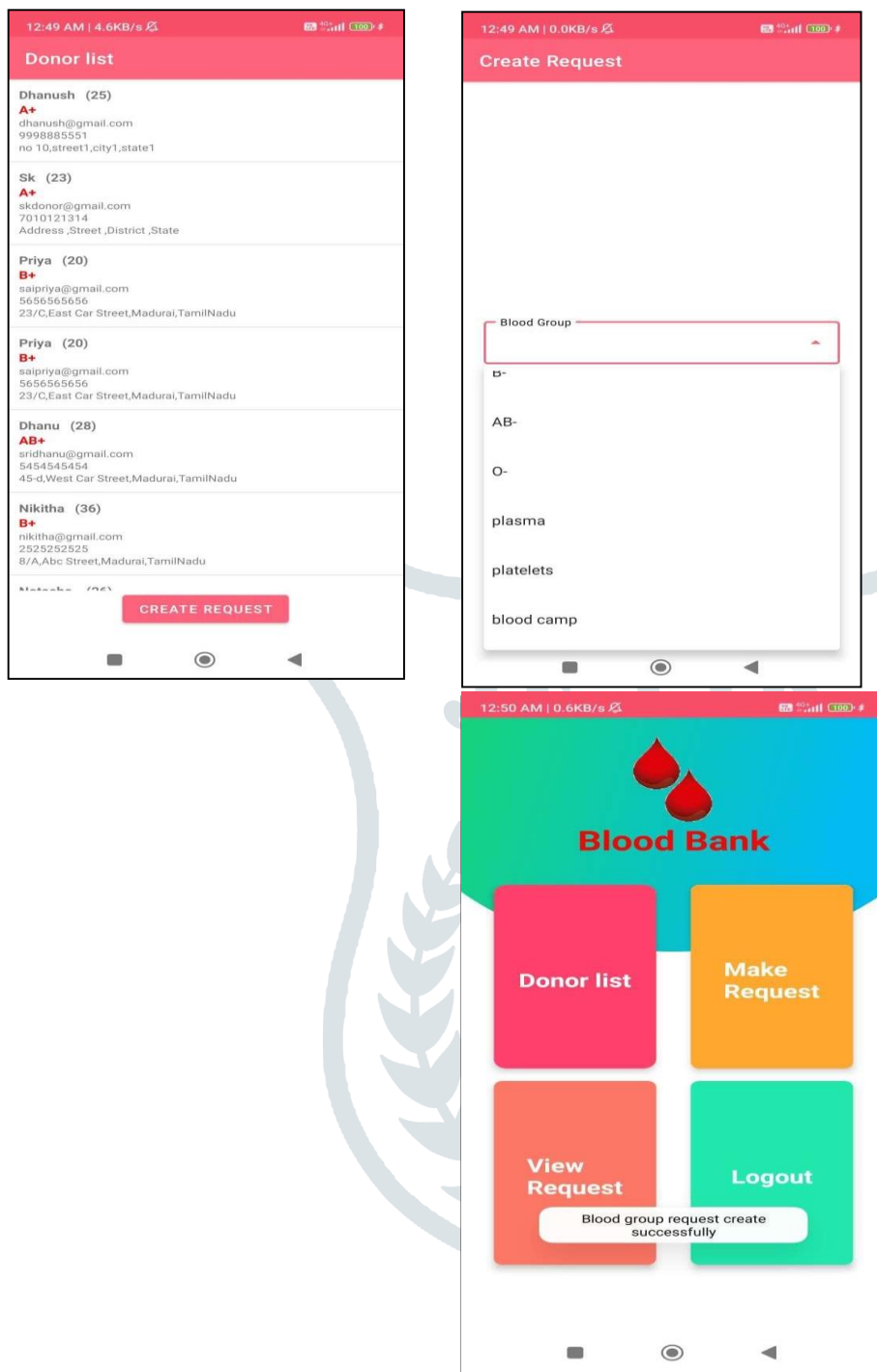


Figure 3: Login Page

Figure 4: View Request

Figure 5: Accept Request



Figure(s) 6: Create Request

VII. CONCLUSION

In conclusion, a blood bank management system is an essential tool for efficiently managing blood donation and transfusion processes. With the help of this system, blood banks can maintain a centralized database of donors, blood units, and inventory. It can streamline the process of blood collection, testing, storage, and distribution, which helps in saving lives in emergency situations. The system can also help in identifying potential blood donors and maintaining their eligibility criteria. It can also manage the blood request process, ensuring that blood units are quickly allocated to patients in need. The use of technology such as barcoding and RFID tagging can further enhance the efficiency and accuracy of the system. Overall, implementing a blood bank management system can significantly improve the quality and safety of blood transfusions and streamline the operations of blood banks. It can ensure that the right blood reaches the right patient at the right time, which is crucial in emergency situations.

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