Mini Project Final Report on

"Blood Donor Management System"

in partial fulfillment for the award of the degree of

Bachelor of Computer/ Information Technology Engineering

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ABSTRACT

Blood Donation Management System (BDMS) is a web based system which provides an online platform for managing blood donors and requesters information. The purpose of the BDMS is to collect data about donors and seekers who are interested in donating blood or who require it. Anyone who wants to donate blood can do so through this website.

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Chapter 1: INTRODUCTION

The Blood Donor Management System is a web based system designed to efficiently handle information related to blood donors and those in need of blood. This system simplifies the management of donor and requester data, making it easier for healthcare organizations and blood banks to facilitate blood donations and fulfill urgent blood requests.

1.1 Background

For hospitals, a blood bank known as blood collection center, also is an area in which collected blood bags are stored and preserved for future use in blood transfusion services. Blood transfusion is a medical operation where a patient requires blood or blood products as a life saving measures.

Government of Nepal, in it's policy declaration of 1991, has mandated Nepal Red Cross Society as the sole authority in conducting blood programs in Nepal. Therefore, a great responsibility has fallen on the Society and to prove its capability, it is systematically strengthening itself with resources available nationally and exploring resource possibilities internationally. The Kathmandu- based Central Blood transfusion service, so far being the only referral Centre for the whole country, has been planning not only to upgrade the Centre but also in upgrading regional blood centres of Biratnagar, Pokhara, Nepalgunj and Chitwan. It is also considering the possibilities of upgrading the Dharan and Dhangadhi blood centers in view of establishments there of major hospitals and coverage area. As it stands today, there are 21 district level blood banks, emergency units in 17 and 25 hospital units of the services in the country.

1.2 Statement of Problem

In today's healthcare environment, efficient blood donor and requester data management is crucial. Traditional methods have often led to delays and errors.For instance, when a person needs a certain type of blood and this type is not available in the hospital, family members send messages through social media to those who can donate to them and this process takes longer than the life of the patient to the most dangerous. To address these challenges, we have developed the Blood Donor Management System. This report will explore the system's functionalities and its role in solving these problems, ultimately improving the process of blood donation and distribution for the benefit of both healthcare providers and patients.

Generally, this system aims to determine how the use of online donations management system enhance blood donation process.

1.3 Objective

- To manage the details of Donor and notify donor regarding the time of blood donation.

1.4 Scope

Allow individuals to register as blood donors or blood requesters. The user can request blood through our system simply by submitting form. Donors will be notified about the blood order and the blood. result after blood donation via email. Requester will be notified about the available blood donor.

1.5 Applications

- Blood Banks
- Hospitals and Healthcare Facilities
- Research and Data Analysis

1.6 Hardware and Software Requirement

Hardware Requirement:

- 1GHz or High processor

- 8 GB RAM

- 500 MB Hard Disk

Software Requirement:

- Web page development: HTML5, CSS, Javascript

- Scripting Language: PHP 7.4.20

- Database Management System: MYSQL

- Sublime Text 4152-15.6 MB

- XAMPP release 7.4.20

Chapter 2: LITERATURE REVIEW

The increasing demand for blood is not being met effectively due to a lack of proper management and outdated blood management websites. Research on existing blood donation apps on Google Play reveals many faults and a shortage of registered donors. Privacy concerns discourage people from sharing their details, and medical conditions are not considered during donor registration. Furthermore, there's no way to find the nearest donor, as current apps only send notifications to donors with a specific blood group.

2.1 Related Works Description 1

In the study entitled "Blood Bank Management System" by Barsha Paudel, Bishruta Nepal, Monika Mishra and Tripti Mahaseth, they suggested the system to develop the blood management system to assist in management of blood donor records and ease/ or control the distribution of blood in various parts of country based on hospital demands. They focus on managing all information of donor/ users details information who wants to donate blood.

2.2 Related Works Description 2

"Blood Bank Management System" done by Ashutosh Sharma, Bikalp G.C, Samaya Rijal, Samek Palikhel and Vishrut Maskey, [Pokhara University's Apex College] encompass two primary goals: facilitating donors in locating nearby blood donation events and keeping donors informed about blood orders and their own blood test results through email notifications. In order to understand the significance and relevance of these objectives, it is essential to conduct a literature review that explores the existing body of knowledge related to blood bank management systems and their objectives.

2.3 Related Works Description 3

According to "Hamro Life Bank", they works closely with blood banks to maintain their information and recruit, engage and retain donors as per the demand with the right donor data management and blood stock management. "Hamro Life Bank", 2020 has made helpful contribution tot eliminate blood shortage in NEPAL by spending your time to make an impact, saving our blood lives or creating a holistic process of blood management with our money.

Chapter 3: METHODOLOGY

3.1 Introduction

When a new donor comes to donate blood, they are required to fill out their personal information including their medical history during the registration process before making the donation. After the donation, the donor is given a donor identification card with their name, blood type, donation information, including blood results. Only blood bank admin has the authority to access the donor's records, since the system is only available for the use within the organization. If the donated blood is disqualified, the donor will be notified through postal mail that their blood component is reactive to viruses , meaning that there is a positive result of the blood being infected, and the organization will also inform the donor to perform another blood test at the blood bank to confirm the result of blood. Hospitals can request for blood by calling in or e-mailing the blood bank the type of blood and the quantity that is in need. The administrator is responsible in checking the availability of the blood type according to the request. If the requested blood type is available, the administrator will withdraw the blood from the inventory and transfer it to the hospital, however, if the requested blood is unavailable, the administrator will send an e-mail to inform the hospital.
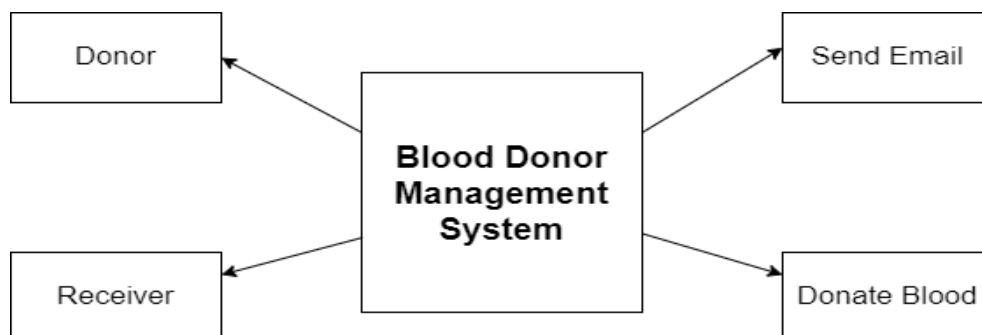
3.2 Block Diagram

Figure3.2: Block Diagram of BDMS

3.2.1 Description of Donor Block

The Donor Block in the Blood Donor Management System represents individuals willing to donate blood. It contains their essential details like name, age, gender, blood type, contact number, and address. Donors can interact with the system to register, schedule donation appointments, and view their donation history, fostering a strong and efficient blood donation process

3.2.2 Description of Reciever Block

The Receiver Block in the BDMS represents individuals in need of blood transfusions. It contain their essential details like name, age, gender, blood type, contact number, and address. Receivers can interact with the system to submit blood requests and receive notifications about available blood, ensuring timely and accurate access to suitable blood donations.

3.2.3 Description of Donate Blood Block

The "Donate Block" in our project represents the core functionality related to blood donation and user management. It includes features such as user role selection (Donor, Requester, Admin), forms for Donors and Requesters to input information, a thank-you message upon submission, admin authentication, and an admin dashboard for user management. The admin can view, edit, or delete user details and send email notifications about blood donation availability manually.

3.2.4 Description of Send Email

The Send Email Block in the BDMS manages communication with blood receivers and donors. It sends notifications about available blood. This block ensures updates for receivers, facilitating efficient blood allocation and enhancing the overall blood donation process.

3.3 Methodology

3.3.1 Description of Methodology

The approach for building our project "Blood Donor Management System" is Incremental Model.

First Increment: Role Selection, Form Submission and Thank You Message

Analysis:

In the analysis phase of the first increment, we gathered and refined requirements related to user role selection, form submission, and the thank you message. We identified the specific user roles (donor, requester, admin) and their respective responsibilities and permissions. We defined the data that needed to be collected through the forms for each role (e.g., donor information, requester details). We also determined the logic for routing users to the appropriate form based on their selected role.

Design:

We designed the user interface for the role selection page with a clear and simple layout to enhance user experience. Each role is presented distinctly, making it easy for users to choose. The form validation process was implemented ensuring users input valid information and enabling the submit button only when all necessary fields are correctly filled. On the thank you message page users encounter a confirmation message expressing our gratitude for their submission.

Code:

 We developed the website's front-end using HTML, CSS, and JavaScript to create the role selection page and forms. We implemented client-side validation for the forms, ensuring that all required fields were filled out correctly, and we checked for the appropriate formats and validation rules. Additionally, we set up the logic to seamlessly route users to the correct form based on their selected role. On the back end, we used server-side scripting with PHP to process form submissions, validating

and storing the data efficiently in a database or another data storage system, ensuring a functional website.

Testing:

We conducted unit testing on individual components, including form validation scripts. Integration testing was also performed to confirm the seamless interaction between front-end and back-end components. The entire user flow, from role selection to form submission and the display of the thank you message, was thoroughly tested. We verified the accurate storage of data in the database.

Second Increment: Admin Dashboard and Management

Analysis:

In the analysis phase of the second increment, we refined and expanded upon the requirements collected during the initial analysis phase. We identified the specific features and functionalities required for the admin dashboard, encompassing user authentication, data management, and email notifications. Detailed requirements and user stories related to the admin dashboard were gathered through discussions with administrators and stakeholders, ensuring a comprehensive understanding of their needs.

Design:

We designed the user interface for the admin dashboard, with a keen focus on optimizing layout, navigation, and element arrangement. We defined the necessary database schema and data models to effectively store and manage donor and requester details. We designed admin flows for tasks like editing, deleting, and viewing records.

Code:

We developed the user authentication system for admin, ensuring secure login with their username and password. We implemented the admin dashboard interface using web development technologies, including HTML, CSS, and JavaScript. On the server-side, we integrated scripting language, PHP to handle data processing and

facilitate interactions with the database. We created the essential backend to enable CRUD (Create, Read, Update, Delete) operations on donor and requester records. Additionally, we successfully implemented email sending functionality, granting administrators the capability to send notifications manually.

Testing:

We conducted unit testing for individual components and modules, including user authentication and data management functions. Integration testing was performed to confirm the correct interaction between the admin dashboard, the database, and backend services. We carried out system testing to verify that the entire admin dashboard operated as intended. The manual email notification feature was tested to ensure successful email sending.

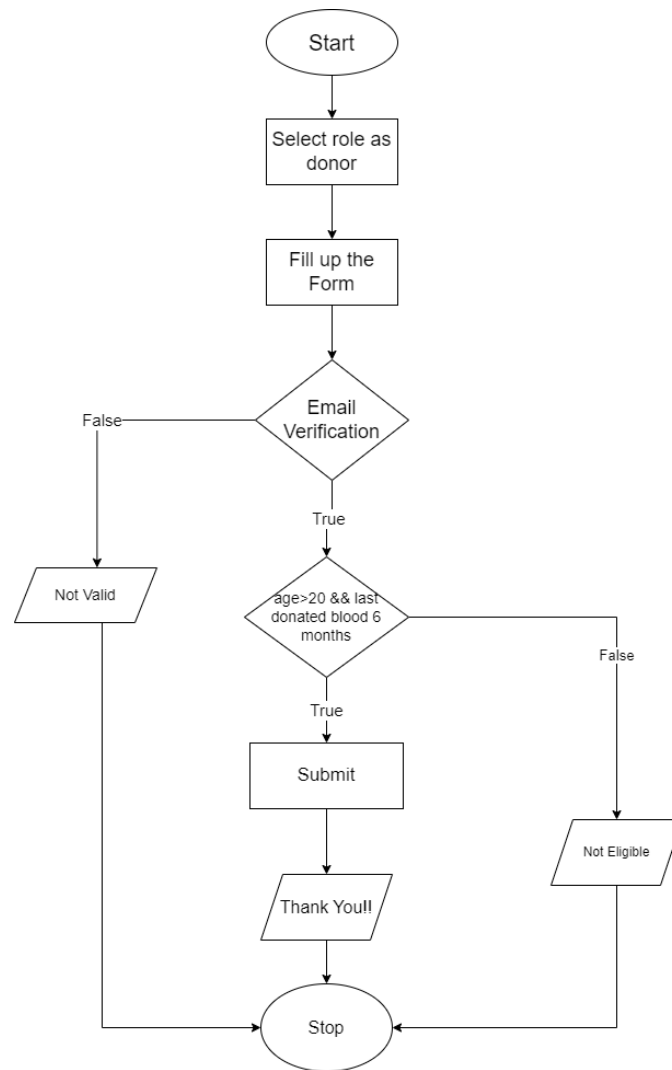# 3.4 Flowchart

3.4.1 Donors

Figure3.4.1: Flowchart of Donors

3.4.1 Description of Flowchart

Step 1:Start

Step 2: Select role as donor

Step 3: Fill up to form

Step 4: check if email exist

         If yes goto step 5

         If not display "Not valid" and goto step 8

Step 5: check if age is greater than 20 and last donated blood date is more than 6 months

         If yes goto step 6

         If no display "Not eligible" and goto step 8

Step 6: Submit the form

Step 7: Display "Thank you!!"

Step 8: Stop
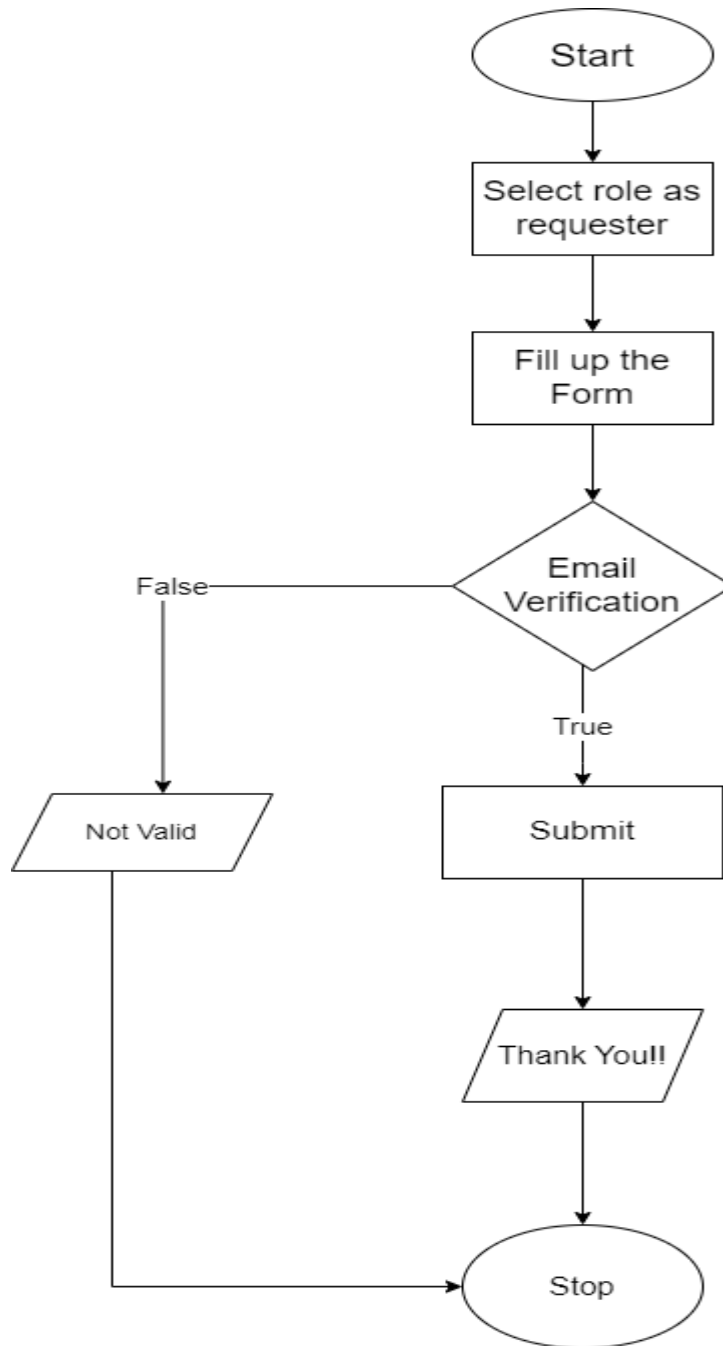
3.4.2 Requester

Figure3.4.2: Flowchart of Requester

3.4.2 Description of Flowchart

Step 1:Start

Step 2: Select role as requester

Step 3: Fill up to form

Step 4: check if email exist

       If yes goto step 5

       If not display "Not valid" and goto step 7

Step 5: Submit the form

Step 6: Display "Thank you!!"

Step 7: Stop

3.4.3 Admin

Figure3.4.3: Flowchart of admin

3.4.3 Description of Flowchart

Step 1:Start

Step 2: Select role as an admin

Step 3: Fill up login credential

Step 4: login

Step 5: if username==$username && password==$password

       If yes goto step 6

       If no display "invalid username or password" and goto step 8

Step 6: manages donors and requeste details

Step 8: Stop

3.5 Entity-Relationship Diagram

Figure3.5: E-R diagram of BDMS

3.6 Usecase Diagram

Figure3.6.1: Usecase Diagram

Chapter 4: RESULT AND ANALYSIS

4.1 Results and Analysis

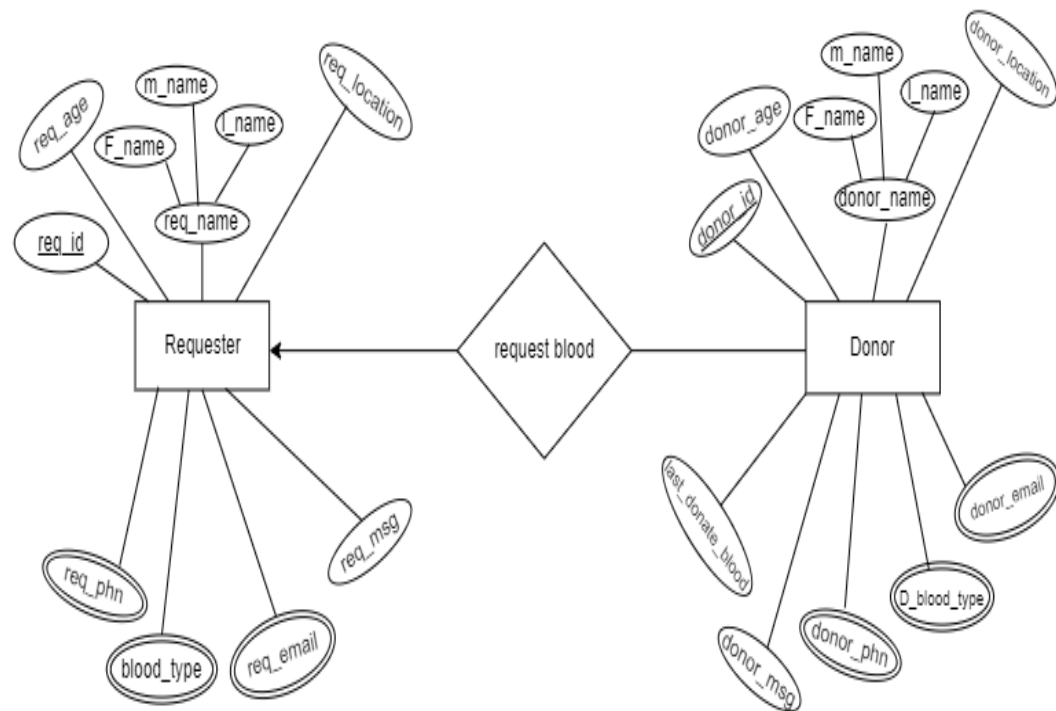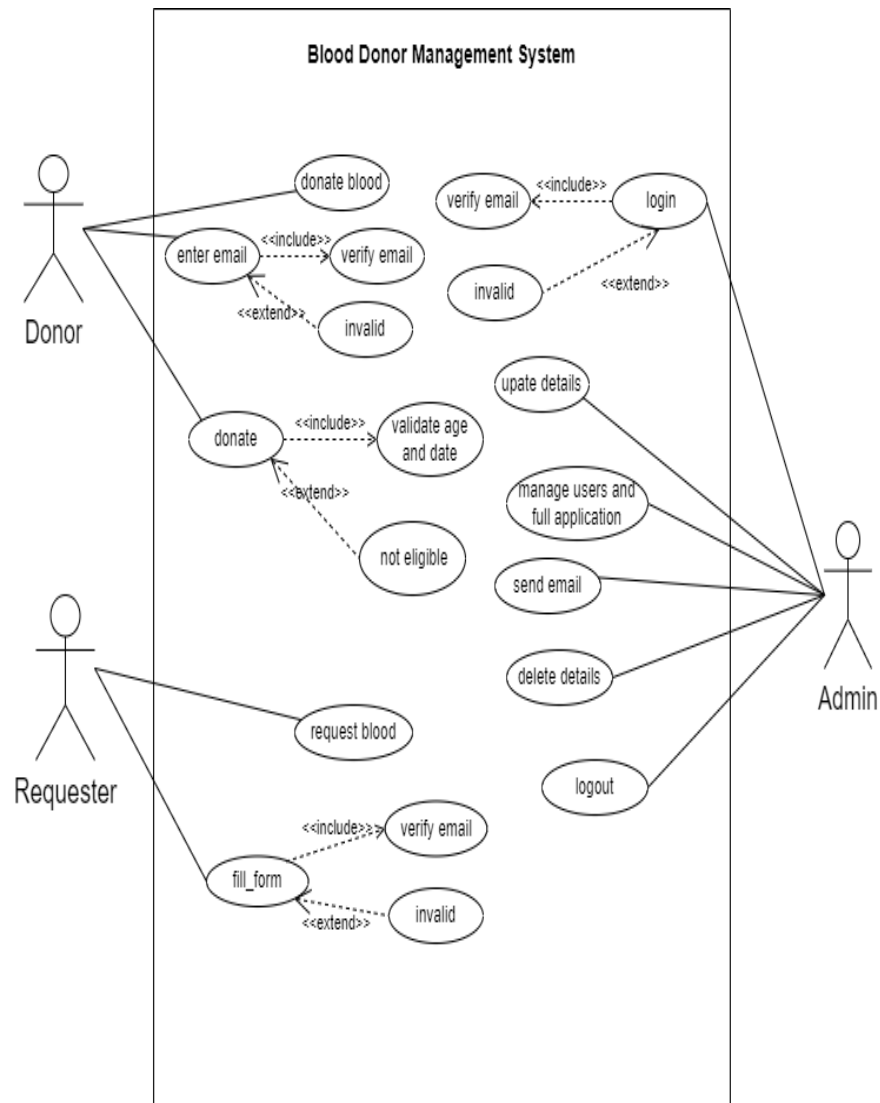We present the outcomes of our Blood Donors Management System project. We gathered data, evaluated system performance using key metrics, and analyzed user needs. Our system has successfully increased donor participation, and improved overall satisfaction. Despite some challenges and limitations, the project demonstrates a positive impact on blood donation management. We recommend further enhancements for ongoing improvement.

S.N	Tasks	9th Jun	20th Jun	3rd Jul	14th Jul	25th Jul	13th sept	20th sept	1st oct	5th oct
1	Research	▓	▓	▓	▓	▓				
2	Design		▓	▓	▓	▓				
3	Coding			▓	▓	▓	▓	▓	▓	▓
4	Testing and Debugging				▓	▓	▓	▓	▓	▓
5	Documentation and Report		▓	▓	▓	▓	▓	▓	▓	▓

Table4.1.1: Work Schedule

ID	Name	Jun, 23				Jul, 23				Aug, 23					Sep, 23				Oct, 23	
		04	11	18	25	02	09	16	23	30	06	13	20	27	03	10	17	24	01	08
1	Research		████████████																	
2	Design			████████																
3	Coding					██████████████████████████														
4	Testing and Debugging							████████████████████████												
5	Documentation and Report								████████████████████											

Table4.1.2: Gantt Chart

20

Chapter 4: Conclusion And Future Enhancement

5.1 Conclusion

Based on the result, this study concluded that online blood donors management system is better than the manual system. The findings showed that respondents prefer to use online blood donor management system rather than the manual system because it offers many advantages and benefits that leads to its effectiveness, and efficiency. Because of the increased confidence on the users on the system, it can be   concluded that online blood donor management system enhances blood transfusion safety because it provide better ways of handling the various processes in blood bank.

5.2 Future Enhancement

In our project, for future enhancements, we can introduce several valuable features. Firstly, we can implement a dynamic notifications bar within the admin panel to keep administrators informed as donors and recipients submit forms. Secondly, we can enhance user experience by providing a feature to display donation details. Additionally, integrating hospital listings on the website for blood testing services will be beneficial. We can also work on improving communication between administrators and donors. Finally, we should consider adding user or manager roles on the admin side to streamline operations.

REFERENCES

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[2] (2019). APEX COLLEGE "Blood Bank Management System" .

[3] https://www.hamrolifebank.com