



Green University of Bangladesh

*Department of Computer Science and Engineering (CSE)
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Blood Management System

Course Title: Integrated Design Project II

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<u>Lab Project Status</u>	
Marks:	Signature:
Comments:	Date:

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0.1 Introduction

0.1.1 Overview

The Blood Management System is designed to simplify and streamline the process of organizing blood donation activities. It connects blood donors, recipients, and blood banks in a centralized platform to ensure a smooth and efficient donation process. With the increase in demand for blood and the need for timely donations, this system provides an effective solution to manage and track the blood donation process.

0.1.2 Problem Domain

Many people face difficulty in finding donors during emergencies due to lack of centralized data and communication. Manual methods lead to delays, errors, and miscommunication. There is a pressing need for a smart, automated system that can handle requests, locate donors, and manage data securely.

0.1.3 Motivation

The motivation behind this project is to create a digital platform that can save lives by making blood available when it's most needed. By reducing the time to find a suitable donor and increasing the ease of registration, this project aims to increase the number of successful donations.

0.1.4 Objectives

- Build a centralized blood management web application.
- Enable real-time blood stock updates.
- Simplify blood donation and request processes.
- Promote voluntary blood donation.
- Inspired by real-world cases of delayed blood availability in emergencies.

0.2 Literature Review

0.2.1 Red Cross Blood Donor App

The Red Cross Blood Donor App enables users to find donation opportunities, schedule appointments, and track their donations. It features gamification to encourage donations and supports appointment reminders. However, it is limited to locations supported by the Red Cross and lacks direct donor-to-recipient communication.

0.2.2 Spot and Ride Blood Donor Finder

This platform integrates geolocation to match nearby donors with recipients. It also supports blood request broadcasting. While innovative in approach, it lacks integration with hospital databases and doesn't ensure real-time availability.

0.2.3 Blood4Life Platform

Blood4Life connects blood banks with donors and receivers. It allows users to register as regular donors and integrates with hospital data. However, it lacks a personalized dashboard and smart emergency alert system, which our system proposes to implement.

0.3 Methodology

0.3.1 Tools and Libraries

- Frontend: HTML, CSS, Bootstrap
- Backend: PHP
- Database: MySQL
- Tools Used: XAMPP, Visual Studio Code
- Version Control: Git and Github

0.3.2 SDLC Model Selection

Priority	Criteria	Waterfall	V-shape	Iterative	Spiral	Agile	Prototype
7	Well Known Requirement	No	Yes	Yes	Yes	Yes	Yes
6	Technological Knowledge	Yes	No	Yes	Yes	Yes	Yes
5	Efficiency	No	No	Yes	Yes	Yes	Yes
2	Risk Analysis	No	No	No	Yes	Yes	Yes
2	User testing ability	No	No	Yes	Yes	Yes	Yes
5	Dependability and Security	Yes	Yes	Yes	Yes	Yes	No
3	Time Consuming	Yes	Yes	No	No	Yes	No
Total 30	Overall	14	15	25	27	30	22

Figure 1: SDLC Model Selection Table

Agile Model is selected for this project due to its flexibility and iterative approach, allowing for frequent updates and user feedback incorporation.

0.3.3 Higher Level Design

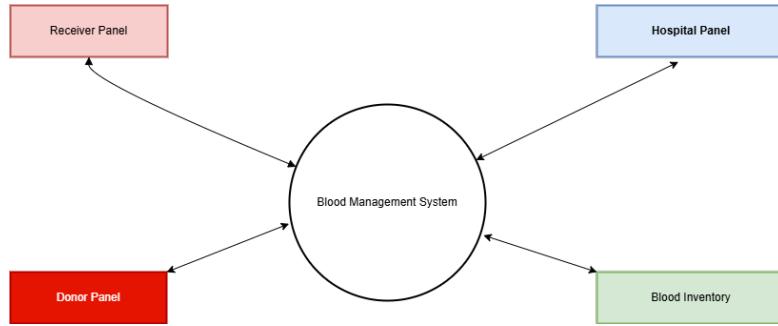


Figure 2: High Level System Architecture

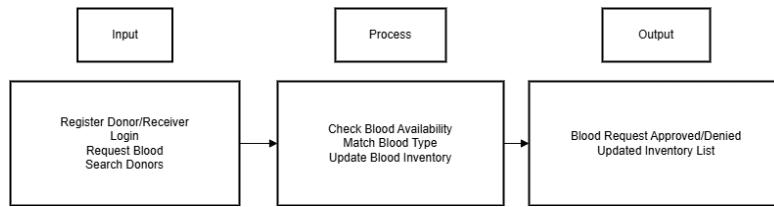


Figure 3: High Level View of the System Architecture

- **Hospital Panel:** Manage users, view analytics, respond to requests.
- **User Panel:** Donor/Recipient registration, request blood, manage profile.

0.3.4 Lower Level Design

- Home Page: Provides basic navigation (Home, About, Contact, Login/Register) accessible to all users.
- Hospital Dashboard: After login, hospitals can manage blood inventory by adding, updating, or deleting stock, and handle donation requests by viewing and approving/rejecting them.
- User Dashboard: Allows donors/recipients to view their account and blood info, request to donate, confirm donations, and log out.

This modular structure ensures smooth navigation, real-time data handling, and user-friendly interaction.

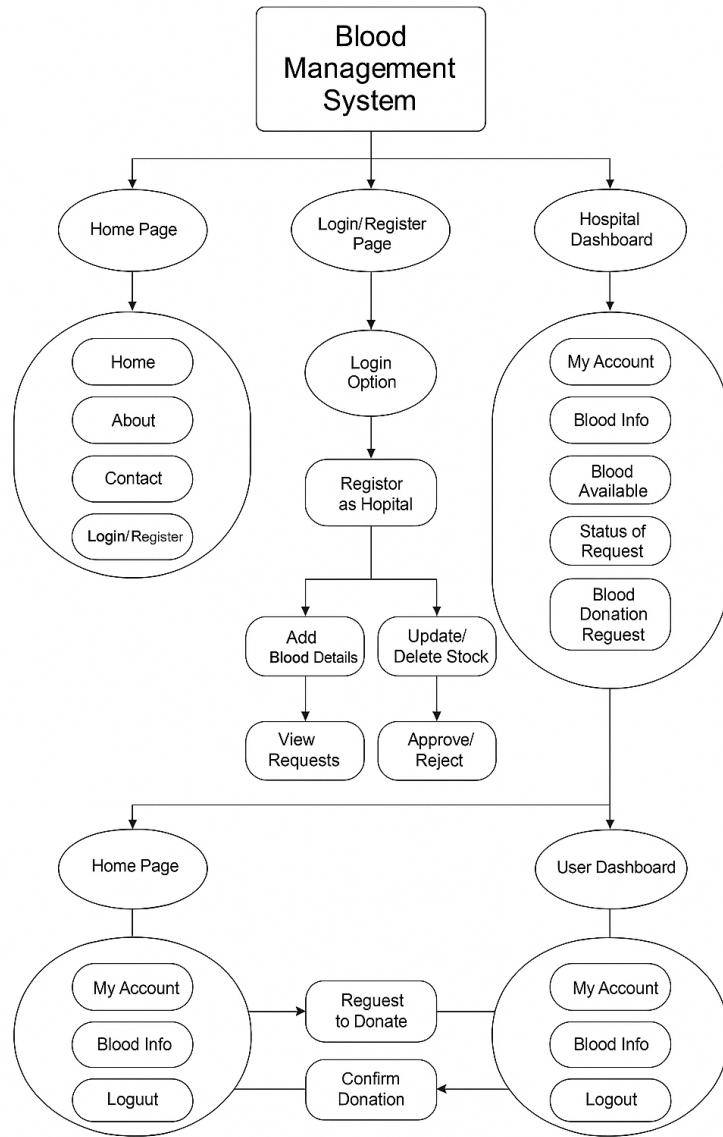


Figure 4: Lower Level Design

0.3.5 ER Diagram



Figure 5: E-R Diagram

Entities:

- User (Donor/Recipient)
- Blood Request
- Hospital
- Blood Stock

Relationships:

- One-to-many between User and Blood Requests
- One-to-one between Donor and Donation History

0.4 Performance Evaluation

0.4.1 Simulation Environment

- XAMPP for local server setup
- Google Chrome/ Edge for frontend testing
- MySQL for database

0.4.2 Results Analysis

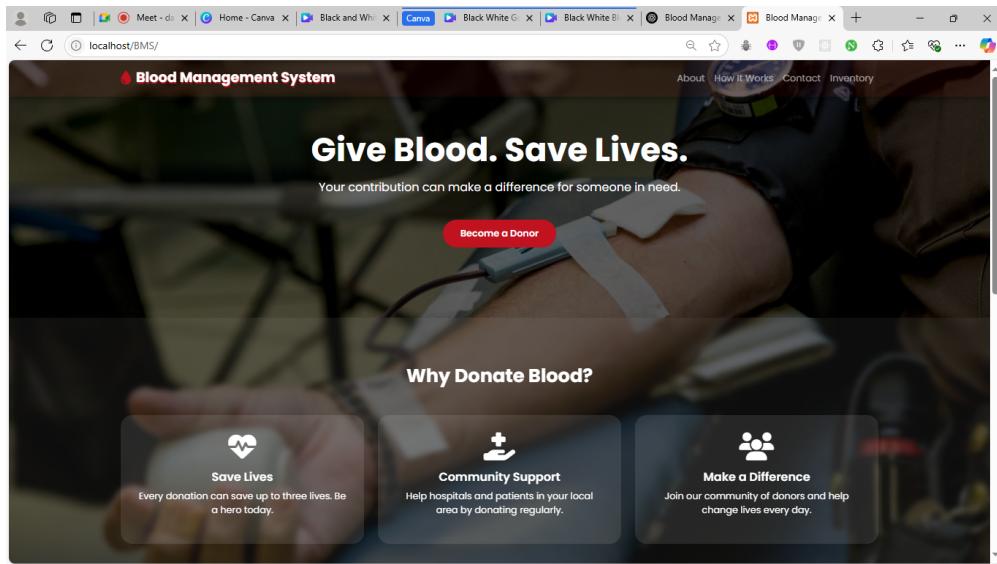


Figure 6: Home Page of Blood Management System

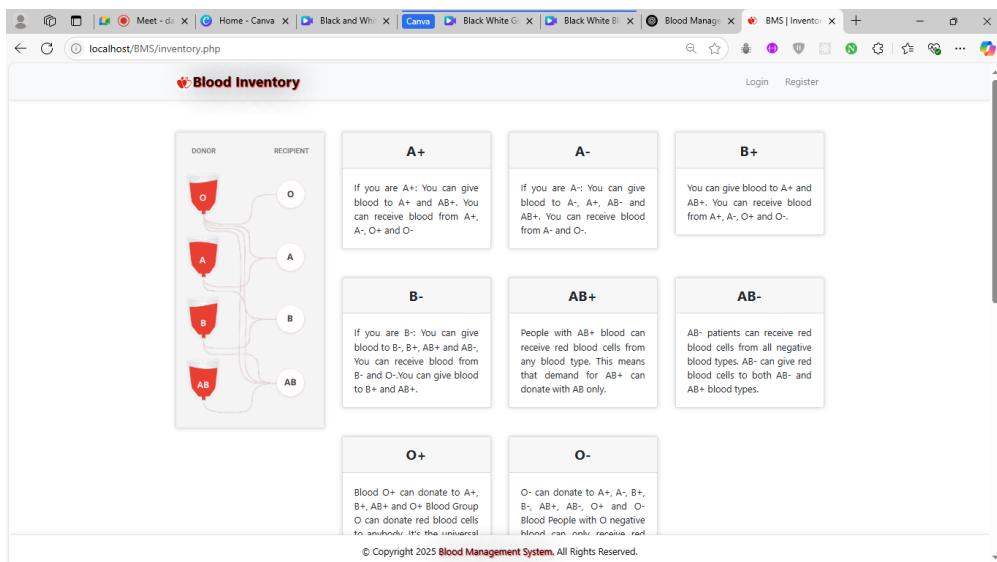


Figure 7: Blood Inventory

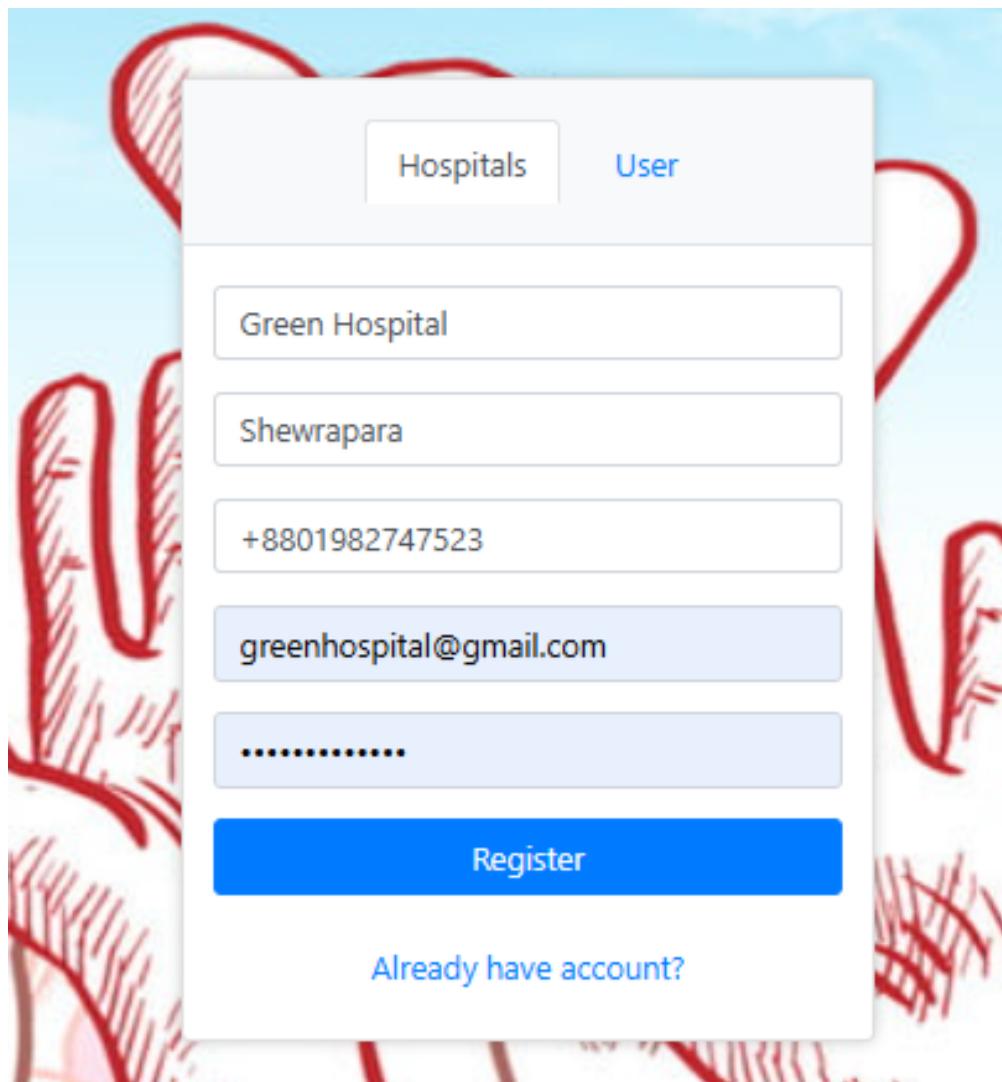


Figure 8: Register as Hospital



Figure 9: Hospital Profile



Figure 10: User Profile

- Successfully registered users
- Number of blood requests fulfilled
- Reduction in average donor search time

0.4.3 Results Analysis/Testing

Available Blood Samples						
#	Hospital Name	Hospital City	Hospital Email	Hospital Phone	Blood Group	Action
1	apollo hospital	Dhaka	apollo@gmail.com	7865376358	A-	<button>Request Sample</button>
2	apollo hospital	Dhaka	apollo@gmail.com	7865376358	O+	<button>Request Sample</button>
3	apollo hospital	Dhaka	apollo@gmail.com	7865376358	B-	<button>Request Sample</button>
4	Dhaka Medical	Dhaka	dmc@gmail.com	9898988909	A-	<button>Request Sample</button>
5	Dhaka Medical	Dhaka	dmc@gmail.com	9898988909	A+	<button>Request Sample</button>
6	Dhaka Medical	Dhaka	dmc@gmail.com	9898988909	AB+	<button>Request Sample</button>
7	Rajshahi Medical	Rajshahi	rmc@gmail.com	080616156262	A+	<button>Request Sample</button>

Figure 11: Search Blood

The screenshot shows a web browser window titled "Blood Inventory". At the top, there is a dropdown menu labeled "Select Blood Group:" with "O+" selected. Below it are two buttons: "Reset" and "search". The main content area is titled "Available Blood Samples" and contains a table with three rows of data. Each row represents a hospital with its name, city, email, phone number, blood group, and an "Action" button labeled "Request Sample".

Available Blood Samples						
#	Hospital Name	Hospital City	Hospital Email	Hospital Phone	Blood Group	Action
1	apollo hospital	Dhaka	apollo@gmail.com	7865376358	O+	<button>Request Sample</button>
2	Apollo Hospital	Dhaka	apollo@gmail.com	04428293333	O+	<button>Request Sample</button>
3	Green Hospital	Dhaka	greenhospital@gmail.com	0198572098	O+	<button>Request Sample</button>

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Figure 12: Available Blood Sample

The screenshot shows a web browser window titled "Blood Inventory". The main content area is titled "Sent Requests" and contains a table with three rows of data. Each row represents a request with columns for ID, Name, Email, City, Phone, Blood Group, Status, and Action. The first row has a "Cancel" button, while the second and third rows have "Accepted" status.

Sent Requests							
#	Name	Email	City	Phone	Blood Group	Status	Action
1	Pranto	pranto@gmail.com	Dhaka	01985620564	O+	Pending	<button>Cancel</button>
2	Pranto	pranto@gmail.com	Dhaka	01985620564	O+	Accepted	
3	rakib	rakib@gmail.com	kishoreganj	01985629564	A+	Accepted	

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Figure 13: Blood Request

- Unit/ manual Testing for individual modules
- Integration Testing for data flow
- UI Testing for frontend elements
- Security Testing for data validation

0.5 Conclusion

0.5.1 Discussion

The Blood Management System has demonstrated significant potential in addressing the common challenges faced in blood donation activities. By providing a centralized digital platform, it streamlines the process of connecting donors, recipients, and hospitals, thus reducing delays and improving coordination. The system's features such as real-time data availability, user dashboards, and smart request management contribute to faster donor identification and efficient stock management. Furthermore, the adoption of a modular design ensures flexibility and scalability, allowing for future integration with hospital databases and mobile platforms. Overall, this system promotes better participation in blood donation and enhances the reliability of emergency response.

0.5.2 Limitations

- Limited to users with internet access
- Lack of integration with live hospital databases
- Manual verification of donor eligibility

0.5.3 Future Work

- Integration with hospital databases
- AI-driven donor matching
- Multi-language support
- Mobile App Development

0.6 References

1. American Red Cross Blood Donor App Documentation
2. Research papers on Blood Donor Finder Systems
3. Official documentation of MySQL and PHP