### STUDENT DECLARATION

This is to certify that I have completed the Summer Project entitled "Blood Bank Management System" under the supervision of "Madan Nath" in partial fulfilment of the requirements for the degree of Bachelor of Information Management at Faculty of Management, Tribhuvan University. This is my original work and I have not submitted it earlier elsewhere.

	Name: Rupesh Pancha
Date:	Signature:

Reg. No.: 7-2-20-916-2020

### CERTIFICATE FROM THE SUPERVISOR

This is to certify that the summer project entitled "Blood Bank Management System" is an academic work done by "Rupesh Pancha" submitted in the partial fulfilment of the requirements for the degree of Bachelor of Information Management at Faculty of Management, Tribhuvan University under supervision. To the best of my knowledge, the information presented by him in the summer project report has not been submitted earlier.

Signature of the Supervisor

Name: Madan Nath

Designation:

Date:

### ACKNOWLEDGMENT

I would like to acknowledge the support and contributions of many people, institutions and well-wishers without whom this project wouldn't have been successfully completed.

First, I want to express my appreciation to the faculty at BIM for their support and valuable input throughout this endeavour.

Additionally, I would like to express my profound gratitude and sincere respect towards our project coordinator and supervisor **Mr. Madan Nath** for his patient supervision, enthusiastic encouragement and useful critiques from the stage of proposal development to project development and throughout the report writing until its completion.

Last but not the least, I am equally indebted to all my family members and friends for sharing their knowledge, ideas and opinions for project completion which kept me motivated and provided lifelong inspiration

#### **EXECUTIVE SUMMARY**

Blood Bank Management System is a comprehensive web application designed to facilitate blood donation and management for a charity organization. It encompasses user authentication, donor and patient registration, stock tracking, and administrative functionalities. Users can register as donors, providing their details such as name, blood group, contact information. The system manages user roles with varying access levels, ensuring secure authentication and data handling. The stock management feature tracks blood availability by counting donors and patients with matching blood groups. Additionally, the system allows users to change their passwords securely and provides interactive PDF generation for donor information. The frontend is designed with HTML, CSS, and JavaScript, ensuring a user-friendly experience. Overall, the project aims to streamline blood donation processes, improve data management, and enhance user engagement within the blood donation and using time efficiently finding blood.

## TABLE OF CONTENTS

TITLE PAC	FE OF SUMMER PROJECT REPORT	
STUDENT	DECLARATION	i
CERTIFIC	ATE FROM THE SUPERVISOR	ii
ACKNOWI	LEDGMENT	iii
EXECUTIV	VE SUMMARY	iv
TABLE OF	CONTENTS	ı
LIST OF F	IGURES	. vii
LIST OF T	4 <i>BLES</i>	viii
<i>ABBREVIA</i>	TIONS	ix
Chapter 1	Introduction	1
1.1 E	Background	1
1.2 I	ntroduction to Organization	1
1.3	Current Situation of the Organization	1
1.4 P	Problem Statement	2
1.5	Objectives of the Report	2
1.6 N	Methodology	2
1.6.1	Project Framework	2
1.6.2	Tools Used	3
1.7 L	iterature Review	5
Chapter 2	Tasks and Activities Performed	7
2.1 A	Analysis of Task and Activities	7
2.1.1	Problem Identification	7
2.1.2	Feasibility Study	7
2.1.3	Technical Study	7
2.1.4	Economic Study	8
2.1.5	Operational Study	8
2.2 A	Analysis of Possible Solution	8
2.2.1	Requirement Analysis	8
2.2.2	Functional Requirement	8
2.2.3	Entity Relationship Diagram	. 13
2.2.4	Non-Functional Requirement	. 13
2.2.5	System Design	. 14
2.3 S	ystem Testing and Validation	. 17
2.3.1	System Testing	. 17
2.3.2	Unit Testing	. 17

2.3.3	Validation Testing	17
2.4	Testing	17
2.5	Finding	19
Chapter 3	Discussion and Conclusion	20
3.1	Discussion	20
3.2	Conclusion	20
3.3	Future Enhancements	20
Reference	es	21
Appendic	ces	

## LIST OF FIGURES

Figure 1 Project Framework	3
Figure 2 Use Case Diagram of Blood Bank Management System	. 10
Figure 3 ER Diagram of Blood Bank Management System	. 13
Figure 4 Level 0 Data Flow Diagram of Blood Bank Management System	. 15
Figure 5 Use Case Diagram of Blood Bank Management System	. 16

## LIST OF TABLES

Table 1 Login into System	11
Table 2 Registration	11
Table 3 Admin Dashboard	11
Table 4 System User Dashboard	12
Table 5 Manage Blood	12
Table 6 Admin Login	17
Table 7 System User Login	18
Table 8 Donor Login.	18

### **ABBREVIATIONS**

BIM Bachelor of Information Management

CSS Cascading Style Sheet

DFD Data Flow Diagram

ERD Entity Relationship Diagram

HTML Hypertext Markup Language

HTTP Hypertext Transfer Protocol

IT Information Technology

PDF Portable Document Format

PHP Hypertext Preprocessor

TU Tribhuvan University

UML Unified Modelling Language

## **Chapter 1 Introduction**

#### 1.1 Background

The summer project is a crucial element where students translate their theoretical understanding of information management into practical applications. These projects usually target specific areas such as database design, software development, system analysis, or IT infrastructure management. They adhere to a structured methodology that includes problem identification, requirements gathering, system design, implementation (involving coding or system configuration), testing, and thorough documentation. Students must produce detailed reports that detail their research, methodology, findings, and recommendations.

This blood bank management system is designed with the primary purpose of ensuring a safe and readily available blood supply. This system benefits both donors and medical staff by providing a streamlined and transparent record-keeping process. Donors can register, schedule appointments, and access their donation history online, while medical staff can efficiently manage blood collection, testing, processing, and inventory. By facilitating quick responses to medical needs, the system enhances the overall efficiency and reliability of blood bank operations. In today's fast-paced world, an online system saves time and effort for both donors and administrators.

#### 1.2 Introduction to Organization

This project is being developed for an anonymous regional blood bank, established in 1995. It is one of the leading blood banks in the area, dedicated to providing a consistent and safe supply of blood and blood components to hospitals and clinics. The blood bank manages the entire blood donation process, from donor registration and screening to blood collection, testing, processing, and storage. The system will offer online services, allowing donors to register, schedule appointments, and access their donation history. Additionally, patients in need of blood can request it by filling out an online form with the necessary details. This enhances the efficiency and reliability of blood management, ensuring timely availability of blood for patients while saving time and effort for both donors and administrative staff.

### 1.3 Current Situation of the Organization

Blood banks are like the heroes of healthcare, making sure there's enough safe blood for everyone who needs it. They deal with challenges like getting enough donors, keeping blood types in balance, and handling all the details. Thanks to cool tech, they've made blood even safer and more efficient. But they follow strict rules to make sure everything is top-notch. Even when COVID-19 caused problems, they found new ways to keep things going smoothly. Now, they're into trends like plasma donations and expanding their services worldwide. It's all about teamwork, spreading awareness, and keeping that life-saving blood flowing.

#### 1.4 Problem Statement

In the current scenario, the processes within the blood bank are largely manual, leading to inefficiencies and challenges. Calculations related to blood inventory, donations, and distribution are done manually, resulting in potential errors and time-consuming tasks. Records are primarily kept using pen and paper, making it cumbersome to retrieve specific information quickly. The organization faces issues such as redundancy, calculation errors, and difficulties in managing and accessing data efficiently. Moreover, donors and patients have to physically visit the blood bank office to fill out forms or inquire about their donation history, leading to inconvenience and delays in service.

#### 1.5 Objectives of the Report

The objective of this project is

- to streamline and modernize the operations of the blood bank by implementing a comprehensive database system.
- to enhance blood record digitally (for donor and as well as patients).

#### 1.6 Methodology

A methodology is a model for the design, planning, implementation, and achievement of the project objective. In order to gather the information and data, and to discover the design of the application various methods has been applied. This system has been build using PHP and MySQL for Backend and HTML, CSS, JavaScript, Bootstrap for the frontend which is used to store information into database.

#### 1.6.1 Project Framework

Project framework is a combination of processes, tasks, and tools used to transition a project from start to finish. This chapter reveals the proposed method of implementing the project. The important on this is systematic planning and implementation in order to complete system on time.

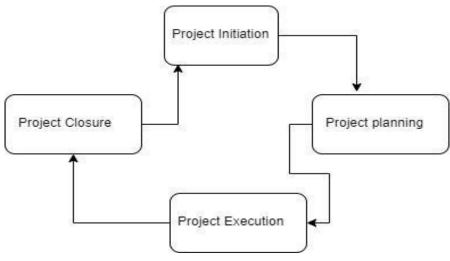


Figure 1 Project Framework

#### Project Initiation

This is the first phase in the system development cycle where a reasonable topic that can solve the issue of the organization was selected. Work on the topic was started after defining its objectives and scope. A written document as a project proposal was submitted to the concerned faculty, stating the clear view about the organization, its issue, recommendation and requirement of the organization. After the approval of the project proposal, the next phase was started.

#### • Project Planning

In this phase the process involved in the overall development of the system and the activities that must be performed as well as the strategies were defined.

#### • Project Execution

In the third phase, the requirement documented were prioritized and the system view was developed. Different types of feasibility were analysed for the completion of the project within the estimated time, budget and the resources required. The overall module of the system was developed in this phase. The actual implementation was performed, and the testing of the system was also executed. This phase was the longest phase.

#### Project Closure

This is the last phase, in which the project is completed and formally closed. In this phase the overall process and the achievement is documented and presented to the mentor. Project Closure involves handing over the actual implementation view of the project along with the documentation including all the activities involve in project from scratch level to the completion of the project to the concerned External and Internal supervisor.

#### 1.6.2 Tools Used

The tools used in this system development include:

#### Microsoft word for documentation (Version 2405)

The Microsoft word is used for softcopy documentation of the project. All the document design and numerations were done by using Microsoft word.

#### • Microsoft Edge as browser (Version 126.0.2592.6)

Microsoft Edge is used to run the system. Microsoft Edge was used to run the local host installed in the computer. As a browser, Microsoft Edge was used to run the developed system and information and research through different websites were collected.

#### Visual Studio Code for code editor (Version 1.90.2)

Visual Studio Code is used to edit the code for designing the system.

#### Draw.io for diagram design

Draw.io is used to create a variety of diagrams, including flowcharts, er diagrams, and more.

#### **Backend**

#### • Xampp Server (V 8.2.4)

Xampp is the authorized platform to run PHP applications as well as MySQL applications. For development of this system, Xampp was used to create a server for the required system to operate.

#### • PHP (Version 8.1.7)

PHP is used in this system for the development of backend for data handling, validation and so on.

#### MYSQL

MYSQL is used in this system for the creation of database and to perform different functions such as insertion deletion and so on.

#### **Frontend**

#### HTML 5

HTML is used to create front end of this system. It defines the structure of the system page content.

#### JavaScript

Java Script is a client-side scripting language. Java Script code is written into an HTML page. Java Script was used in the project to add interactivity to a web page.

#### Cascading Style Sheets

For the designing and styling of the page CSS was used. It is used to define layout and appearance of text and other materials.

#### • Bootstrap (Version 4.0.0)

In this system bootstrap is used to make the system more responsive and user interactive.

#### 1.7 Literature Review

The article "Development of a blood bank management system" by Sulaiman, Sumazly, Abdul Aziz K. Abdul Hamid, and Nurul Ain Najihah Yusri, published in Procedia-Social and Behavioral Sciences in 2015, addresses the crucial need for effective management systems in blood banks. The authors present a comprehensive literature review that highlights the challenges and importance of managing blood inventories efficiently. They emphasize the significance of technology in enhancing blood donation processes, inventory management, and distribution logistics. The review underscores the role of information systems in improving communication between blood banks and hospitals, ensuring timely access to blood products for patients in need. By synthesizing existing research, the article contributes to understanding how technological advancements can optimize blood bank operations, ultimately enhancing healthcare delivery and patient outcomes. (Sulaiman, 2015)

The literature review in the article "Towards an efficient and secure blood bank management system" explores critical aspects of blood bank operations, focusing on enhancing efficiency and security through technological advancements. It begins by highlighting the persistent challenges faced by blood banks worldwide, including issues with inventory management, donor recruitment, and ensuring timely access to blood products. The review discusses various technological solutions employed to address these challenges, such as barcode systems for accurate tracking of blood units, electronic donor management systems to streamline donor registration and screening processes, and integrated information systems for real-time inventory monitoring and distribution logistics optimization. Emphasis is placed on the importance of security measures within these systems to safeguard sensitive donor information and maintain the integrity of blood products throughout the supply chain. Case studies and examples are presented to illustrate successful implementations of these technologies, underscoring their impact on operational efficiency and patient care outcomes. The

review concludes by discussing future directions in blood bank management, including the potential use of emerging technologies like artificial intelligence and blockchain to further enhance system capabilities and address evolving needs in healthcare delivery. (Sandaruwan, 2020)

The article "Blood bank management system" by Ekanayaka and Wimal adharma (2015) presents a comprehensive literature review focusing on the development and implementation of blood bank management systems. The review discusses the critical importance of efficient management practices within blood banks, highlighting challenges such as inventory control, donor management, and the distribution of blood products to meet patient needs effectively. It examines various technological solutions proposed in the literature, including barcode systems for inventory tracking, automated donor management systems for efficient donor screening and scheduling, and integrated information systems for real-time monitoring of blood stocks and demand forecasting. The review also explores security measures integrated into these systems to protect sensitive donor information and ensure the safety and traceability of blood products throughout the supply chain. By synthesizing existing research, the article underscores the role of technology in enhancing operational efficiency and patient care outcomes within blood bank settings, while also identifying areas for future research and technological advancement in this critical healthcare domain. (Ekanayaka, 2015)

## **Chapter 2 Tasks and Activities Performed**

#### 2.1 Analysis of Task and Activities

The summer project is of the highlighted subjects which helps to make students be some part of professional world. Among the various provided, I use PHP based web system. Similarly, among the various organizations, I selected Blood Bank Management System for a district to understand the technical aspect of the real world in an organization.

#### 2.1.1 Problem Identification

As we know manual system is quite tedious, time consuming, less efficient and less accurate compared to computerized system. The organization is facing problem with operations of recording, updating, receiving applications, accepting or rejecting them using pen and copy. The organization need to call the donors and patients manually about the blood condition in the organization. Similarly, the process and implementation are major issue. Implementing required changes to organizational culture which is a major challenge.

#### 2.1.2 Feasibility Study

Feasibility study is made to see if the project on completion will serve the purpose of the organization for the amount of work, effort and the time that spend on it. Feasibility study lets the developers for see the future of the project and usefulness. A feasibility study of a system proposal is according to its workability, which is the impact on the organization ability to meet the user needs and effective uses of resources. The document provides the feasibility of the project that is being designed and list various areas that were considered very carefully during the feasibility study of this project such as Technical, Economic and Operational feasibilities.

#### 2.1.3 Technical Study

Blood donation management is technically feasible and plays a crucial role in ensuring the availability and efficient distribution of blood units for patients in need. Modern blood bank management systems leverage technologies such as database management systems, web development frameworks. These systems facilitate donor registration, inventory management, and real-time tracking of blood units. Donors can easily register, and the system maintains a centralized donor database. Inventory management ensures stock monitoring. In summary, technology, regulations, and efficient processes make blood donation management feasible and essential for saving lives.

#### 2.1.4 Economic Study

Blood donation software can save money in the long run, but it costs money upfront to build and keep going. The benefits include less work for staff, better blood storage, and more frequent donations. implementing such a system comes with upfront costs. Development, including design and implementation, can be significant. Ongoing maintenance for servers, software updates, and technical support add to the financial burden.

#### 2.1.5 Operational Study

Blood donation software can save money in the long run, but it costs money upfront to build and keep going. The benefits include less work for staff, better blood storage, and more frequent donations. implementing such a system comes with upfront costs. Development, including design and implementation, can be significant. Ongoing maintenance for servers, software updates, and technical support add to the financial burden.

#### 2.2 Analysis of Possible Solution

The main objective of requirement analysis is to identify and evaluate the requirement of the proposed system. It helps to know about user requirement, system requirements and non-functional requirements for Blood Bank Management System.

#### 2.2.1 Requirement Analysis

The main objective of requirement analysis is to ensure that a software system meets the needs of stakeholders while also satisfying constraints like budget, time, or technology. It's a key step in software development that allows engineers to define user needs early in the process. Requirement analysis involves identifying, analysing, validating, and prioritizing requirements. These requirements are then used as a basis for designing, developing, testing, and maintaining the software.

#### 2.2.2 Functional Requirement

Functional requirements are product features or functions that developers must implement to enable users to accomplish their tasks. So, it's essential to make them clear both for the development team and the stakeholders. Generally, functional requirements describe system behaviour under specific conditions. It can briefly be described by the help of use-case diagram and Use-case Description:

- Admin User Management
  - Login

- Register new users
- Delete users
- Modify user's password
- Modify password
- View blood stock
- View donors/patients' requests
- Logout
- System user Management
  - Login
  - View blood stock
  - O View donors/patients' requests
  - Modify password
  - o Logout
- Donor Management
  - o Register as a blood donor
  - o Login
  - o Update donor information
  - o Modify donor password
  - View donor history
  - Apply for blood donation
  - logout

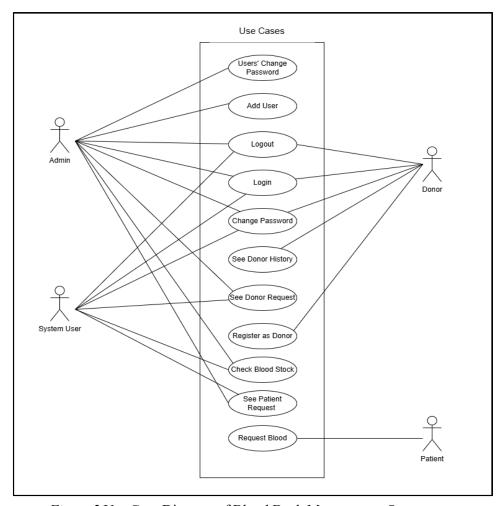


Figure 2 Use Case Diagram of Blood Bank Management System

The provided Use Case Diagram illustrates the interactions between various user roles (Admin, System User, Donor, and Patient) and the system. The admin role is associated with numerous use cases including changing users' passwords, adding users, logging out, logging in, changing passwords, viewing donor history, viewing donor requests, registering as a donor, checking blood stock, viewing patient requests, and requesting blood. The System User role shares all the same use cases as the admin role, including the ability to change users' passwords, add users, log out, log in, change passwords, view donor history, view donor requests, register as a donor, check blood stock, view patient requests, and request blood. The Donor role is involved in use cases such as logging out, logging in, changing passwords, viewing donor history, viewing donor requests, registering as a donor, checking blood stock, viewing patient requests, and requesting blood. Lastly, the Patient role is limited to the single use case of requesting blood. Each use case is depicted as an oval, and lines connect the user roles to the respective use cases they are authorized to perform.

Table 1 Login into System

Use-case identifier	UC1: Login
Primary actor	Admin and System User
Secondary actor	None
Description	The actors can login into the system. The actor should be registered
Description	in the database
Pre-condition	The actor must have the valid username and password
Post-condition	The database must be updated
Success scenario	Login Successfully
Failure scenario	Login failed message should be displayed

## Table 2 Registration

Use-case identifier	UC2: Registration
Primary actor	Donor
Secondary actor	None
Description	Donor can see own details and last blood donate date.
Pre-condition	The donor must be logged in
Post-condition	The database must be updated
Success scenario	Donor can see details and donate again
Failure scenario	Donor haven't logged or misconfigured to database to view details

## Table 3 Admin Dashboard

Use-case identifier	UC3: Admin Dashboard
Primary actor	Admin
Secondary actor	None
Description	Admin can add, delete user, accept or delete the patient request.
Pre-condition	The admin must be logged in.
Post-condition	The database should be updated.
Success scenario	The success message should be displayed on the screen.

Failure scenario	The failure message should be displayed on the screen.	
------------------	--	--

## Table 4 System User Dashboard

Use-case identifier	UC4: Manage staffs
Primary actor	Admin
Secondary actor	None
Description	Admin can add, update and delete the food name, price etc.
Pre-condition	The admin must be logged in.
Post-condition	The database should be updated.
Success scenario	The success message should be displayed on the screen.
Failure scenario	The failure message should be displayed on the screen.

## Table 5 Manage Blood

Use-case identifier	UC5: Manage order
Primary actor	Admin and System User
Secondary actor	None
Description	Admin and User can manage the order of the blood.
Pre-condition	The admin and user must check the list of the orders.
Post-condition	The database should be updated.
Success scenario	The database should be updated.
Failure scenario	The database is not connected.

#### 2.2.3 Entity Relationship Diagram

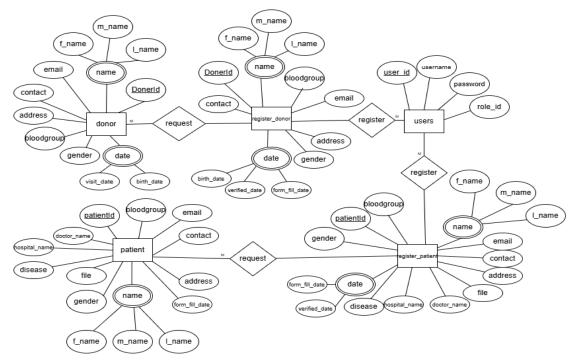


Figure 3 ER Diagram of Blood Bank Management System

Entity-Relationship (ER) diagram illustrates a system designed to manage blood donors and patients. It includes key entities such as donor, patient, register\_donor, register\_patient, and users. The donor entity captures comprehensive information about donors, including their name, contact details, address, email, gender, blood group, birth date, and visit date. The patient entity stores detailed patient information, such as name, contact details, address, email, gender, blood group, hospital name, doctor name, disease, file, and birth date. The register\_donor entity is responsible for managing donor registrations, linking donors to users and recording form fill dates and verified dates. Similarly, the register\_patient entity handles patient registrations, connecting patients to users and storing form fill dates, verified dates, hospital names, doctor names, and disease information. The user's entity keeps track of user login credentials, including username, password, and role ID. The request relationship indicates that both donors and patients can request information from each other. The register relationship links users to the registration entities, signifying that users have the capability to register both donors and patients.

#### 2.2.4 Non-Functional Requirement

Non-functional requirement are the constraints on the services or functions offered by the system such as timing constraints, constraints on the development process, standards, etc. Non-functional requirement are additional requirements, which describes additional requirement needed to meet the functional requirement of the user. Non-functional requirements may be more critical than functional requirement. If these are not met, the system is useless. Major non-functional requirement is:

- Fast response times for user actions (registration, appointments, requests) are crucial for efficient blood donation processes.
- Reliable data, with accuracy and minimal errors, is vital for the blood donation system to maintain blood safety.
- A user-friendly interface with clear instructions is essential for all user types (donors, patients) to navigate the system effectively.

#### 2.2.5 System Design

System design is a process to conceptualize the software requirements into software Implementation. It is initial phase of physical deployment of any solution, which shows the process of system functioning.

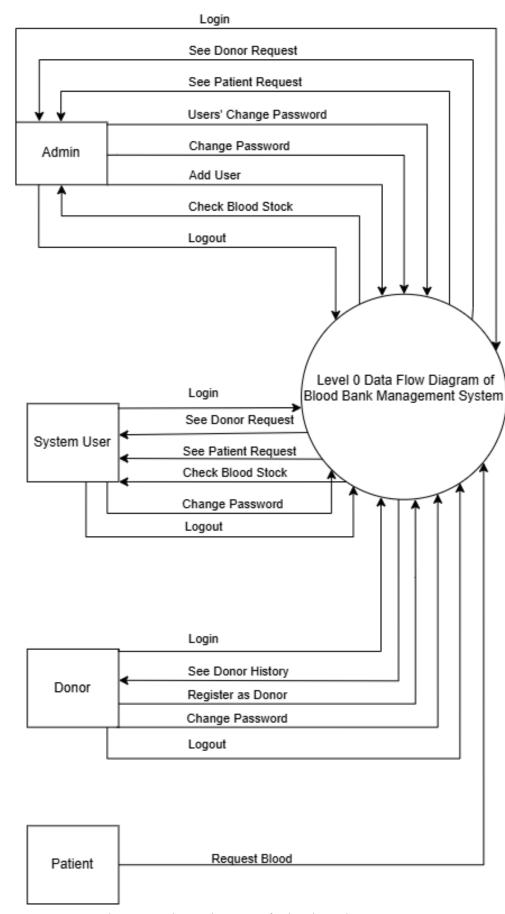


Figure 4 Level 0 Data Flow Diagram of Blood Bank Management System

The context diagram of the Blood Bank Management System showcases the interactions between different user types and the system's functionalities. There are four main user roles: Admin, System User, Donor, and Patient. Admins have comprehensive access, allowing them to log in, view donor and patient requests, change passwords for themselves and other users, add new users, check blood stock, and log out. System Users have similar access but cannot add new users or change other users' passwords; they can log in, view donor and patient requests, check blood stock, change their own password, and log out. Donors can log in, view their donation history, register as a donor, change their password, and log out. Patients have a single interaction point where they can request blood. This diagram effectively outlines the roles and permissions within the Blood Bank Management System, ensuring that each user type can perform their respective tasks efficiently.

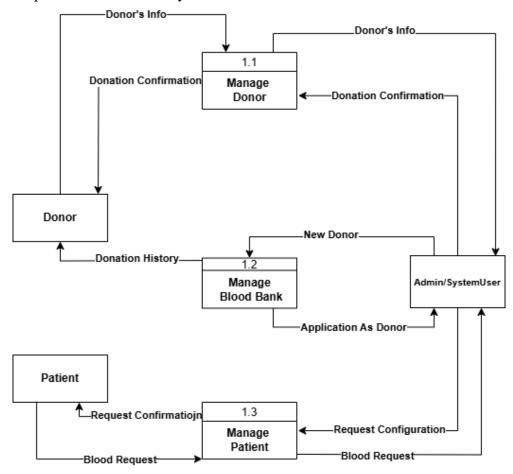


Figure 5 Use Case Diagram of Blood Bank Management System

The diagram illustrates a Data Flow Diagram (DFD) Level 1 for a Blood Bank Management System, highlighting the interactions between donors, patients, system user and an admin through three main processes: managing donors, managing the blood

bank, and managing patients. The process begins with donors providing their information, which is handled by the "Manage Donor" module. This module confirms the donation and updates the donor's details, sending confirmation back to the donor and updating the donation history in the "Manage Blood Bank" module. The admin oversees new donor applications, ensuring their data is integrated into the "Manage Donor" module, and manages the blood bank's overall information. Meanwhile, patients request blood through the "Manage Patient" module, which processes these requests and confirms back to the patients. This structured flow ensures accurate donor records, maintains a comprehensive donation history, and facilitates efficient patient blood requests, all coordinated through the admin's oversight and management of the interconnected modules.

#### 2.3 System Testing and Validation

#### 2.3.1 System Testing

System testing ensure that the system is fully integrated and complete software product. The testing ensure that the objective of the project is met.

#### 2.3.2 Unit Testing

Unit testing is internally maintained test which is independent of the external dependencies. The project heavily tests the internal objects to ensure there's no integrity violation and deadlock during the production. To keep the unit testing isolated, each function with given task is tested within the scope of its own lifetime and environment.

#### 2.3.3 Validation Testing

Validation is an important piece in software development. In order to filter the malicious input from external factor, we have to have validation on the user side as well as server side. We've implemented validation testing with various libraries in the business logic and users are given instant feedback about the validation in the forms they're submitting.

## 2.4 Testing

Table 6 *Admin Login* 

Unit Effected	Test Input Data	Expected Result	Actual	Status
			Result	
Admin	Email: admin	Admin should be	As	Pass
Login	Password: admin123	able to log in the	expected,	
		system.		

Admin	Email:	Admin should not be	As	Pass
Login	rupeshpancha7@gmail.com	able to log in the	Expected,	
	Password: password	system.		
Admin Login	Email: ruru	Admin should be	As	Pass
	Password: bloodbank	able to log in the	Expected,	
		system.		

## Table 7 System User Login

Unit Effected	Test Input Data	Expected	Actual	Stat
		outcome	Result	us
System User	Full name: Rupesh Pancha	System User	As	Pass
Details	Password: bloodbank	should be able to	expected,	
	Email:	register in the		
	rupeshpancha7@gmail.com	system.		
System User	Username: roman shyaju	System User	As	Pass
Details	Password:123asdfg	should not be	expected,	
	Email: roman1@gmail.com	registered to log		
	Contact:123456789	in the system.		

## Table 8 Donor Login

Unit Effected	Test Input Data	Expected	Actual	Stat
		outcome	Result	us
Donor Details	Full name: Rupesh Pancha	Donor should be	As	Pass
	Password: rupeshpancha	able to register in	expected,	
	Email:	the system.		
	shrestharojan902@gmail.com			
Donor Details	Username: roman shyaju	Donor should not	As	Fail
	Password: bloodbank	be registered to	expected,	
	Email: roman1@gmail.com	log in the system.		
	Contact:123456789			

### 2.5 Finding

After analysing about the organization, it was found that if the blood bank management system implementation underscores its pivotal role in enhancing operational efficiency and ensuring effective blood supply chain management. Through user-centric roles like admin, system user, registered donor, and patient, the system optimizes access control and workflow management. Key observations include streamlined donor registration processes, accurate tracking of donation history, real-time blood stock monitoring, and seamless handling of patient blood requests. These findings highlight the system's contribution to reducing errors, improving resource utilization, and ultimately saving lives by facilitating timely access to critical blood units. Future enhancements may revolve around enhancing reporting capabilities, fostering donor engagement through mobile platforms, and leveraging advanced analytics for supply chain optimization and decision-making.

## **Chapter 3 Discussion and Conclusion**

#### 3.1 Discussion

The implementation of a blood bank management system has brought significant advancements in managing blood donations, stock, and patient requests efficiently. The system's structured approach to handling different user roles, such as administrators, system users, registered donors, and patients, has streamlined operations and improved overall service delivery. The blood bank management system has significantly improved the efficiency and reliability of blood bank operations. Continued enhancements and addressing potential challenges will further solidify its role in saving lives through better management of blood resources.

#### 3.2 Conclusion

The system was successfully completed in time as per the objectives. After the evaluation of system within the organization, the system is expected to fulfil the requirements and prove out to be beneficial for people and staffs. The Blood Bank Management System has proven to be a vital tool in modernizing blood bank operations, ultimately contributing to saving lives through more effective and efficient management of blood resources. Continued improvements and adaptation to emerging technologies will ensure that the system remains a cornerstone of effective blood management practices.

#### 3.3 Future Enhancements

There is scope for future development of this project. Different enhancement can be made to make this system more efficient, more user friendly and capable of meeting future challenges in blood donation. Thus, the project is flexible and can be enhanced at any time with more advanced features.

- Develop a mobile application for donors to take appointments, view donation history and receive notifications for future donations.
- Generate details report on dashboard for strategic planning.
- Create seamless integration with hospital-based management system, electronic and other health care platforms efficient data exchange.
- Build automation system for initial donor by screening based on donor history.

## References

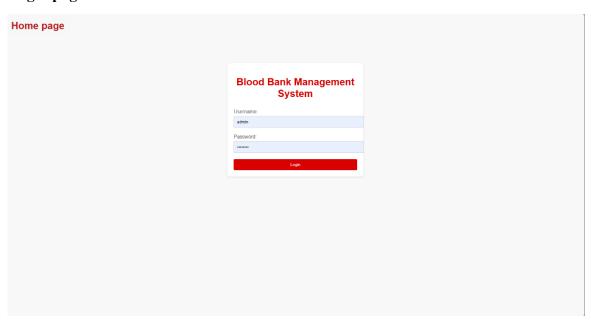
- Ekanayaka, E. M. (2015). Blood bank management system.
- Sandaruwan, P. A. (2020). Towards an efficient and secure blood bank management system. 2020 IEEE 8th R10 Humanitarian Technology Conference (R10-HTC).
- Sulaiman, S. A. (2015). Development of a blood bank management system. *Procedia-Social and Behavioral Sciences*, *135*, 2008-2013.

# **Appendices**

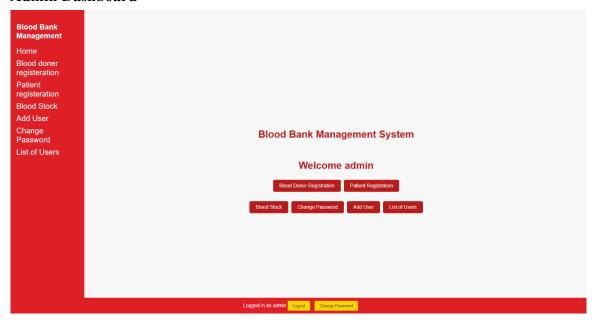
## Homepage



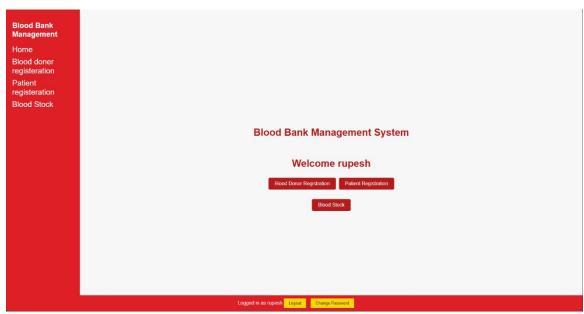
### Login page



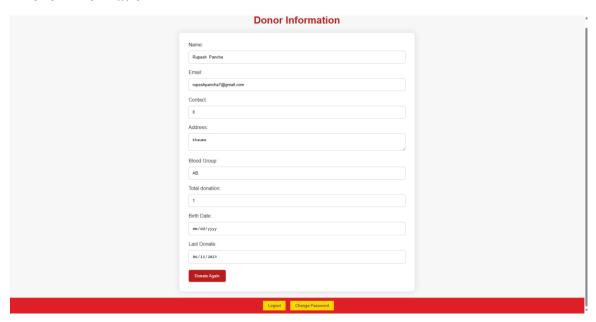
#### **Admin Dashboard**



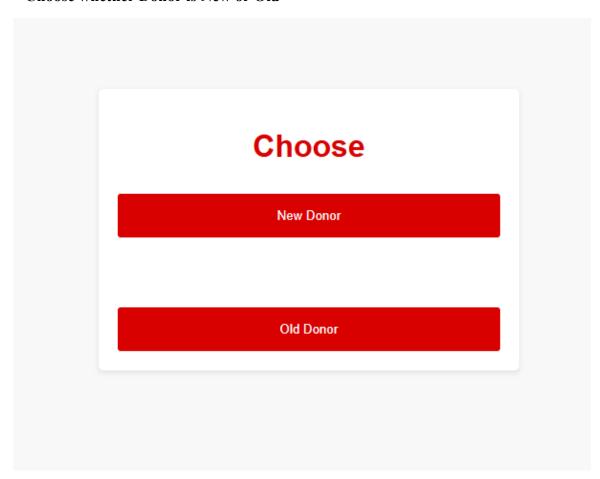
## System User Dashboard



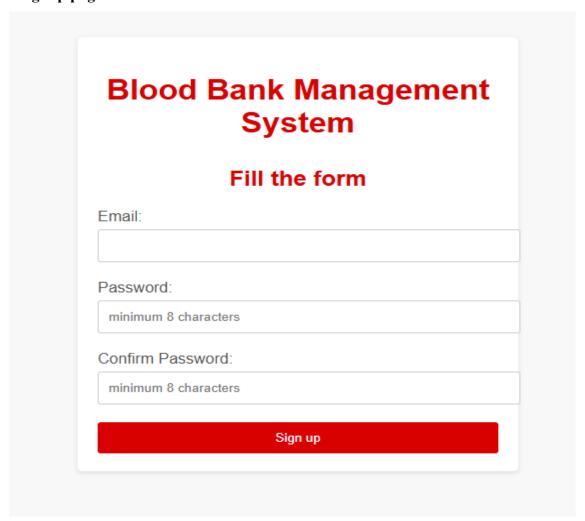
### **Donor Information**



### **Choose whether Donor is New or Old**



### Signup page for new donor



#### **Form for Donation**

