

BLOOD BANK MANAGEMENT SYSTEM

A MINI-PROJECT REPORT

Submitted by

HARSHITHA DEVI G [RA2011030010020]

RAKSHITA RAJ [RA2011030010030]

DEVSHREE MOGHE [RA2011030010049]

Under the guidance of

Dr. R.NARESH

(Associate Professor, Department of Networking and Communications)

In partial satisfaction of the requirements for the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

With specialization in Cyber Security



SRM

INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

**SCHOOL OF COMPUTING,
COLLEGE OF ENGINEERING AND TECHNOLOGY,
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY,
KATTANKULATHUR - 603203.**

MAY 2023



SRM
INSTITUTE OF SCIENCE & TECHNOLOGY
Deemed to be University u/s 3 of UGC Act, 1956

**COLLEGE OF ENGINEERING & TECHNOLOGY,
SRM INSTITUTE OF SCIENCE & TECHNOLOGY,
S.R.M. NAGAR, KATTANKULATHUR – 603 203.**

BONAFIDE CERTIFICATE

Certified that this project report **“Blood Bank Management System”** is the bonafide work of **Harshitha Devi G (RA201030010020), Rakshita Raj (RA2011030010030), Devshree Moghe (RA2011030010049)** of III Year/VI Sem B.tech(CSE) who carried out the mini project work under my supervision for the course 18CSC303J- Database Management systems in SRM Institute of Science and Technology during the academic year 2022-2023(Even sem).

SIGNATURE

Dr.R.Naresh,
Supervisor
Associate Professor,
Department of Networking and
Communications

SIGNATURE

Dr. Annapurani. K
Head of the Department
Department of Networking and
Communications

ABSTRACT

The Blood Bank Management System is a comprehensive software solution designed to streamline and optimize the operations of blood banks and ensure the efficient management of lifesaving blood components. This system leverages modern technology to address the complexities associated with the collection, storage, distribution, and tracking of blood units, aiming to enhance the overall efficacy and safety of blood transfusion services.

This management system encompasses a range of essential features that facilitate seamless coordination among various stakeholders, including blood donors, recipients, medical professionals, and administrative staff. It offers a user-friendly interface to efficiently handle the entire blood banking process, from donor registration and blood collection to inventory management and transfusion requests.

The implementation of the Blood Bank Management System brings numerous benefits, including improved operational efficiency, enhanced patient safety, minimized wastage, and increased donor engagement. By automating and centralizing critical processes, the system fosters transparency, accountability, and traceability throughout the blood supply chain, ultimately contributing to better healthcare outcomes.

TABLE OF CONTENTS

Chapter No.	Title	Page No.
	Abstract	3
1	Introduction	5
2	Literature Survey	6
3	System Architecture And Design	8
5	Coding And Testing	10
6	Result	16
7	References	17

CHAPTER1

INTRODUCTION

The Blood Bank Management System is a software solution designed to streamline and automate the various operations and processes involved in blood banking. It leverages modern technology to facilitate efficient donor management, inventory control, testing and screening, transfusion management, and reporting and analytics. By integrating these functionalities into a single platform, the system aims to enhance the overall effectiveness and safety of blood transfusion services.

One of the key aspects of the Blood Bank Management System is donor management. It enables blood banks to maintain comprehensive donor profiles, including contact information, donation history, and eligibility criteria. By automating donor registration, scheduling donation appointments, and sending reminders, the system encourages regular donations and helps ensure a steady supply of blood.

Inventory control is another critical component of the Blood Bank Management System. Real-time tracking of blood units and associated components such as packed red blood cells, platelets, and plasma allows blood banks to efficiently manage their stock levels. The system monitors expiry dates, sends alerts for replenishment, and optimizes resource allocation to minimize wastage and ensure an adequate supply of blood products. By automating and integrating critical processes, BBMS improves efficiency, safety, and transparency within the blood banking industry. With its donor management, inventory control, testing and screening, transfusion management, and reporting features, BBMS ensures a constant and safe supply of blood products, ultimately saving lives and enhancing healthcare outcomes.

CHAPTER 2

LITERATURE SURVEY

By automating and integrating critical processes, BBMS improves efficiency, safety, and transparency within the blood banking industry. With its donor management, inventory control, testing and screening, transfusion management, and reporting features, BBMS ensures a constant and safe supply of blood products, ultimately saving lives and enhancing healthcare outcomes.

Donor Registration and Management: Blood banks maintain records of voluntary blood donors, including their personal information, medical history, and donation frequency. Donor registration involves the collection of demographic data, contact details, and blood type. This information is stored and managed in databases or electronic records.

Blood Inventory Management: Blood banks monitor and track their blood inventory, including different blood types, components (e.g., whole blood, red blood cells, platelets), and quantities available. Inventory management systems help in efficient storage, retrieval, and tracking of blood units, including their expiry dates. Barcode or RFID technology is often used for inventory management and tracking.

Testing and Screening: Donated blood undergoes various tests to ensure its safety and compatibility. This includes screening for infectious diseases (such as HIV, hepatitis B and C), blood grouping, and cross-matching. Testing and screening results are recorded and associated with the donor's profile and the corresponding blood units.

Transfusion Management: The existing systems facilitate the process of matching blood units with patients in need of transfusion. This involves cross-matching the recipient's blood type and compatibility with available blood units. Transfusion management systems track the issuance of blood units, maintain records of transfusions, and provide alerts for special requirements (e.g., rare blood types).

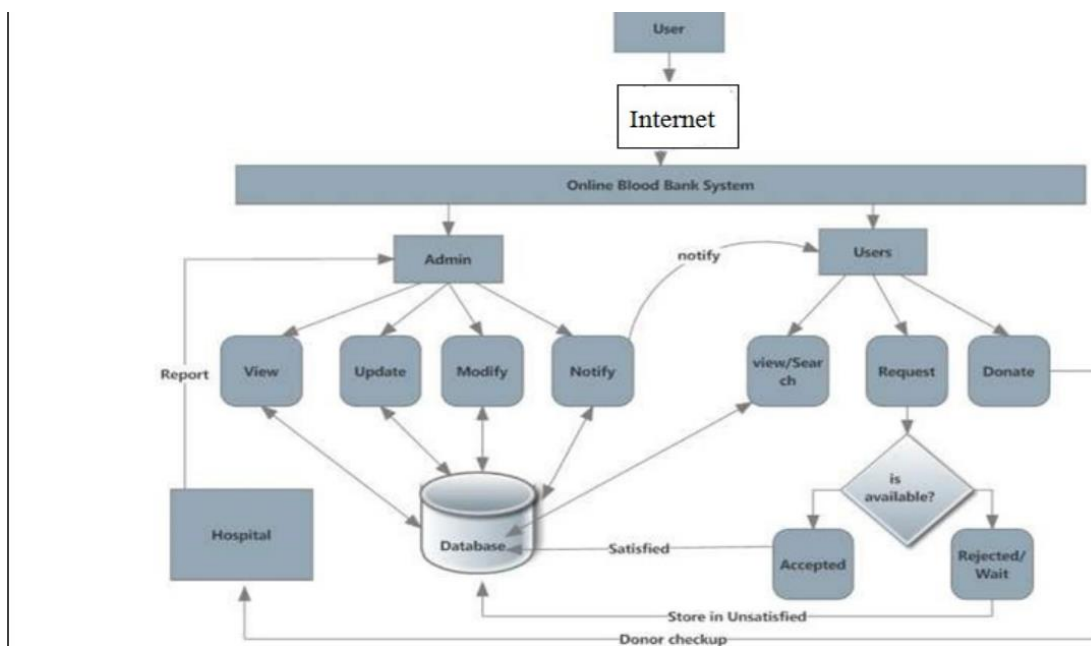
Reporting and Documentation: Blood banks generate reports and maintain documentation related to various aspects of their operations, including donor statistics, inventory status, usage trends, and regulatory compliance. These reports help in monitoring the performance of the blood bank, identifying areas for improvement, and meeting regulatory requirements.

Communication and Collaboration: Existing systems often include features to facilitate communication and collaboration among different stakeholders, such as blood bank staff, healthcare providers, and recipients. This can involve notification systems for blood availability, electronic requests for blood units, and secure messaging platforms for real-time communication.

CHAPTER 3

SYSTEM ARCHITECTURE AND DESIGN

The system architecture and design of a Blood Bank Management System (BBMS) play a crucial role in ensuring its effectiveness, scalability, and security. Here are the key aspects of the architecture and design:



Client-Server Architecture: BBMS typically follows a client-server architecture, where the client application runs on user devices (such as desktops or mobile devices) and communicates with a centralized server. This architecture enables centralized data management, security enforcement, and easier system updates and maintenance.

Database Management System (DBMS): A robust and scalable DBMS is essential for storing and managing the vast amount of data associated with donors, blood inventory, test results, and transfusion records. The choice of DBMS depends on factors like data volume, performance requirements, and scalability. Commonly used DBMS for BBMS include MySQL, PostgreSQL, or Oracle.

User Interfaces: The user interfaces of BBMS should be intuitive, user-friendly,

and tailored to the needs of different user roles, such as administrators, donors, medical staff, and recipients. The interfaces should allow seamless data entry, search capabilities, and generate relevant reports. Web-based interfaces or mobile applications are often used to provide flexibility and accessibility.

Security Measures: Due to the sensitive nature of the data involved in BBMS, robust security measures are crucial. This includes implementing user authentication and access control mechanisms to ensure that only authorized personnel can access specific data and perform certain actions. Data encryption, secure communication protocols (e.g., HTTPS), and regular security audits are also important considerations.

The Database Schema of Blood Bank Management System typically consists of the following:

Donor Table: This table would store information about the donors, including their name, address, email and phone number.

Donation Table: This table would store information about the donations, including date and location.

Blood Unit Table: This table would store information about the blood, including type, expiry date and status (e.g., available, reserved, issued).

Recipient Table: This table would store the information about the recipients, including name, phone number, blood type, transfusion date.

Transfusion Table: This table would store information about the transfusions, including the date and location.

Laboratory Test Table: This table would store information about the tests, including test type and result.

CHAPTER 3

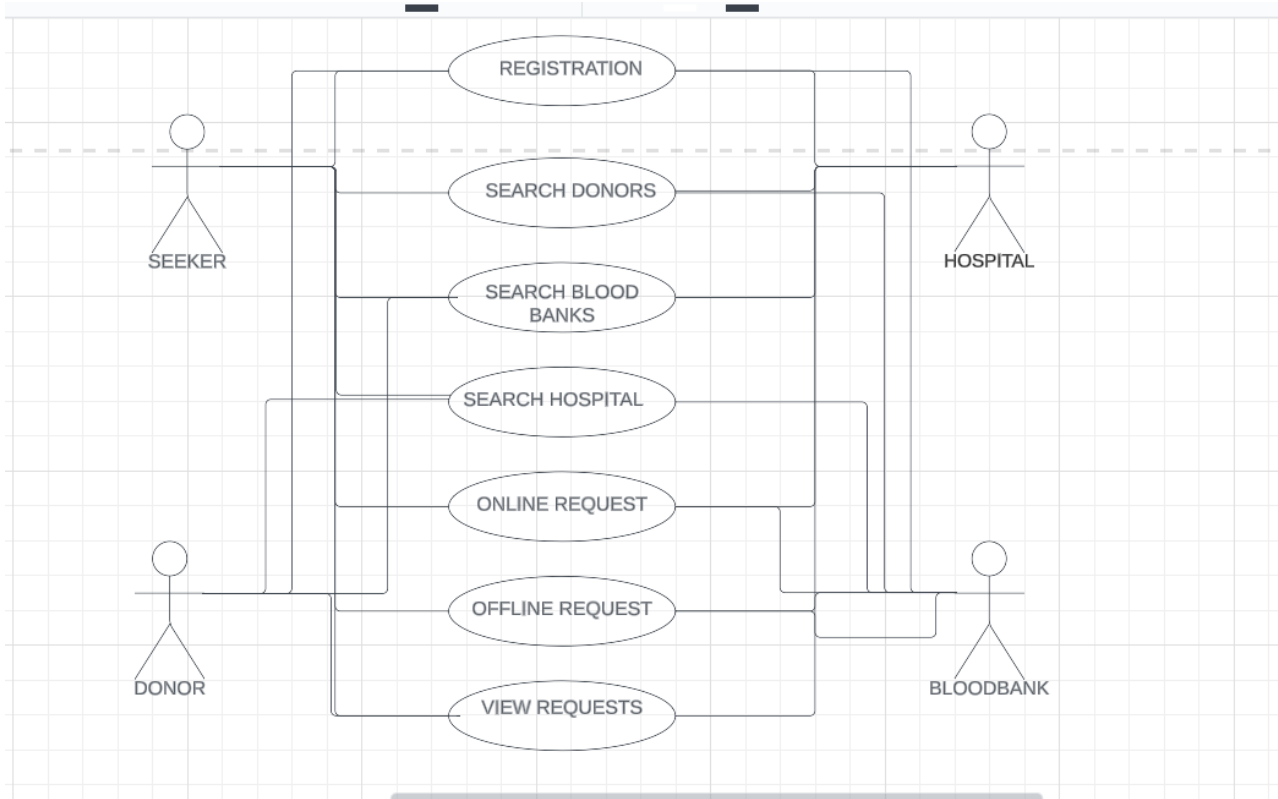
CODE

```
create table Patients(patient_id number(5) not null,patient_name varchar(20),
    blood_type varchar(4),disease varchar(4),contact number(5),
    city varchar(20),
    constraint patient_pk primary key(patient_id));
```

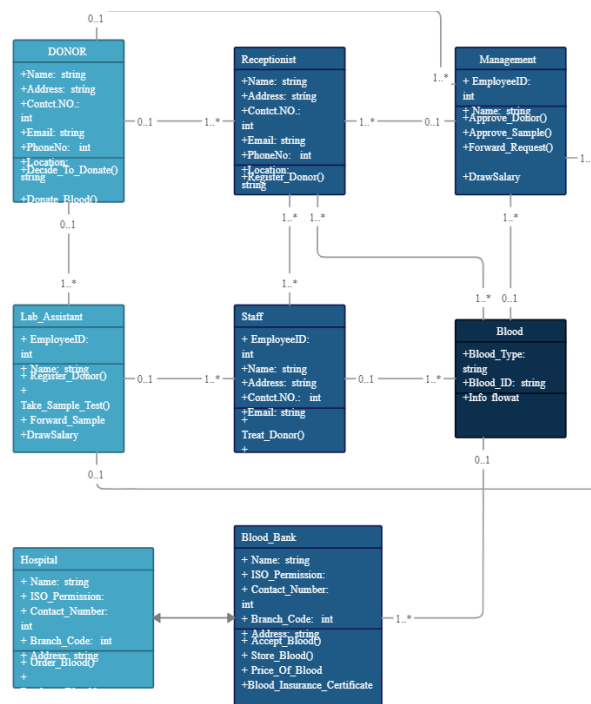
```
8
9 create table DONOR(donor_id int not null,donor_name varchar(20),report varchar(4),
10     city varchar(20),contact number(10),
11     constraint donor_pk primary key(donor_id));
12
13
```

```
create table Blood_bank(blood_bank_id int not null,blood_bank_name varchar(20),
    blood_bank_city varchar(20),contact number(10),
    constraint blood_bank_pk primary key (blood_bank_id),
    constraint blood_bank_fk1 foreign key(donor_id) references DONOR(donor_id),
    constraint blood_bank_fk2 foreign key(patient_id), references Patient(patient_id));
```

USE CASE DIAGRAM



Class diagram:










QUERIES:







```
insert into Patients values(101,'Jose Adams','AB+','O+',7778889999,'Melbourne')
insert into Patients values(102,'Rose Clara','B+','AB-',8889999777,'Austria')
insert into Patients values(103,'Jose Adams','AB+','O+',6669999777,'Naple')
insert into Patients values(104,'Jose Adams','AB+','O+',8885559777,'Paris')
insert into Patients values(105,'Jose Adams','AB+','O+',1119999777,'London')
```










```
insert into DONOR values(201,'Lara Croft','satisfactory','Meru',1112223333)
insert into DONOR values(202,'Lara Croft','satisfactory','Lamu',2223334444)
insert into DONOR values(203,'Lara Croft','satisfactory','Nairobi',3334445555)
insert into DONOR values(204,'Lara Croft','satisfactory','Narok',4445556666)
insert into DONOR values(205,'Lara Croft','satisfactory','Vasha',5556667777)
```

```
insert into Blood_bank values(301,'Meru Blood Bank','Meru',6667778888)
insert into Blood_bank values(302,'Lamu Blood Bank','Lamu',7778889999)
insert into Blood_bank values(303,'Nairobi Blood Bank','Nairobi',8889991111)
insert into Blood_bank values(304,'Narok Blood Bank','Narok',9991112222)
insert into Blood_bank values(305,'Vasha Blood Bank','Vasha',1112223333)
```

DATABASES:

 patient_id	int		patient_name	varchar(20)		blood_type	varchar(4)		disease	varchar(4)		contact	number(10)		city	varchar(20)	
101			Jose Adams			AB+			O+			7778889999			Melborne		
102			Rose Clara			B+			AB-			8889999777			Austria		
103			Ray Spencer			O-			A-			6669999777			Naple		
104			Sara Crux			AB+			B-			8885559777			Paris		
105			Nate Zara			A+			O+			1119999777			London		

 donor_id	int		donor_name	varchar(20)		report	varchar(4)		city	varchar(20)		contact	number(10)	
201			Lara Croft			satisfactory			Meru			1112223333		
202			Manuel Ladder			not satisfactory			Lamu			2223334444		
203			Zain Orange			satisfactory			Nairobi			3334445555		
204			Anne Gibbs			not satisfactory			Narok			4445556666		
205			Reign Stomy			satisfactory			Vasha			5556667777		

 blood_bank_id	int		blood_bank_name	varchar(20)		blood_bank_city	varchar(20)		contact	number(10)		 donor_id	int		 patient_id	int	
301			Meru Blood Bank			Meru			6667778888			201			101		
302			Lamu Blood Bank			Lamu			7778889999			203			102		
303			Nairobi Blood Bank			Nairobi			8889991111			205			103		
304			Narok Blood Bank			Narok			9991112222			205			104		
305			Vasha Blood Bank			Vasha			1112223333			203			105		



DONATE/REQUEST



BLOOD STOCK

BLOOD GROUP	UNIT
-------------	------



DONATE/REQUEST



REGISTER

LOGIN



DONATE/REQUEST



DONAR REGISTER



DONATE/REQUEST



USER LOGIN

RESULT

This proposed Blood Bank Management System gives a reliable platform for both donors and acceptors. The BMMS is a web-based application that helps to minimize human errors and problems pertaining to data redundancy. It is a fast-paced and efficient way to communicate without any security threats as the data entered will be verified and frequently updated thereby increasing the probability of saving one's life. Moreover, the availability of a location-based system where the nearest blood bank can be located through Google maps makes it more accessible.

FUTURE SCOPE:

The proposed system is Blood Bank System. We can enhance this system by including more facilities like emergency SMS for donor which ready for donating blood as well as embedding with hospitals, for Hospital patients facility those who one need blood they can find easily.

REFERENCES

1. <https://www.techzuke.com/portfolio-item/blood-bank-management-system/>
2. <https://codecanyon.net/item/blood-bank-management-system/19371063>
3. <https://github.com/md-saad/blood-bank-management-system>
4. <https://techwaresolution.com/blood-bank-management-system>
5. <https://www.creatrixcampus.com/blood-bank-management-system>
6. Transfusion Medicine and Hemostasis: Clinical and Laboratory Aspects" by Christopher D. Hillyer, Leslie E. Silberstein, and Paul M. Ness
7. Blood Banking and Transfusion Medicine: Basic Principles and Practice" by Christopher D. Hillyer, Beth H. Shaz, and James C. Zimring.
8. Blood Banking and Transfusion Practices: Principles and Procedures" by Lisa C. Baumann Kreuziger and Tracy G. George.