# Blood Management System with SMS Alerts and Credit System

TV. SAHITHI REDDY [1], [2] JANNAVULA SAI PRANATHI [2], HARIVARAN S [3], [4] K SHANMUKHA SRINIVASULU ROYAL [4] , ATHIRA GOPALAKRISHNAN [5]

[1] *TV. SAHITHI REDDY CSE DEPT Alliance University Bangalore, India*
[2] *JANNAVULA SAI PRANATHI CSE DEPT Alliance University Bangalore, India*
[3] *HARIVARAN S CSE DEPT Alliance University Bangalore, India*
[4] *K SHANMUKHA SRINIVASULU ROYAL CSE DEPT Alliance University Bangalore, India*
[5] *ATHIRA GOPALAKRISHNAN Assistant Professor, CSE DEPT Alliance University Bangalore, India*

## ABSTRACT

*The global blood shortage has resulted in many deaths, and blood donation and transfusion have become increasingly critical issues. The primary cause of those losses is the absence of a centralized mechanism for blood donation. Despite the prevalence of digital and online processes, traditional methods of blood collection remain unchanged. To run the centers and present the information to interested parties, an automated system is required. This paper describes a website that addresses every problem pertaining to blood donation and events. As a fundamental component of the integrated frame, this method creates an SQL database that will house actual blood donation data in a centralized location for logical processing. People would be able to sign up as patrons under the proposed system, making themselves available whenever someone needs their blood type. A hunt option has been added to help find folks who are available and willing to participate. Health-related information would be streamlined and publicly accessible in the blood operating system database during patron enrolment under our suggested system. The Donor Management System and Blood Bank operate online. Those who would wish to donate blood can register with the blood bank. The people in need of blood search the city for people who share their blood type. But, if Users sets up a patron in his megacity as well, User receives all the patron's details. If the User finds no client at all, Users are provided with the phone numbers and addresses of the Life-Saving Contact Persons for big metropolises. Regardless of the type of credit added, it's very important to be clear and consistent in your crediting.*

**Keyword : -** *credit, big cities, Donor Management System, SQL database*

## 1. INTRODUCTION

One essential instrument for streamlining blood donation procedures and guaranteeing efficacy, accessibility, and Efficiency in blood resource management is the Blood Donation Management System (BDMS). By providing a centralized platform that links blood banks, hospitals, donors, and recipents, this system makes it easier for all parties involved in the blood donation process to coordinate and communicate with one another

### 1.1 Goals and Objectives

The Blood Donation Management System's main goal is to handle the difficulties involved with blood donation, including finding donors, keeping track of inventories, and getting blood to patients in need on time. The following goals are the system's primary goals: Effective Donor Acquisition: The BDMS hopes to draw in a wide range of donors and simplify the donation procedure by offering an online platform for appointment booking and donor registration. Inventory management: By monitoring blood inventory levels in real time, the system makes sure that

there is a sufficient supply of different blood types to satisfy the needs of medical facilities as well as emergency scenarios. Improved Communication: By facilitating communication between blood banks, donors, and medical facilities, BDMS makes it possible to promptly notify people about blood drives, urgent blood needs, and units of blood that are available. Data Management and Analysis: To facilitate resource allocation and decision-making, the system gathers and analyzes data on donor demographics, donation trends, and blood usage patterns. Quality Assurance: The BDMS includes procedures such as donor screening, testing, and monitoring to guarantee the security and caliber of blood donations.

## 1.2 Important Elements

A number of features are available through the Blood Donation Management System that are intended to enhance the blood donation procedure:
• Donor registration and profiling: Upon registering online, donors can submit personal data, medical background, and blood type specifics. Profiles are safely kept on file for further use.
• Appointment Scheduling: Donors can arrange donation appointments according to their preferences and availability, which helps to guarantee a consistent supply of blood and shorten wait times
• Inventory tracking: Blood banks are able to keep an eye on their stock levels and get warnings when blood units are about to expire or run low. Demand projections can be used to create automatic replenishment orders.
• Donor Management: The system keeps track of donors' contact details, eligibility status, and donation history in a database. Reminders about forthcoming appointments and notes expressing gratitude for their support are sent to donors.
• Blood Matching and Allocation: By indicating the necessary blood type and quantity, healthcare facilities can use the system to request blood units. From the available inventory, BDMS finds appropriate matches and streamlines the allocation procedure.
• Reporting and Analytics: By producing reports on inventory levels, blood usage, and donation patterns, BDMS enables stakeholders to evaluate performance, pinpoint areas in need of development, and make informed decisions

## 1.3. Advantages
For all parties engaged in the blood donation process, the Blood Donation Management System's installation provides a number of advantages:
• Enhanced Efficiency: Blood bank employees and medical personnel save time and experience less administrative strain because of automated procedures and centralized data management.
• Enhanced Accessibility: Donors can register, set up appointments, and access information from any location with an internet connection thanks to the online platform.
• Enhanced Blood Safety: Strict screening protocols and quality assurance measures guarantee the integrity and safety of given blood, reducing the possibility of negative responses and infections brought on by transfusion.
• Optimized Resource Utilization: By preventing shortages and waste, real-time inventory tracking and demand forecasting assist maximize the use of blood resources while cutting expenses.
• Community participation: By means of outreach campaigns, donor appreciation initiatives, and social media integration, BDMS fosters community participation and raises awareness of blood donation. In conclusion, the Blood Donation Management System is essential to streamlining the entire blood donation process—from finding and screening potential donors to allocating and using blood units. Through the use of technology to improve accessibility, efficiency, and safety, BDMS helps ensure that blood supplies are available on time and in sufficient quantities, which ultimately saves lives and improves healthcare outcomes.

## 2. METHODOLOGY

In the blood donation management system, most of the existing projects share the donors' location with the requesting parties, a practice that raises significant concerns regarding privacy. By divulging such sensitive information, these systems inadvertently expose donors to potential privacy breaches and compromise their confidentiality. This indiscriminate sharing of location data not only undermines the privacy rights of donors but also poses ethical and legal challenges in safeguarding personal information within the healthcare ecosystem. This technique describes a system for blood donation that makes use of an online ERP system, a SQL database, SMS notifications, and a donor credit system.

**2.1 Parts of the System**

• All system data, including donor details, blood type, inventory levels, donation history, and credit points, are kept in an SQL database, which serves as the primary repository.

• ERP System Online: The features of this web-based application include: Donor Registration: This enables people to sign up to donate blood by providing information about themselves, including name, contact information, blood type, and medical background.

• Appointment Scheduling: The technology allows donors to book blood donation appointments, guaranteeing a seamless donation procedure.

• Blood Stock Management: Monitors the number of various blood types in stock and alerts users to dangerously low levels.

• Search and Request: Using the system, hospitals or patients can look up suitable blood types and make requests for blood units.

• Credit Management: Provides for possible redemption possibilities and keeps track

• Analytics and Reporting: Produces data on trends in blood donation, stock levels, and donor activity.

• SMS Alerts: The following are some of the ways that the system uses text messaging to notify registered donors of severe blood shortages and to entice them to donate blood based on their eligibility and blood type.

• Confirm Appointments: Inform donors via text message that their blood donation appointments have been arranged.

• Hospital Notification: Inform hospitals when required blood units become available.


**2.2. Work Flow**

1) Donor Registration: By supplying the required personal and medical data, individuals can register as donors via the online ERP system.

2) Appointment Scheduling: Using the system's calendar function, donors can arrange contribution appointments according to their availability.

3) Blood Donation: Medical staff members gather blood throughout the donation procedure and update the donor's information in the system, including the volume and kind of blood obtained.

4) Blood Testing and Processing: Using established procedures, collected blood is tested and processed. Fig. 1. Working

5) Inventory management: Following successful processing, the system modifies the blood inventory levels for each blood type.

6) Credit System: Donors' blood donations are rewarded with points or credits in the system. These credits can be exchanged for a number of advantages, including:

• savings on health care services

• Free testing for blood screening

• Recognition by the public or merchandise

7) SMS Alerts: Blood requests with the necessary blood type and quantity are submitted through the system by hospitals or people in need. Based on inventory levels, the system looks for blood units that are compatible. The system sends an SMS alert to the requesting hospital as soon as availability is confirmed. Blood units are sent Fig. 2. Registration to the hospital that will receive them when the correct protocols are followed.
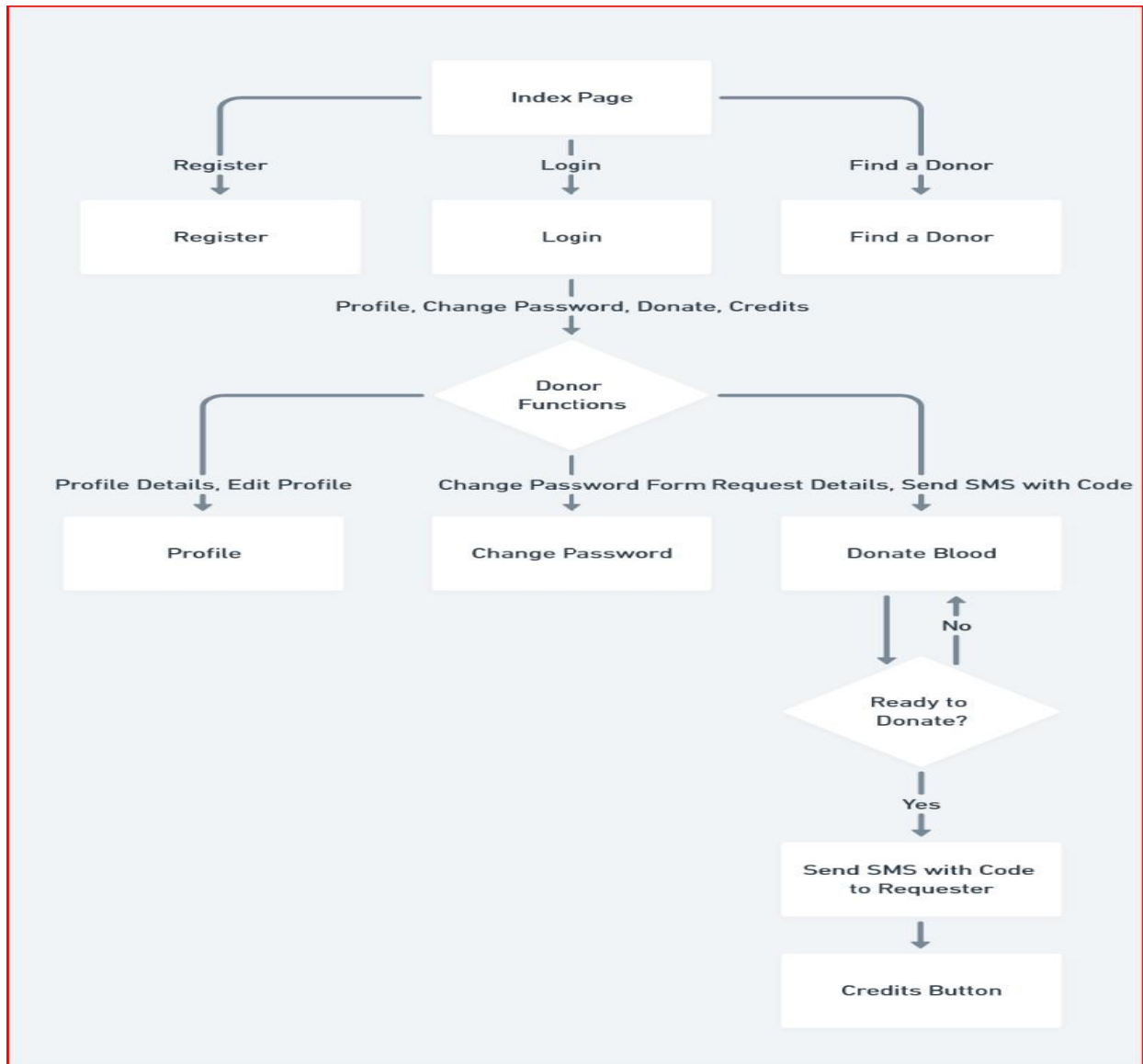
## 3. RESULT

Donations might be increased and blood bank operations could be revolutionized with the help of a credit system and a blood management system with SMS notifications. Envision an apparatus that monitors blood supply, expiration dates, and even the compatibility of blood types. The technology automatically notifies registered donors with suitable blood types through SMS when the blood supply is dangerously low, encouraging them to give. The Credit System encourages consistent giving. With every donation, donors receive points that may be exchanged for goods or services like expedited medical visits. This approach would guarantee timely blood availability, simplify blood bank operations, and promote contributions that could save lives

| id | name | phone_number | email | password | date_of_birth | bloo | state | city | zipcode | address |
|---|---|---|---|---|---|---|---|---|---|---|
| 22 | shanmukha | +917382080777 | royal@gmail.com | $2y$10$SDfRD6bDWCNkeu | 2003-04-18 | O- | Karnataka | Bengaluru | 560001 | 1st B Main Road, Banashankari 1st Stage, Bengaluru... |
| 23 | test | +911234567890 | 12@gmail.com | $2y$10$D/ 0wP2jlXuviMwSeZJE6kuaBa | 1997-04-10 | B- | Karnataka | Bengaluru | 560001 | NR Colony, Basavanagudi, Bengaluru, Bangalore Nort... |

# Donor Credits

Back to Dashboard

## Your Credit Score

## 0

Enter the code         Get

## 4. CONCLUSIONS

Giving blood donors credits entails recognizing their altruistic deeds of giving blood and giving them virtual money or a badge of honor within the donor network. These credits are a concrete way for blood banks or donation sites to show their appreciation for the tremendous difference that donors make in the lives of patients who are in need.

Credits serve as incentives that go beyond simple recognition; by providing real advantages or rewards for their donations, credits motivate contributors to keep up their charitable work. Organizations can show their gratitude for donors' contributions and foster a mutually beneficial relationship that encourages donors to continue contributing to donation programs by giving donors credit for their efforts. Adding credits to blood donors is essentially a strong way. Many advantages come with using a website-based blood donation system, such as improved accessibility, effectiveness, awareness, community involvement, and data administration. Blood donation organizations can increase their capacity to save lives and better serve their communities by utilizing technology and internet platforms

## 5. ACKNOWLEDGEMENT

Donor Acknowledgment: A selfless act of giving blood is recognized and documented in the donor database. As a token of appreciation, donors receive credits based on predetermined standards such as the quantity of blood donated, the frequency of donations, or involvement in special activities. To ensure transparency about the credit system, clear descriptions of the requirements for obtaining credits and the procedure for redeeming them are provided. A range of redemption choices is offered to donors, including first dibs on appointment scheduling for donations, invitations to donor-only events or products, and material benefits like gift cards or vouchers. This information is easily accessible via websites, donor handbooks, or special support channels.

## 6. REFERENCES

[1] Optimization of Blood Donor Information and Management System by Technopedia P. Priya1, V. Saranya2, S. Shabana3, Kavitha Subramani4 Department of Computer Science and Engineering, Panimalar Engineer ing College, Chennai, India

[2] LIFESAVER: BLOOD DONATION MANAGEMENT SYSTEM WEB APP USING MERN STACK Abdul Hannan*1, Mohammed Zaid*2, Mohammed Zaid Abdullah*3, Ms. Smitha Patil*4 *1,2,3AICTE, De apartment Of Computer Science And Engineering, Presidency University, Fig. 5. Credit System Bangalore, Karnataka, India. *4Assistant Professor, Department Of Computer Science And Engineering, Bangalore, Karnataka, India

[3] Design of SMS-based Automated Blood Bank using Embedded System Pavitra H V, Dr. G.F. Ali Ahammed IV Sem M-Tech, Assistant Professor Dept of Digital Electronics and Communication Systems VTU PG CENTRE, MYSURU

[4] Blockchain-Based Management of Blood Donation DIANA HAWASHIN 1 , DUNIA AMIN J. MAHBOOBEH 2 , KHALED SALAH 2 , (Senior Member, IEEE), RAJA JAYARAMAN 1 , IBRAR YAQOOB 2 , (Senior Member, IEEE), MAZIN DEBE 2 , AND SAMER ELLAHHAM 3 1Department of Industrial and Systems Engineering, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates 2Department of Electrical Engineering and Computer Science, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates 3Heart and Vascular Institute, Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates

[5] Recent intelligent Approaches for Managing and Optimizing smart Blood Donation process Shadi AlZu'bi, and Darah Aqel Computer Science Department Al Zaytoonah University of Jordan Amman, Jordan smalzubi,d.aqel@zuj.edu.jo Ala Mughaid Computer Science Department The Hashemite University Zarqa, Jordan ala.mughaid@hu.edu.jo

[6] Prof. H. B. Mathur, Prof. H. C. Agarwal, Sapna Johnson "Analysis Of Pesticide Residues In Blood Samples From Villages Of Punjab" March, 2005

[7] Pavitra H V, Dr. G.F. Ali Ahammed, "Design of SMS based Automated Blood Bank using Embedded System", International Journal of Engi neering Research and Technology (IJERT) ISSN: 2278-0181

[8] Ghulam Muhammad, Hamza Asif, Farrukh Abbas, Imran Memon, Hadiqua Fazal, "An ERP Based Blood Donation Management System for Hospital and Donor" Vol. 3 No. 1 (2020): Sukkur IBA Journal of Emerging Technologies (SJET)

[9] Devanjan K. Srivastava, 2Utkarsh Tanwar, 3M.G. Krishna Rao, 4Priya Manohar, 5Balraj Singh, "A Research Paper on Blood Donation Man agement System" 2021 IJCRT — Volume 9, Issue 5 May 2021 — ISSN: 2320-2882

[10] Abdullah M. Basahel , Adnan Ahmed Abi Sen ,Nour Mahmoud Bahbouh ,Mohammad Yamin,"Smart Application for Blood Donation Management in Health Domain", 2023 10th International Conference on Computing for Sustainable Global Development (INDIACom)

[11] Thirunavukkarasu, N "Blood Bank Management System" University of Moratuwa, Sri Lanka Nilathiru.1 [

12] 0William P. Pierskalla "SUPPLY CHAIN MANAGEMENT OF BLOOD BANKS" Anderson Graduate School of Management University of California at Los Angeles [

13] Uthayakumar, R.; Priyan, S. Pharmaceutical supply chain and inventory management strategies: Optimization for a pharmaceutical company and a hospital. Oper. Res. Health Care 2013, 2, 52–64. [Google Scholar] [CrossRef]

[14] Privett, N.; Gonsalvez, D. The top ten global health supply chain issues: Perspectives from the field. Oper. Res. Health Care 2014, 3, 226–230. [Google Scholar] [CrossRef]

[15] Fattahi, M.; Mahootchi, M.; Husseini, S. Integrated strategic and tactical supply chain planning with price-sensitive demands. Ann. Oper. Res. 2016, 242, 423–456. [Google Scholar