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| **Tech Saksham**  Final Project Report |  |  |

**“BLOOD DONATION”**

**“RAYALASEEMA UNIVERSITY COLLEGE OF ENGINEERING”**

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| **ROLL NO** | **NAME** |
| 21RU5A0407 | NADAVALA VISHNUPRIYA |
| 20RU1A0429 | KUMMARI PRAVALLIKA |
| 20RU1A0448 | POLDAS SAI PADMAJA |
| 20RU1A0529 | KUPPAGANTI MOUNIKA |

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|  |  |
|  | Trainer Name |
|  | Master Trainer |

**ABSTRACT**

Blood transfusion safety is a relevant and significant public health issue in the Sultanate of Oman. Since most blood banks are still in paper-based system, various disadvantages are experienced by various stakeholders, which endanger the lives of patients and deter the healthcare system. As such, the researchers aimed to design, develop, and implement an online blood bank management system (OBBMS). This web-based application allows hospitals in Oman to make inventories of their blood bags online, subsequently, allowing each hospital to check the availability of blood bags anytime.

The researchers designed and administered a questionnaire that assess the perceptions of various stakeholders in both manual-based and OBBMS. Based on the findings and results, it was found out that these stakeholders perceived online blood bank management system is much better than the manual system. Therefore, with the use of online blood bank management system, blood transfusion process is safe and secured. Threats on improper blood donor documentation, or misplaced records will be totally eradicated. Also, processes involving recording about blood donors, blood bag collection, storage, and inventory will be systematized and organized, hence, improving the healthcare management for blood banks.



**CHAPTER 1**

**INTRODUCTION**

**1.1 Overview :**

* Some people with thalassemia – usually with thalassemia major – need regular blood transfusions because their body makes such low amounts of hemoglobin. People with thalassemia intermedia (not as severe as major, but not as mild as trait) may need blood transfusions sometimes, such as when they have an infection or an illness.
* This section discusses findings and observations done by some research works on webbased blood bank management system. The gathered information on these related papers strengthens and supports the research study
  1. **Features :**
* It keeps all the information of a donor including blood group and his/ her health.
* Person can donate or sell his/ her blood to acceptor, hospitals and plasma donation centers associated with the application.
* Provides the e-certificate for blood donation, by which a donor can accept blood (if required) for free or less cost.
* All the details of donor are first
* Provides the searching facilities of blood based on blood group

**1.3** **Advantages :**

* Online Blood Bank project aims at maintaining all the information pertaining to blood

donors, different blood groups available in each blood bank and help them manage in a better way.

* The blood donors can register to this system by entering their profile information.
* have internal or external bleeding due to an injury
* have sickle cell disease or another illness that affects the blood
* are undergoing [cancer](https://www.medicalnewstoday.com/articles/323648) treatment
* are undergoing surgery, such as cardiovascular or orthopedic surgery
* have an inherited blood disorder
* are undergoing a transplant
* need treatments involving plasma or other blood products.

**1.4 Scope :**

* This research study covers the three (3) basic operations of blood banks, namely: donor registration, monitoring of blood bags or products’ inventories, and monitoring of blood bags or products’ issuance. Also, due to time-constraint, respondents will be from hospitals from North Batinah Region in the Oman, though the research study talks about blood banks in the Sultanate of Oman. In addition, the study considers three (3) possible users of the system, namely: hospital administrator, doctors, and blood receptionists.

**1.5 Feature work :**

* Blood Connect is India’s largest youth-led organization that works with colleges, corporates, and RWAs to help the blood banks be blood sufficient. We provide a 360° solution to the problem: from motivating people to donate blood, to helping them donate via camps and finally helping anyone in dire need via a helpline.



**CHAPTER 2**

**SERVICES AND TOOLS REQUIRED**

**2.1 Services Used :**

* Blood is an intrinsic requirement for health care and proper functioning of the health system. NACO has been primarily responsible for ensuring provision of safe blood for the country since 1992. NACO supports a network of 1131 blood banks across the country in over 600 districts and strives to achieve accessibility to adequate quantity of safe, quality and affordable blood and blood components to the needy.
* Government of India adopted the National Blood Policy in April 2002 which aims to develop a nationwide system to ensure easy access to adequate and safe and good quality blood supply. Supreme Court judgment of 1996 for CWP 91/1992 mandated creating of National Blood Transfusion Council and removal of professional blood donation. National Blood Transfusion Council (NBTC), the apex policy making body for issues pertaining to blood and plasma is a part of National AIDS Control Organization.
* Accordingly, through all phases of the National AIDS Control Programme, a comprehensive, efficient and total quality management approach has been adopted towards strengthening Blood Banks and Blood Transfusion Services. NACO has taken number of steps towards the modernization of blood banks in the country by providing the critical inputs for ensuring provision of safe blood for the country. During this time HIV sero-reactivity among blood donors also declined to 0.14% in NACO supported Blood Banks. Availability of Blood has increased to 10.8 million blood units in 2015-16.

**2.2 Tools and Softwares :**

* This is a tool designed to automate and streamline the process of managing blood donations, inventory, and distribution. It helps blood banks to efficiently track and manage blood donations, donor information, blood testing results, and inventory levels, ensuring the availability of blood when needed
* A blood bank software offers a range of key features, including streamlined donor and inventory management, automated blood testing, real-time data access, reporting and data analysis, and compliance with regulations.
* software solution that streamlines inventory management, donor management, blood testing, and other crucial operations, allowing our customers to improve their efficiency and patient safety.
* software has received positive feedback from customers, who have seen significant improvements in their blood bank's operations and outcomes.
* We are committed to providing excellent service to our customers and continuing to innovate our software to meet their evolving needs.

**2.2.1 NodeJS :**

* This Repo is a complete #MERN Stack Web App in order to help the patients and their attenders who are seeking blood at a particular location.
* A Node.js.web application built using Express framework with EJS as front end and MongoDB as database. Developed to be a platform for blood donors and requester

**2.2.2 HTML :**

* The HTML element is everything from the start tag to the end tag: My first paragraph. Note: Some HTML elements have no content (like the element). These elements are called empty elements. Empty elements do not have an end tag! The purpose of a web browser (Chrome, Edge, Firefox, Safari) is to read HTML documents and display them correctly.
* HTML is a markup language that web browsers use to interpret and compose text, images, and other material into visible or audible web pages. Default characteristics for every item of HTML markup are defined in the browser

**2.2.3 MY SQL :**

* MySQL is the world’s most popular open source database. According to [DB-Engines](https://db-engines.com/en/ranking), MySQL ranks as the second-most-popular database, behind [Oracle Database](https://www.oracle.com/database/). MySQL powers many of the most accessed applications, including Facebook, Twitter, Netflix, Uber, Airbnb, Shopify, and Booking.com.
* Since MySQL is open source, it includes numerous features developed in close cooperation with users over more than 25 years. So it’s very likely that your favorite application or programming language is supported by MySQL Database.

**CHAPTER 3**

**PROJECT ARCHITECTURE**

**3.1 Architecture**

**USER FRONTEND BACKEND**

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|  | **HTML 5** | **NODEJS 14.0**  **Database** |





**CHAPTER 4**

**ARCHITECTURE BLOCKS DETAIL WORKING**

**4.1 Blocks :**

Typical architecture block for a blood donation system might include the following components:

**User Interface (UI):** This is the front-end where donors can register, schedule appointments, and access information about blood donation. It should also allow blood banks to manage donor records.

**Donor Database:** A database to store donor information, including personal details, blood type, donation history, and contact information.

**Appointment Scheduler:** This component helps donors book appointments for blood donation at convenient times and locations.

**Blood Bank Management:** This module is responsible for managing blood inventory, including tracking available blood types and quantities.

**Donation Tracking:** A system to track each donation, including the date, time, donor ID, and the quantity and type of blood donated.

**Notification System**: Send automated notifications to donors about upcoming appointments, donation opportunities, and thank-you messages.

**Blood Type Matching:** A component that matches donor blood types with the needs of patients and alerts the blood bank when specific blood types are low.

**Admin Dashboard:** An interface for administrators to monitor and manage the entire system, view reports, and access donor records.

**Security and Authentication:** Implement robust security measures to protect donor data and ensure that only authorized personnel can access sensitive information.

**Integration with Hospitals:** If necessary, integrate with hospital systems to facilitate the transfer of blood donations to where they are needed.

**Reporting and Analytics:** Generate reports on blood donation statistics, donor demographics, and inventory levels to aid in decision-making and planning.

**Payment Gateway :** If donations are monetarily compensated or fees are involved, integrate a payment gateway for financial transactions.

**Mobile App :** Develop a mobile app for donors to easily access the system and receive notifications.

**Scalability and Redundancy:** Ensure that the architecture can scale to handle a large number of donors and donations, with redundancy to prevent system failures

**Compliance:** Comply with relevant data protection regulations, such as GDPR or HIPAA, depending on the region and the type of data collected.

**Feedback and Support:** Include mechanisms for donors to provide feedback and seek support if needed.

Remember that the specific architecture may vary based on the scale and requirements of the blood donation system. Additionally, ensuring data privacy and security is of utmost importance in such systems.



**CONCLUSION**

* By understanding the need for blood donations, recognizing the benefits, and taking action to donate, you can make a significant difference in the lives of those in need.
* Based on results, this study concluded that online blood bank management system is much better than the manual system.
* The findings showed that respondents prefer to use online blood bank management system rather than the manual system because it offers many advantages and benefits that lead to its effectiveness, and efficiency.
* Because of the increased confidence on the users on the system, it can be concluded that the online blood bank management system enhances blood transfusion safety because it provides better ways of handling the various processes in blood bank.
* If we should start donating blood regularly to help other people, and stay informed about your health, improve your mental well-being, earn bragging rights, and other small yet satisfying bonuses.



**REFERENCES**

* blood donation occurs when a person voluntarily has blood drawn and used for transfusions and/or made into biopharmaceutical medications by a process called fractionation (separation of whole blood components). Donation may be of whole blood, or of specific components A directly (apheresis).
* Safe blood and blood products. Module 1: Safe blood donation. Geneva: World Health Organization;
* Guidelines on assessing donor suitability for blood donation.
* Aide-mémoire. Blood safety. Geneva: World Health Organization.
* WHO/IFRC. Towards 100% voluntary blood donation: A global framework for action. Geneva: World Health Organization.
* The Melbourne Declaration on 100% voluntary non-remunerated donation of blood and blood components. Geneva: World Health Organization.
* WHO/CDC/IFRC. Blood donor counselling: Implementation guidelines. Geneva: World Health Organization.
* Blood donation project: You can check out the American Red Cross website for information and resources on organizing a blood drive pro

**CODE**

**Please Provide Code through Git Hub Repo Link**