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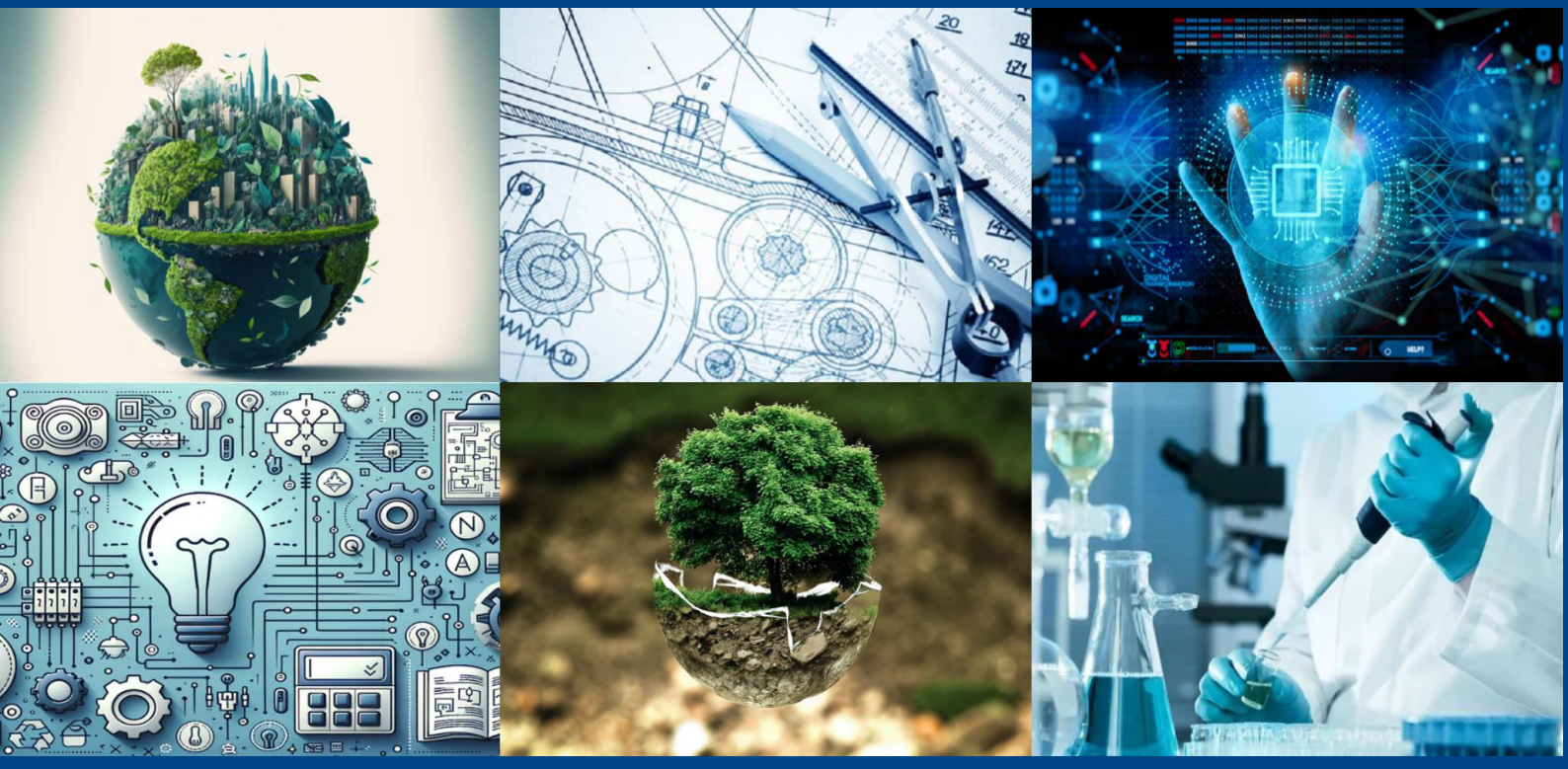

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International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

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Blood Bank System

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ABSTRACT: A Blood Bank System is a digital platform designed to manage and streamline blood donation, storage, and distribution processes. It serves as a centralized system for hospitals, donors, and recipients, ensuring efficient tracking of blood inventory and availability. The system maintains records of blood donors, including their personal details, blood type, and donation history, while also managing requests from hospitals and patients in need. It helps in reducing wastage by ensuring proper stock management and timely utilization of blood units.

KEYWORDS: Blood Bank, Arduino, Blood Bank Management System, Donor Registration, Recipient Management

I. INTRODUCTION

A blood bank system is a specialized system designed to manage the collection, storage, processing, and distribution of blood and its components. It plays a crucial role in healthcare by ensuring a steady and safe supply of blood for patients in need, such as those undergoing surgeries, suffering from severe injuries, or dealing with medical conditions like anemia or blood disorders.

This system involves donor registration, blood screening, proper labeling, and storage under controlled conditions to maintain quality and safety. Additionally, it tracks inventory, facilitates blood requests from hospitals, and ensures that the right blood type is delivered to the right patient at the right time. Modern blood bank systems are often computerized, integrating with hospital databases to streamline operations, enhance traceability, and minimize errors. Through efficient management, the blood bank system helps save lives by making blood and its components readily available when needed.

System Design
The proposed system consists of the following components:
1. System Architecture
2. Recipient Module
3. Database Design
4. Advanced Technologies

System Implementation
The system is implemented using the Android Studio, and the code is written in Java & XML The system uses the following libraries:
1. UI and Design for designing modern UI elements.
2. Database and Storage For cloud-based storage of donor details, blood inventory, and requests.
3. Networking and API Calls For making API requests to a backend server.

II. METHODOLOGY

The methodology adopted in this project involves several stages, including system design, software development, and system testing.
A. System Design

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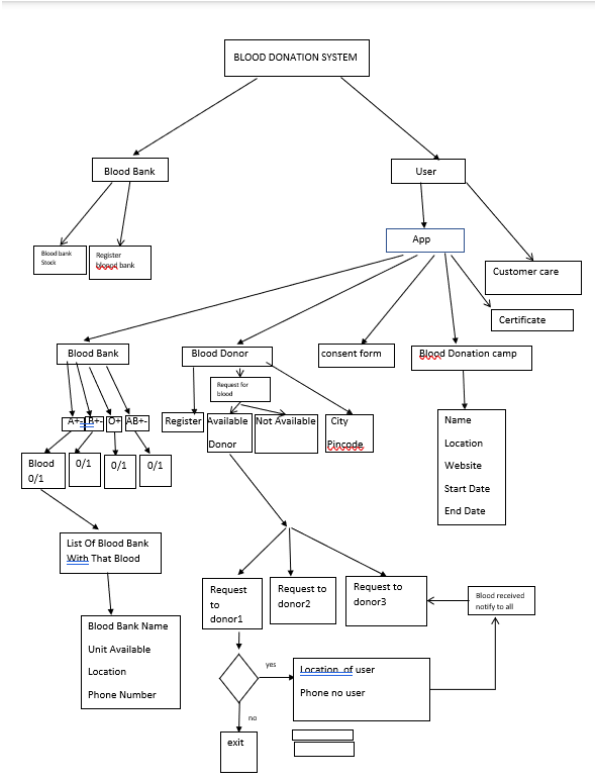
The system design of a blood bank system involves defining the architecture, components, and interactions required to efficiently manage blood donations, storage, and distribution. It ensures a seamless flow of information between donors, blood banks, and hospitals while maintaining security and accuracy.

The system design of a Blood Bank System focuses on creating an efficient and secure platform for managing blood donations, inventory, and distribution. It follows a structured approach, including architecture design, database management, user interface design, and security implementation.

B. Architecture of the system



C. Software Development

The development of a Blood Bank System follows a structured Software Development Life Cycle (SDLC) to ensure efficient blood donation management, inventory tracking, and request processing. It begins with requirement analysis, identifying key

D. System Testing

System Testing for a Blood Bank System ensures that all components work together as expected, validating functionality, performance, security, and usability before deployment. The testing process follows structured phases to detect and fix any errors or inefficiencies.

System testing is a critical phase in the development of a blood bank system, ensuring that all components function as expected and meet the system requirements. It involves various testing methodologies to identify and fix errors, optimize performance, and enhance security.

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III. RESULTS

The Blood Bank System ensures efficient blood donation management, real-time inventory tracking, and streamlined request processing. After successful implementation, the system delivers several key results that enhance healthcare operations and emergency response.

IV. CONCLUSION

In this paper, Blood Bank System plays a crucial role in ensuring a streamlined and efficient blood donation and distribution process. By leveraging technology, it enhances donor registration, blood inventory management, and real-time request processing. The system minimizes blood shortages by automating stock updates, request fulfillment, and donor notifications.

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