BloodUnity App Using Android Studio

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Abstract—During emergency situations, the availability of blood becomes critical for saving lives. A blood bank plays a crucial role in collecting blood from diverse donors, managing the blood group database, and supplying the necessary blood to hospitals in times of urgency. The challenge is not the scarcity of donors but rather finding a willing donor promptly. Our objective is to establish a network of individuals who can assist each other during crises[2]. This application facilitates regular updates of donor information, and the administrator has full access to the blood bank administration system. Donors are requested to provide personal information such as their name, phone number, and blood group[7].

Keywords—Blood bank, Android, Blood transfusion, Database, Donors, Acceptors, Administrator, Geographic information System[7]

I . INTRODUCTION

BloodUnity App, Its game-changing solution at the intersection of technology and healthcare. This app revolutionizes blood management and transfusion by connecting donors and recipients seamlessly[1]. With just a few   taps, donors can schedule appointments, find nearby blood drives, and receive real-time alerts for urgent needs. For recipients, it streamlines the process of connecting with potential donors, potentially saving lives in critical situations[1]. The Blood Unity App not only optimizes transfusion procedures but also emphasizes the profound impact of this selfless act on healthcare. Join us in this digital revolution, where technology and compassion unite to make a difference—one drop at a time[1].

II . LITERATURE REVIEW

(i)Literature Review:

The Optimization of Blood Donor Information and Management System by Technopedia[1].
In an online application developed by P. Priya, V. Saranya, S. Shabana, and Kavitha Subramani, real-time updates on donor, acceptor, and patient information are made available to the administrator[1]. Security measures have also been implemented to protect contributors' contact information from misuse by third parties[4].

A Survey Paper on E-Blood Bank and an Idea to use on Smartphones[1].
Tushar Pandit, Satish Niloor, and A.S. Shinde proposes E-Blood Bank as a mobile-centric solution that enables direct communication between donors and blood banks[1][10]. This real-time data access enhances efficiency in urgent requests and has the potential to save lives[1][10].

Blood Bank Management Information System in India[11].
Dr. Sharad Maheshwari presents an assessment of the existing Web-Based Information System for Blood Banks in India[11]. This system enables nationwide donor record access and efficient city-specific blood searches, ensuring timely assistance[1].

(ii) Existing System:[1]
Blood Connect:
Blood cannot be produced in factories; it can only be obtained from generous donors[10]. To address this demand, the Blood Connect initiative was introduced on April 1st, 2010 (under NSS IIT Delhi). Its primary aim is to resolve the issue of blood shortage in India. As per data from the World Health Organization (WHO), India is currently facing a shortfall of 3 million blood units[1]. This scarcity can be easily mitigated if an additional 2% of the country's young population volunteers to donate blood[1].

E- Blood Bank:
This application facilitates the discovery of blood donors within your vicinity. Contact information such as phone numbers and email addresses is provided for reaching out to them. Additionally, the user's location can be viewed on a map[1]. If you register on the app, you will receive push notifications whenever there is a demand for blood that matches your blood group[1]. Furthermore, the app allows users to locate nearby hospitals and access their information.[1]

Name	Main Point	SUMMARY
The Optimization of Blood Donor Information and Management System by Technopedia.[1]	Developed a secure online system for real-time updates on donor information, with alerts for low blood group stocks. Integrated an efficient Android app for emergency donor location, enhancing adaptability in healthcare	Online system for real-time updates on donor info with robust security; integrated Android app for efficient emergency donor location in healthcare blood bank management.
A Survey Paper on E-Blood Bank and an Idea to use on Smartphones[8].	Current online blood banks lack direct communication; Tushar Pandit et al. propose E-Blood Bank, a mobile-centric solution for real-time data access, enhancing efficiency in urgent requests and potentially saving lives.	:E-Blood Bank,mobile-centric system, introduces direct communication between donors and blood banks, utilizing real-time data access to enhance efficiency in urgent requests and potentially save lives.

Blood Bank Management Information System in India.	Evaluating the Blood Banks, crucial for global lifesaving. The system enables nationwide donor record access and efficient city-specific blood searches, ensuring timely assistance.	Proposed: Enhancing the for Blood Banks to optimize global life saving efforts. The upgraded system will prioritize streamlined nationwide donor record access, improve efficiency in city-specific blood searches, and ensure timely assistance in critical situations.

III . PROPOSED SYSTEM

How to Join the BloodUnity Network

To become a part of the BloodUnity network, individuals must download the application and fill out a registration form[1]. The form will require basic personal information such as name, address, contact details, blood type, and emergency contact. After successfully registering, users will have access to a variety of features including searching for blood banks and camps, locating nearby places, requesting blood, and updating their profiles.[1]

User Options

Upon registration, users will be presented with several options on their screen:[1]

1. Blood Banks
2. Blood Camps
3. Donor Search
4. Blood Camp Organization
5. Nearby Place Search
6. Blood Requirement
7. Blood Request
8. Speed Dial
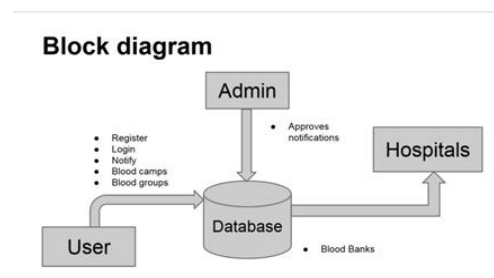9. Medical First Aid
10. Profile Update

Fig. 1.BloodUnity Block Diagram

IV . METHODOLOGIES

Android Studio:
Android Studio serves as the integrated development environment (IDE) for the development of Android applications[1]. It is constructed on the foundation of IntelliJ IDEA and is specifically tailored for Android development[1]. Android Studio is accessible for download on Windows, Mac OS X, and Linux, replacing Google's main IDE for the creation of native Android applications[1]. It encompasses a versatile Gradle-based build system, code templates that aid in the construction of common app features, a comprehensive layout editor with the ability to drag and drop themes, built-in support for Google Cloud Platform, facilitating the seamless integration of Google Cloud Messaging and App Engine, and an array of other robust functionalities[1].

Firebase services:
Authentication
The objective of this service is to expedite user registration and login procedures[7]. Firebase Authentication has the capability to utilize various platforms for authentication purposes, including Google, Twitter, Facebook, GitHub, and mobile phone numbers[5]

Fig 2. Components of Android Studio[5].

MySQL:
MySQL operates as an open-source relational database management system (RDBMS) centered upon Structured Query Language (SQL)[1]. Its design entails storing data within distinct tables, as opposed to a single large repository [1]
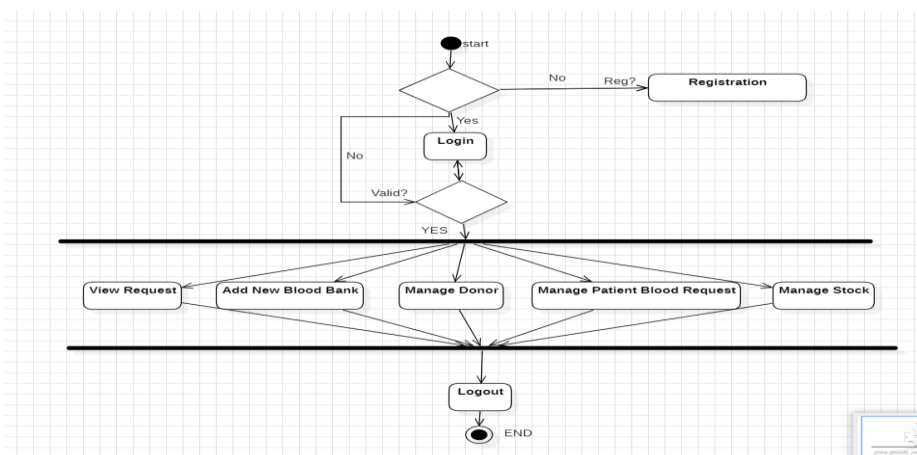
V . ACTIVITY DIAGRAM

Fig. 3.BloodUnity Activity Diagram

VI . IMPLEMENTATION

- Admin Panel view: After authentication, administrators have the authority to manage blood banks and camps, view user profiles, change their passwords, and accept or reject user requests[1].
- Login Panel: Administrators log in using their credentials to access the system[1].
- Adding Blood Bank: Authorized administrators can add new blood banks to the database, providing necessary details such as name, address, contact number, email, and available blood group[1].
- Update Blood Bank: Administrators can modify existing blood bank information whenever necessary.
- Change Password: Administrators have the option to change their passwords at any time.
- Send Notifications: Administrators can post notifications to communicate with registered users.
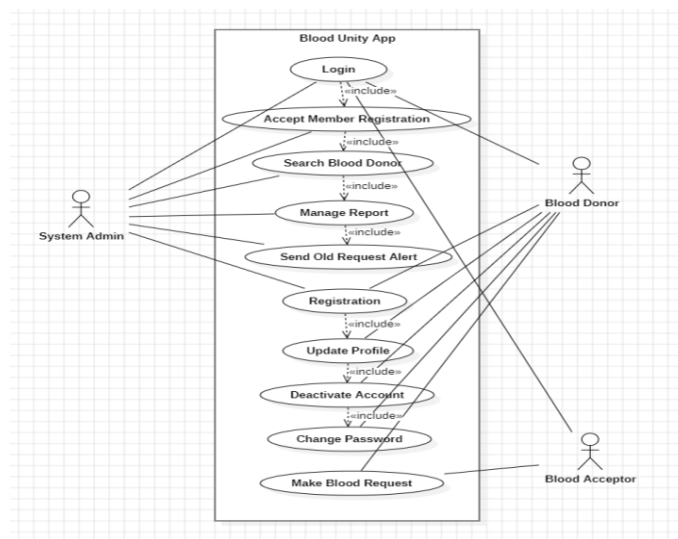
VII . USE CASE DIAGRAM

Fig. 4.BloodUnity Use Case Diagram

VIII . SYSTEM OVERVIEW

The Blood Unity App is a breakthrough system that has the potential to alter blood management and transfusion procedures. Donors may simply create profiles, schedule appointments, and receive real-time alerts about nearby blood drives thanks to an intuitive interface. The software uses geolocation technologies to assist donors in locating convenient blood donation sites, hence increasing accessibility. a recipient matching system facilitates quick answers to urgent needs by seamlessly connecting recipients with potential contributors. Furthermore, the software has robust inventory management, which reduces waste and ensures a steady supply of safe blood supplies.
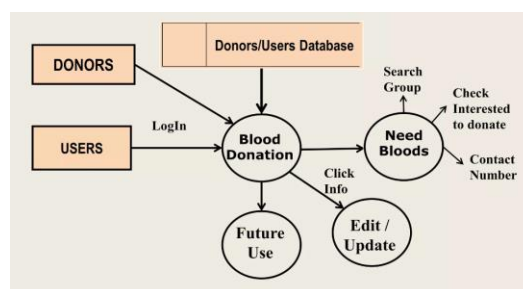

Fig. 5.System Overview of App[11]

IX . CONCLUSION

Blood donation is an important component of citizen civic duty, and our software allows people to contribute voluntarily. Our innovation is the creation of authorized user identities for both the center and contributors, resulting in a secure and confidential process. Authorized users can look for blood donors in specified areas and contact, alert, or call them as needed. Rigorous testing with a varied user population provides a consistent experience. The Blood Unity App removes barriers to blood donation while promoting community well-being. Its user-friendly design encourages widespread adoption, breaking the chain of commerce in blood donation and assisting those in need for free. This project not only improves current blood banks, but it also encourages the transfer to more user-friendly frameworks.

X .REFERENCES

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