

DROP OF HOPES

1st Riddhi Vijay Sanap 2nd Pranali Rajesh Chavan 3rd Pournima Madhukar Gaikwad

^{4th} Prof. Kadambari R. Metha

¹Student, ²Student, ³Student, ⁴professor

Department of Computer Engineering,

Gopinath Mahadev Vedak Institute of Technology, Raigad, India

Abstract -

This paper is focused on Blood bank and donor management system using modern engineering which is a modern React application named Drop Of Hopes. Drop Of Hopes is a web-based application which creates a link between donors and patients who needs blood. Drop Of Hopes is built on using modern java-script front-end framework React.js, with modern state management tools like Node (Express.js) for back-end with new-age database like MongoDB. Drop Of Hopes provides donors and the blood bank list according to the user required city. When a patient needs the blood of a particular type with an advanced searching it also checks for compatible blood type in hospitals and registered users too. The Drop of Hopes application offers a user-friendly platform that allows users to register easily using a sign-up form. Additionally, the application provides messages and SMS notifications through Google API or third-party applications to registered hospitals, donors, and users for easy communication Drop Of Hopes provides an easy registration process for hospitals, blood banks, users and donors with a self-created API.

Index Terms - Online blood donation, React.js, MERN Stack, Restful API, Node, Express.js, Web application, JavaScript, JSX.

I. INTRODUCTION

Blood donation is a crucial process that requires efficient management to reduce latency and ensure the availability of blood when needed. The Drop of Hopes application offers a user-friendly platform that allows users to register easily using a sign-up form. Additionally, the application provides messages and SMS notifications through Google API or third-party applications to registered hospitals, donors, and users for easy communication. To facilitate the search for blood donors and blood banks, the application provides a search option that enables users to find donors in the same city. Furthermore, the application displays relevant information on a page that includes donor and blood bank details, as well as blood information. The main objective of the application is to streamline the blood donation process by reducing the complexity of the management system. This, in turn, makes it easier for donors and hospitals to find each other and communicate efficiently, ensuring that blood is available when needed.

II. LITERATURE SURVEY

- [Paper 2016] The “Android Blood Bank” application allows donors to easily locate a blood bank using GPS. The application stores the details of blood donors, with private and confidential data only accessible by the administrator. The app is developed using PHP, MYSQL, and Android.
- [Paper 2014] In the past, managing blood donations for needy individuals was challenging due to inadequate management and technology. Additionally, people had limited awareness of such activities taking place. In rural areas, crises were becoming increasingly prevalent, and previous blood donation systems were not reactive or user-friendly, and proper records were not maintained.
- [Paper 2011] Priya proposed a method of creating a website and Android application to optimize the blood donor information and management system in “The Optimization of Blood Donor Information and Management System by ssssTechnopedia.” This system enables blood donors to be easily accessible when required.

III. METHODOLOGY

The idea behind implementing a blood bank management system is to overcome the disadvantages of the manual blood donation process. The Drop Of Hopes is an advanced, web-based application that aims to provide quick and easy blood donation services to the city. The system has been engineered to minimize latency and ensure the availability of blood whenever it is required. It accomplishes this through a streamlined registration process that is initiated via a simple sign-up form. Users can use Drop Of Hopes application powerful search options to find donors or blood banks in their city. As soon as possible, relevant information is displayed on a dedicated page that includes donor and blood bank details, as well as blood type information. By using the latest technology and advanced engineering techniques, Drop Of Hopes simplifies the blood donation process and reduces complexity within the management system. This process in turn makes it easier for donors, users and hospitals to find and communicate with each other, ensuring that blood is readily available in times of need.

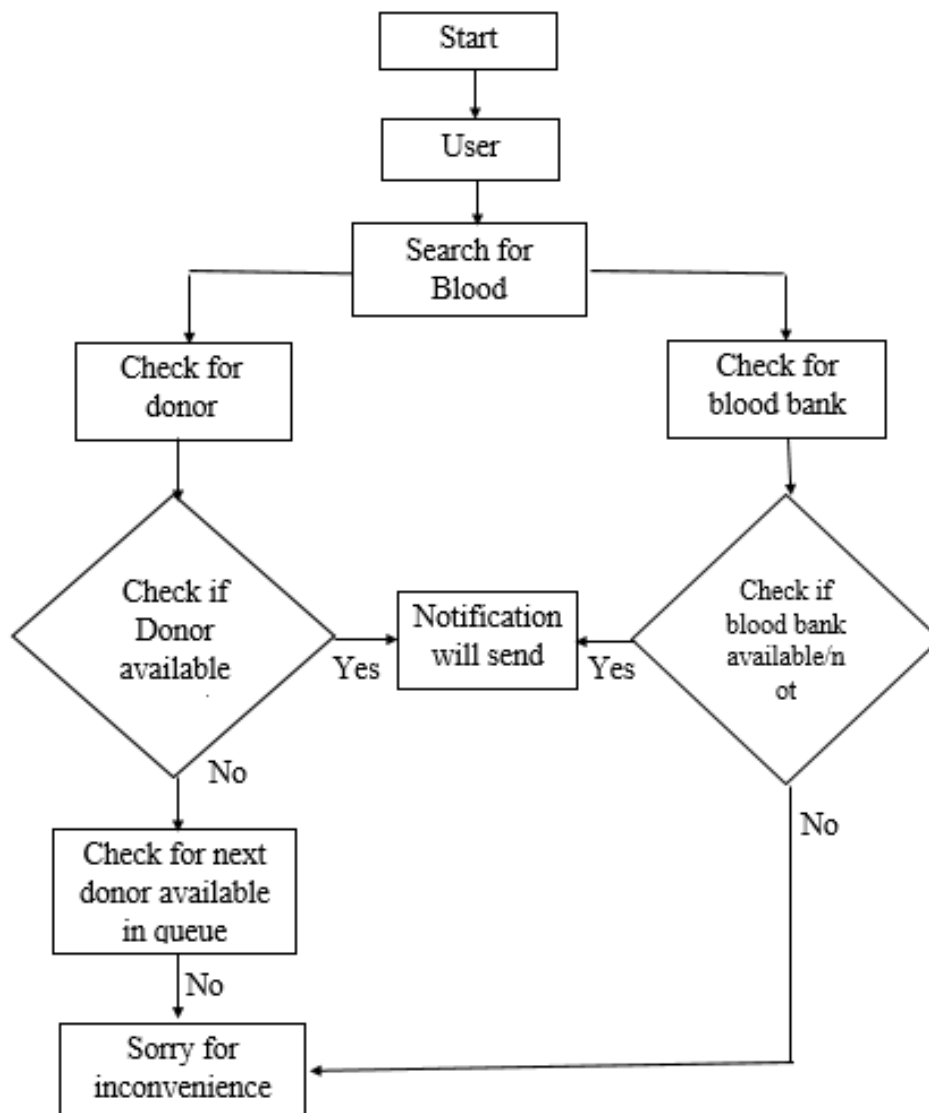


Fig.1 Workflow

System Modules:

System Module Admin module, Hospital, Donor, Blood bank, and User module respectively. The admin module has access to every movement of the application. The hospital, donor, blood bank and user can register to the application, after registration, they need to share their database with the application, and the admin will verify the data, and then its database will get integrated with our database which eventually reflects on the front-end. The donor can register himself on the application and donor can also search nearby another donor or blood bank to donate blood.

1. Donors:

Donor is a person who wants to donate blood. First-time users need to sign-up with an email address and password after sign-up. Admin will verify their details and add them to the database as donors with respective blood types. A regular user can directly login using register e-mail and password. A donor can also request a blood or search a blood in particular city as well as search for a blood bank. After login they can go to the blood fetch page created in the application where they need to provide the details of blood type and area after pressing the search button, they will get the list of donors with available compatible blood type. Then they can contact them to get the blood or the SMS will automatically send to that donor.

2. Hospitals:

Any hospitals can register with us by providing proper detail and after verification, they get registered. In an emergency, they can contact other blood banks/donors for blood. After login they can go to the blood fetch page created in the application where they need to provide the details of blood type and area after pressing the search button, they will get the list of donors with available compatible blood type. Then they can contact them to get the blood or the SMS will automatically send to that donor.

3. Blood Bank:

Any blood Bank can register with us by providing proper details and after verification, they get registered.

4. Users:

The person who needs blood in an emergency. Users also have login/sign-up they have to follow the same step as the users (Donor) did. After login they can go to the blood fetch page created in the application where they need to provide the details of blood type and area after pressing the search button, they will get the list of donors with available compatible blood type. Then they can contact them to get the blood or the SMS will automatically send to that donor.

All these different modules are connected together as React components. API requests are handled by the Express server created using Node JS. Database connectivity is created with MongoDB using Express and all of the NoSQL queries are executed and sent back to the client in JSON format which is rendered smoothly by React. It's also used for searching algorithms handling the compatible blood type HTTP request query and hospitals or blood camps in user state. Express is also used for session management and cookies. All of the data is being stored in the database using Axios and fetch HTTP requests. MongoDB is used as the database for Drop Of Hopes for the following reasons as its flexible, dynamic, and easy to user-friendly work environment for development. MongoDB Atlas is used to deploy and scale the database in the cloud. It's free (community server only) having Multi-cloud data distribution (75+ cloud regions), secure for sensitive data, and is designed for developer productivity and optimal performance The database is divided into 4 collections hospitals, blood banks, users, donors. Each collection has its data, function, and usage according to need. Hospital collection is used to provide the list of registered hospitals with their details and available types of blood to the recipient of blood searching on the app. NoSQL JSON format is primarily used for storing and transporting data between the app and the MongoDB while Express provides the platform for the same

IV. CONCLUSION

In conclusion, Drop Of Hopes is a well-designed and much-needed solution that addresses the pressing issue of blood supply shortage during emergencies. By bridging the gap between potential blood donors and patients, this system significantly enhances the healthcare sector and streamlines the process of transfusing blood. By offering a reliable platform that efficiently connects hospitals, donors and patients, Drop Of Hopes makes it easier to locate blood banks and donors in the nearest location, and thus guarantees a timely transfusion. Promoting an efficient and effective method of blood donation, Drop Of Hopes provides a simple yet powerful tool that aims to save lives during crucial times

V. REFERENCES

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