IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 11, November 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.625

© 2024 IJIRCCE | Volume 12, Issue 11, November 2024| DOI: 10.15680/IJIRCCE.2024.1211069

www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Haemo-Hub: The Inter-Institutional Student Blood Donation Platform

Mrs.Y.Ashwini[1], A.V.S Subodh[2], D.Saketh Maharaj Goud[3], G.Vennela Shree[4]

Department of Computer Science and Engineering, Anurag University, Hyderabad, Telangana, India[1,2,3]

ABSTRACT: In this day and age, blood donations are a common occurrence, with millions taking the charge to provide blood to an extreme amount, even more so in India. Over 12000 people die everyday due to a tardy or no blood donation. It is appalling when seen at a monthly or a yearly rate. There are several websites that facilitate contact for blood donation but do not take one of the most valuable sanguinary assets India has , students. The aim of the website we are making using FullStack Web development. is to connect a large number of students across various schools and institutions to furnish patients with the blood that befits their transfusion parameters. This reduces the overall period of time it takes to donate and is a great help in matters of urgency , during cases of copious blood loss and severe haematological deficiencies.

KEYWORDS: Fullstack Web development, sanguinary assets, transfusion parameters, copious blood loss haematological deficiencies

I. INTRODUCTION

It is a website that provides access and information to patients and people that have a requirement for blood by connecting various institutions and schools to provide a list of potential donors as well as a list of the people who need blood donations through alerts, notifications and uploads of requests and approvals. It possesses separate logins and registrations for the staff of a hospital and other authorised employees and a dedicated donation base of students, which asks of them to input their contact details in an orderly manner , along with the name of the institution they are pursuing their education in. This in turn, provides a large base of operation and ease and swiftness of access to those that are in dire need of large portions of blood by supplying it from a large student population , thus maintaining a stable provision of blood for blood transfusion, donation camps and more. We have looked into multiple sites for hospitals as well as independent blood donation websites and we have notice a key point that there is no definitive assortment of donors that can be inputted from a large institution instead of individual donation and that they maintain their databases in a tedious atmosphere which takes far longer to change and maintain. There are already a large amount of blood donation platforms that exist and they offer a sense of ease for donors, but they do not connect a hospital and a donor in a way that caters specifically to blood donation , it only exists as a sub-category and is often set aside by others as just another title on a large website and even when a website meant solely for blood donation comes into play, it doesn't usually notify them of events and sudden occurrences, though still providing a beneficial solution .We wish to improvise upon this situation by providing a connection between the students , the patients as well as the hospital so the validity of the donation is made clear to medical professionals with a more flexible database for an extensive amount of data and a visually pleasing interface that is operable to the highest degree by people with a varying scale of proficiency in utilisation. . Our objectives include providing a clear comprehension of the details of the subject's blood to the evaluator and making clear the subject's most common circulatory irregularities and problems to determine if he needs to seek professional help and providing contact between a patient that needs blood and a donor willing to provide the exact blood needed in the most optimal time period possible with ease of access to the needy and the ailing through a large base of visitors, both receiving and donating, via direct use as well as application from the hospital's side of operations.

www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

II. RESEARCH METHODOLOGY

This project focuses on why a blood donation website that connects three main people, the administrator, the hospital and the donor is important and also what it aims to state. Unto these purposes , we have taken the emails of multiple people numbering a total of seven, all of these emails were made to check the security and the validity of the site, which has led to a mixed methodology of information collection, As the participants entered their information into the registration interface , their data was saved in our NoSQl database(MongoDb) with clear distinction between each type of access for the various categories of the visitors of the websites instead of inputting it into a singular table, which would make extraction and recovery tedious[3].Once this data was saved, the various other operations will be available for proceeding. There are multiple methods that are published to house blood donation management systems, but none of them align towards a blood donation platform that connects a large donor base that is easier to approach and retrieve from and a large base that orchestrates a multitude of donations. This in turn increases the chances of survival by a large margin of a hospital's patients . As we have taken the method of using full stack development to make this website using an MERN stack(MongoDb, Express, React and Node) with a large application of all of the various elements through out the website for all of their specific purposes including , database storage, routing , placing markers of information and data, data access and permits. We've taken the information from each of the holders of these e-mails with varying blood groups to whom requests of donation were made.

III. THEORY

In theory, the website will be activated once the user enters it into the url post, from which the user can take to the registration page to register himself , either as a donor or a hospital employee or so , both of these cases will be monitored by an administrator. Once the vital information is interred into the registration portal and a successful registration is accomplished, the information is stored inside of a user's database in the MongoDb collection .On the main site , the user is transferred to the homepage and his menu board will depend on the bracket of the users they fall into, donors or the authorised hospital staff. The donors will be able to access their dashboards and accept requests of donation on it , whereas , the hospital staff will be able to issue requests unto the user base based on the requirements and will be able to look at the approval and rejection of the requests they have made for their patients, all of these activities are monitored by the administrator and regulated with thorough inspection to avoid any discrepancies. We use routing to guide users around the website and the various operations they will undertake as they partake in exploring it and we use the ideal amount of cascading style sheet elements and java script elements to keep the website ideally presentable and functional to an efficient degree.

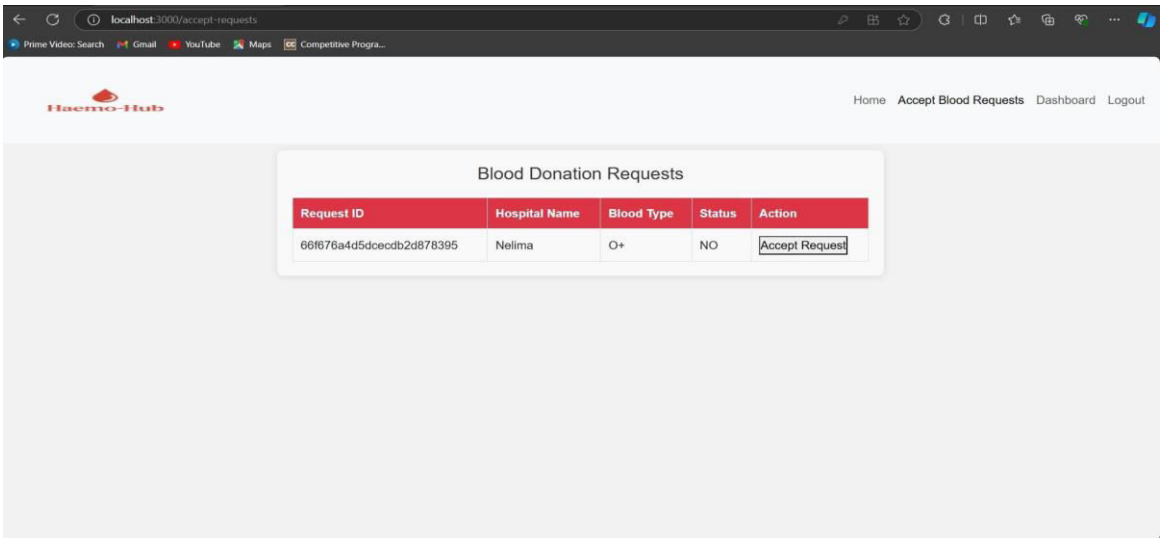
IV. RESULTS AND DISCUSSION

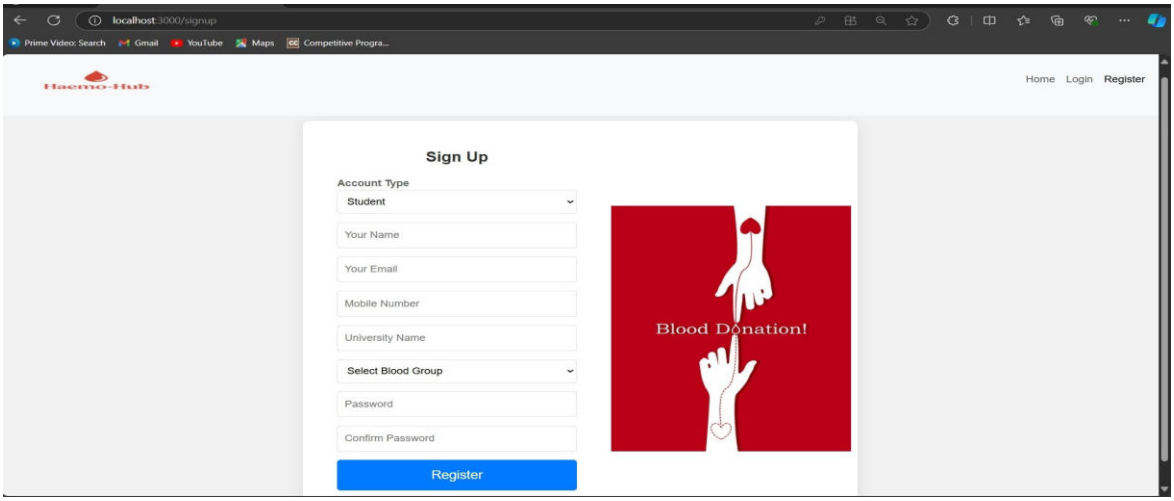
The culmination of all of the various workings of the the MERN stack leads to the output of the below pages. The blood requests have a novel way of being sent as Email response requests which are then accepted or rejected by a potential donor, this information is then preserved in the hospital request repository for reference and record. The usage of the technology is completely novel as it takes from a large donor base that is rarely explored, has an Email response system and connects large institutions such as hospitals along with the essentials of identifying signed up users , classifying blood types and segregating tasks as per the requirements of each clade of user. How these are deployed and how their activity is observed and operable is recorded in the next section

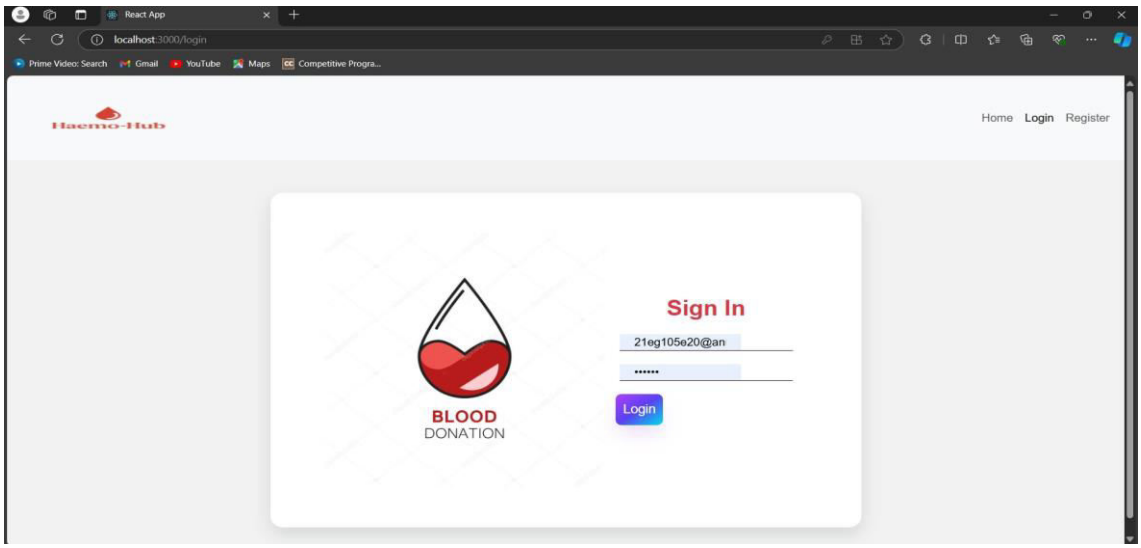
www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)





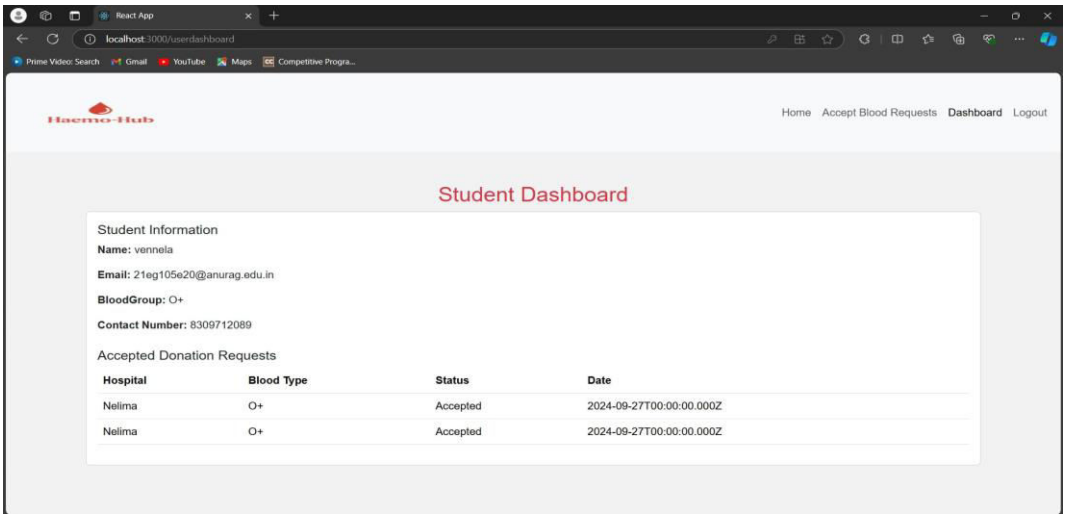


© 2024 IJIRCCE | Volume 12, Issue 11, November 2024| DOI: 10.15680/IJIRCCE.2024.1211069

www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



4.1 Preparation of Figures

The figures below represent the operation and the embedding of the various components of the working system of the blood donation platform.

4.1.1 Formatting Figures

Deployment Diagram: The deployment diagram is used to show the arrangement of the physical arrangement of the software and the hardware used in the project that are deployed.It demonstrates how components are distributed across different nodes and how they interact through potential communication paths . In the diagram below we can see that the client device is used to access the web browser which is used to open the website to check for any pending blood donation requests.The hospital system has an Application Program Interface that they use to send and receive blood requests through a notification system containing an Email server, both of these being connected to a web server's backend application which stores all of the necessary data in the database repository for access and recall.

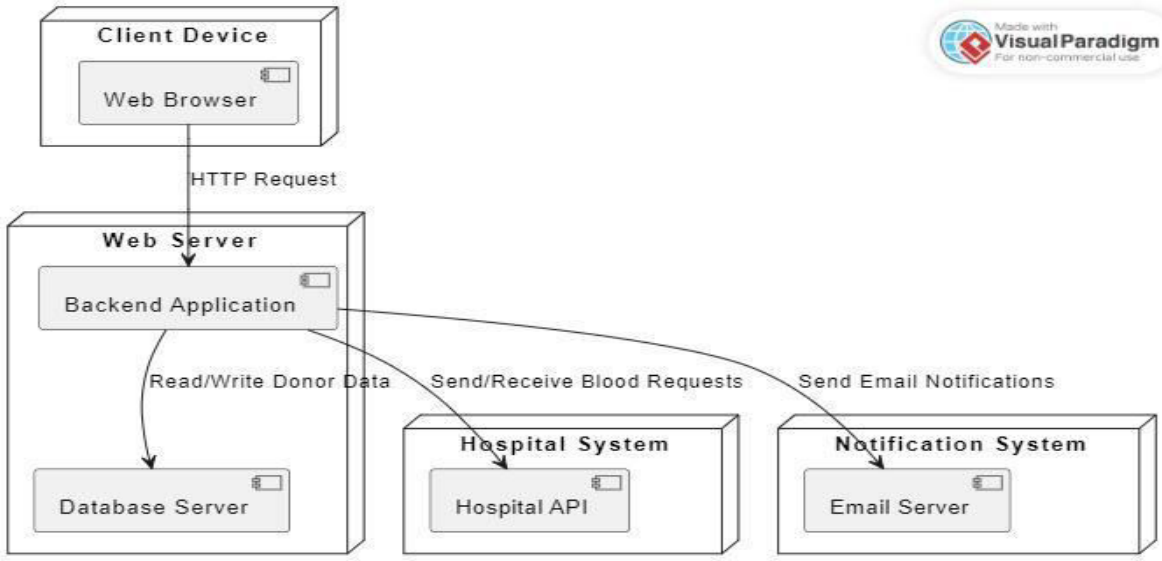


Figure 1: Deployment Diagram of Haemo Hub

www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Component Diagram: This diagram depicts the organisation and the relationships of the components through dependencies and interfaces. For Haemo- hub , the front end consists of four main components connected to five backend components that are responsible for providing operative measures and capacity to the front end, with assistance from the external system's gateways and portals. The donor registration is linked to the user management files made in Javascript and the user database in MongoDb.the donor dashboard is connected to both donation management and the blood request management as the donor is supposed to accept or reject the blood donation request provided by the hospital.The Hospital portal is also connected to the blood request management as they are the ones who issue the requests , the admin dashboard has operative sovereignty of both the verification system as well as the notification system connected to the notification gateway, allowing for a seamless sharing of the required details with precision.

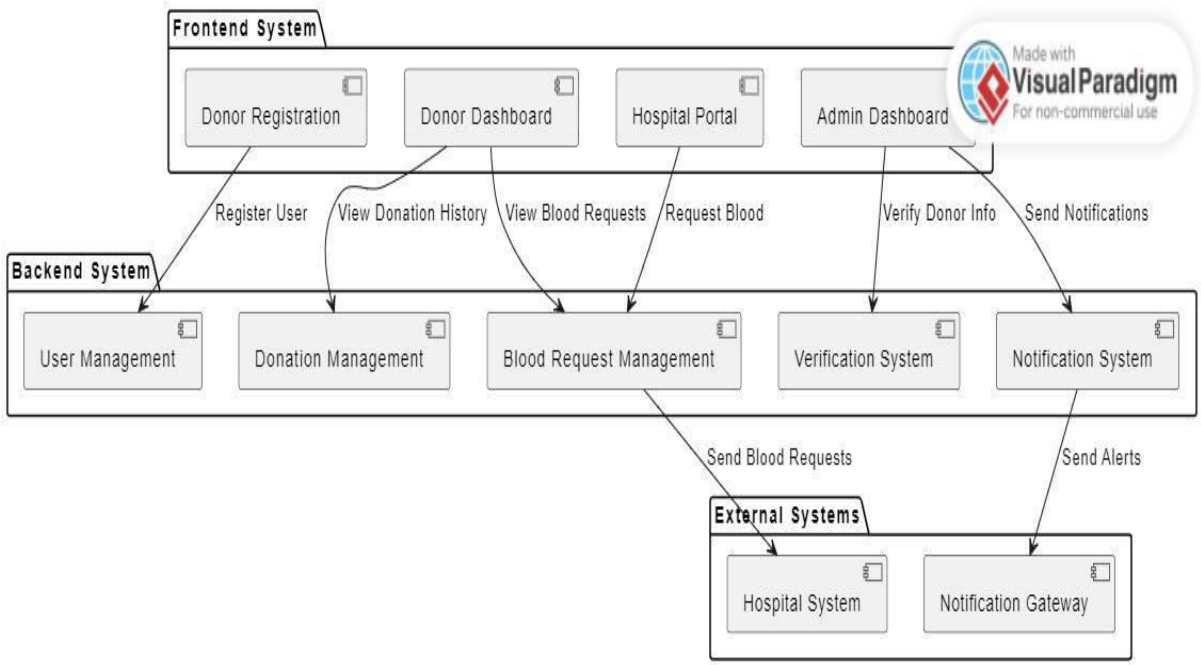


Figure 2: Component diagram of Haemo Hub

Activity Diagram: It models the workflow of the system or the process while highlighting the sequences of decisions and activities, The diagram helps in visualising a step by step process of the basic working system that the platform follows. In this case, the donor begins registration while being verified by the administrator and upon acceptance is given clearance for donation and is run through the hospital's patient records to see if the donor has a matching blood type to the various patients of the hospital, once a patient is confirmed and ready to accept the transfusion along with the donor's acceptance, the process is continued and the donor can now approach the hospital for donation and the procedures that follow after.

© 2024 IJIRCCE | Volume 12, Issue 11, November 2024| DOI: 10.15680/IJIRCCE.2024.1211069

www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

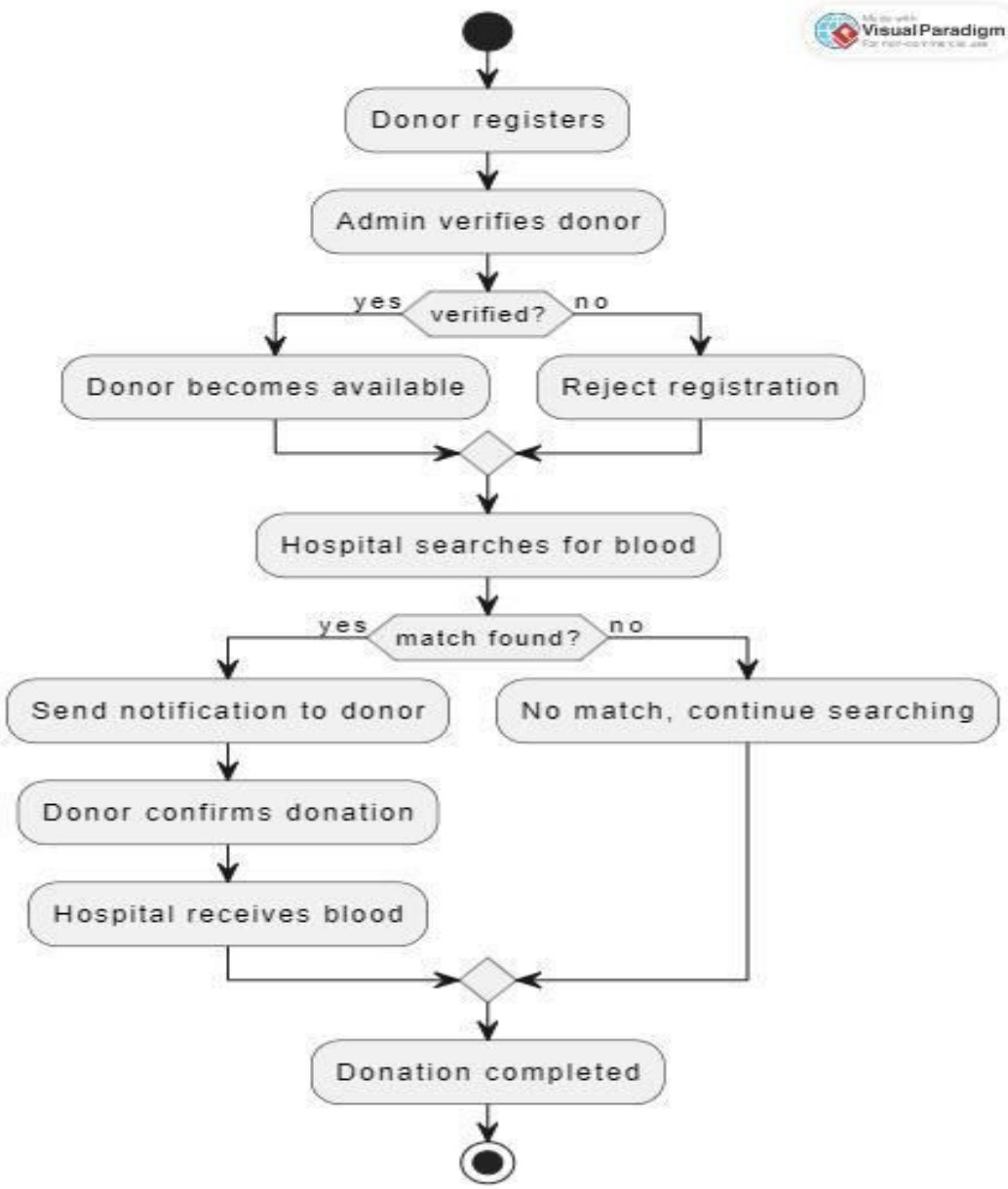


Figure 3: Activity diagram of Haemo Hub

V. CONCLUSIONS

The platform aims to bridge the gap between a large donor population and a large patient population and manages to do so as it is a model that is both innovatively recent in nature and incorporates elements of the past to heighten it's operative scale. The importance of this is, instead of waiting for a donor , or waiting to be approved for a blood transfusion, the hospitals will instantly provide a request to which a donor can reply to post haste, thus saving time, money and lives by an order of magnitude, which is more viable than taking individual donations from one off donors, who may or may not visit the hospital again. It is highly relevant in the current time period as patients still suffer from a lack of blood donated to them, or a lack of the duration in which the blood is to be donated, but with Haemo- hub, a lot of lives can stay at ease. The limitations are far and few, one of them being that, the notification period still takes an

www.ijircce.com | e-ISSN: 2320-9801, p-ISSN: 2320-9798| Impact Factor: 8.625| ESTD Year: 2013|

International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

ample amount of time, even when an Email is sent to the potential donors along with a notification in the dashboard of the donor present in the site and that there must be a stable internet connection to access the site. All in all, Haemo hub has many applications towards medical assistance that provide an outlook into how technology , as it advances, can change lives and save them, future upscaling will become valid for the model as well as using relevant software technologies corresponding to that time period , an offline notification system that alerts its users more thoroughly is also a potential addition. But even without all of this, Haemo hub proves itself to be a sophisticated medical assistance platform that plays a key role in providing circulatory donations and respite in plenty and will continue to do so.

VI. DECLARATIONS

6.1 Study Limitations
None
6.2 Funding source
None.
6.3 Competing Interests
The authors, hereby declare that there are no or competing interests.

VII. HUMAN AND ANIMAL RELATED STUDY

The study involves no collection of physical data acquired from humans or animals that are put through rigorous testing nor do they have to give a sample of their fluids or any other bodily secretions or excreta.
7.1 Informed Consent
All of the e-mails made were done with consent as test e-mails provided by the authors themselves.

REFERENCES

1. Tahiru Abdul Gafaaru,David Sanka Laar, “Design and implementation of an online blood donation system ,” *Asian Journal of Research in Computer Science*, vol. 17, no. 4, pp. 44-61, Abbrev. February, 2024. , https 10.9734/ajrcos/2024/v17i4429
2. Kamal Aacharya, “Online Blood Donation Management System”, *ResearchGate.*, vol. 1, no. 1, pp. 1.1-1.2, July 2023,.10.13140/RG.2.2.29877.49127
3. Zoha Attar,Dariyan Naagar, “Blood Flow:Blood Bank Management System”, *International Journal of Scientific Research and Engineering Trends*, vol. 10, no. 2, pp. 1-2 , Apr 2024 . https://ijsret.com/wp-content/uploads/2024/03/IJSRET_V10_issue2_272.pdf

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INNO SPACE SJIF Scientific Journal Impact Factor

doi crossref

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details