PLASMA DONOR APPLICATION

HX8001

Professional Readiness for Innovation, Employability and Entrepreneurship

PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

RAJALAKSHMI INSTITUTE OF TECHNOLOGY

ANNA UNIVERSITY: CHENNAI 600 025

NOVEMBER 2022
ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "**PLASMA** DONOR APPLICATION "is the bonafide work of "**AMRITA VARSHENI(211719104013), ANANTHARAMARA(211719104014),ARAVINDHR(211719104019),DEE PAK M (211719104031) HARSHINI S(211719104043)**", who carried out the project work under my supervision.

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INTERNAL EXAMINER   **EXTERNAL EXAMINER**

TABLE OF CONTENT

1. INDRODUCTION

1.1 PROJECT OVERVIEW

The overview of the project is to create awareness of plasma donation to the people and to reduce the problems in plasma donation. Nowadays, many peoples are facing plasma requirement issues in many situations. Blood plasma donations are used for slightly more specific purposes than general blood donation. The most common uses of plasma donations include individuals who have experienced severe trauma, burn, or shock, adults or children with cancer, and people with liver or clotting factor disorders.

Such Donations are usually done in blood banks. But the recent trend shows a hike in the black markets of plasma. The sale or Purchase of plasma is prohibited by law, and such trade can lead to imprisonment of two to seven years and a fine of Rupees 10,000 to Rupees 20,000.

Whenever an individual has a cut or injury, these clotting factors ensure that they do not lose too much blood. Plasma donations ensure that these individuals can receive a plasma transfusion to supplement their body's clotting ability and stop excessive bleeding from occurring. Your donation helps patients who need plasma-derived biotherapies to improve or save their lives. Those in need are suffering from life-threatening conditions such as hemophilia, immune deficiencies, and other blood disorders. Plasma is the essential ingredient in many medications and treatments.

1.2   PURPOSE

The objective of collecting plasma through voluntary blood donation is provide safe and quality plasma and blood components collected from voluntary donors, round the clock, at affordable cost to the general public and free of cost to the poor. But, many peoples facing many issues in plasma donation and getting issue in plasma receiving in the emergency situations.

When someone is cut or has an accident, these clotting components ensure that they do not lose too much blood. These individuals can receive a plasma transfusion to improve their body's innate ability to clot and stop excessive bleeding thanks to plasma donations. Patients whose lives can be enhanced or saved by plasma-derived biotherapies benefit from your generosity. Those in need are affected by life-threatening diseases including hemophilia, immune system deficiencies, and other blood abnormalities. Plasma is an essential ingredient in many medications and therapies.

In many cases nowadays, people are having trouble getting the plasma they need. Donations of plasma are put to significantly more specialized uses than ordinary blood donations. People with liver or clotting factor abnormalities, adults or children with cancer, and those who have suffered from severe trauma, burns, or shock are among the groups who most frequently benefit from plasma donations.

2. LITERATURE SURVEY

2.1 EXISTING PROBLEM

Plasma Donation is much more important than ever as medical conditions are going beyond man's control. In the world of medication, the natural immune system plays a significant role and we attain that through plasma. Even if our plasma becomes weak due to external organisms, we can improve our health by taking up plasma from donors.

During plasma donation, the liquid component of the donor's blood is separated from the cells. Plasma is collected by passing the blood through a sophisticated machine after it is sucked from one arm. The donor is then returned to some saline solution along with the donor's red blood cells and platelets. Plasma is the straw-coloured, clear liquid component of blood that remains after the removal of white blood cells, red blood cells, platelets, and other biological components.

The most common recipients of plasma donations are patients with liver or clotting factor abnormalities, and individuals who have suffered a burn. A severe accident or shock and adults or children with cancer. The plasma can be stored for up to one year in a frozen state and is used in today's world for saving numerous lives. Nowadays people face the below-mentioned problems,

- The peoples don't aware of plasma donation
- Invalid or unedited user data
- The voluntary donor doesn't get information about the plasma requirement
- The plasma availability in the blood banks
- Confirmation of the donor
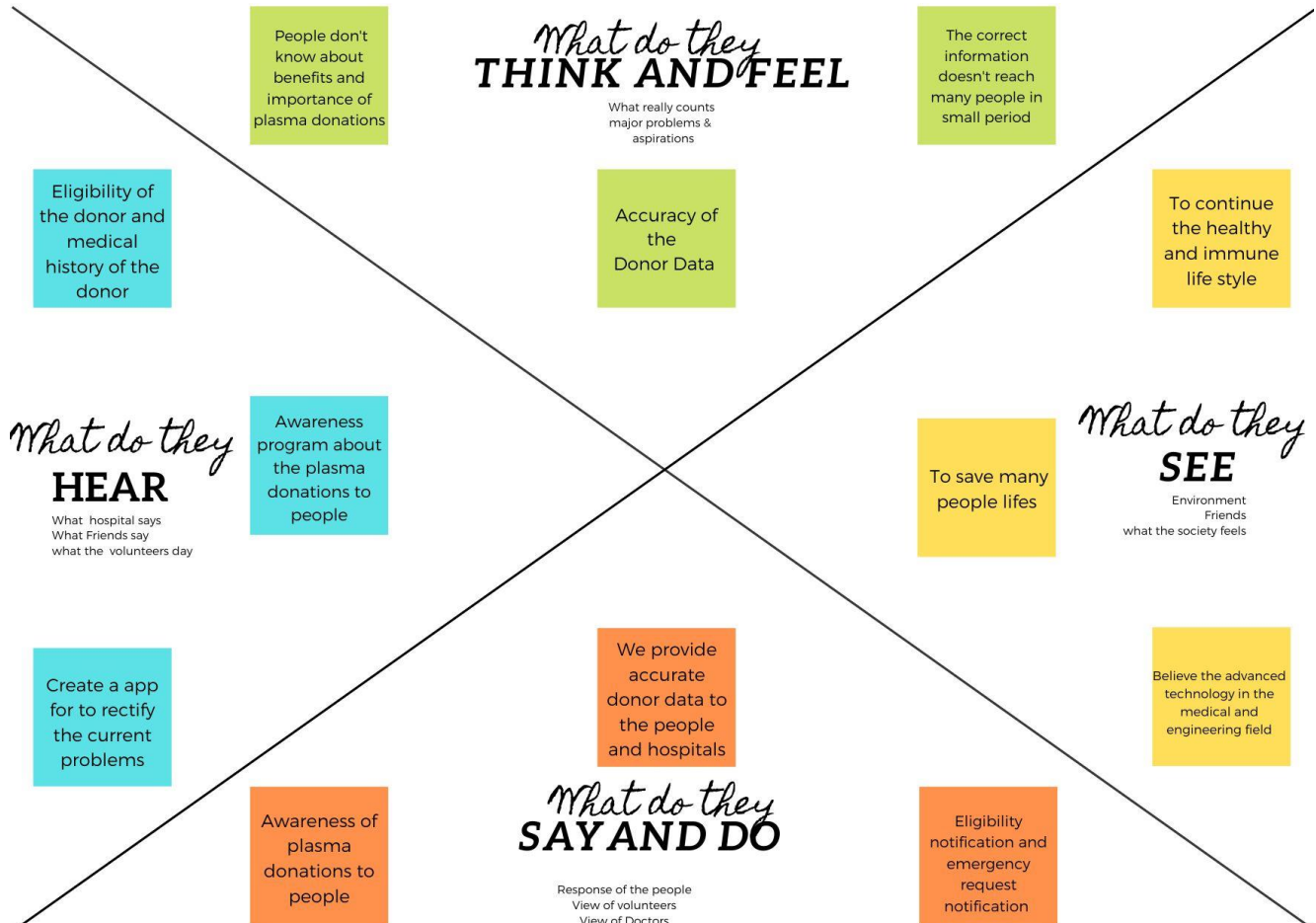- Verification of the plasma request

2.2 REFERENCES

1. Philip J, Sarkar RS, Pathak A. Adverse events associated with apheresis procedures: Incidence and relative frequency. Asian J Transfus Sci. 2013 Jan;7(1):37-41. doi: 10.4103/0973-6247.106730. PMID: 23559763; PMCID: PMC3613659.

2. Flask Web Development by Miguel Grinberg Copyright © 2014 Miguel Grinberg. All rights reserved. Printed in the United States of America. Published by O'Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, CA 95472.

3. Version v1.2.0 (fba92ef) of The Docker Book by James Turnbul © Copyright 2014 - James Turnbull.

4. An Introduction to Kubernetes by LEVEREGE, First Edition © Leverege LLC.

5. White Paper by IDC Sponsored by: IBM Andrew Smith, February 2021.

6. Essentials of Application Development on IBM Cloud December 2017 Third Edition (December 2017) by Ahmed Azraq Hala A. Aziz Uzma Siddiqui.

7. From Ahmedabad, Smriti Thakkar is the first recovered Covid-19 patient in India who volunteered to donate her plasma. India Today Web Desk New Delhi, April 25, 2020 UPDATED: April 25, 2020 19:15 IST

8. Tablighi Jamaat gives blood for plasma therapy By Zubair Ahmed BBC Hindi, Delhi Published 28 April 2020.

2.3 PROBLEM STATEMENT DEFINITION

This system aims at connecting the donors & the patients through an online application. By using this application, the users can either raise a request for plasma donation or a requirement. Similar to blood donors there also exist plasma donors who exists problems in case of emergency needs the most important lives saver necessity is plasma, Plasma Banks are the main providers of plasma receive blood from various donors, monitor the plasma groups database of emergencies make them available to the hospital whenever needed. The major problem faced by the main plasma providers and the need is the availability of donors at right time. We hereby took a step forward to build a system to create a network of people who can help each other in need. We propose an application where the plasma banks can timely update the plasma Stock availability and donor and register themselves as a donor so users can find plasma availability nearby him/her. The urgent time of a plasma requirement, the user can quickly check for plasma banks, hospitals, or donors as per requirement matching a particular or related and reach out to them through the App.

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

People don't know about benefits and importance of plasma donations

What do they
THINK AND FEEL
What really counts
major problems &
aspirations

The correct information doesn't reach many people in small period

Eligibility of the donor and medical history of the donor

Accuracy of the Donor Data

To continue the healthy and immune life style

What do they
HEAR
What hospital says
What Friends say
what the volunteers day

Awareness program about the plasma donations to people

To save many people lifes

What do they
SEE
Environment
Friends
what the society feels

Create a app for to rectify the current problems

We provide accurate donor data to the people and hospitals

Believe the advanced technology in the medical and engineering field

Awareness of plasma donations to people

What do they
SAY AND DO
Response of the people
View of volunteers
View of Doctors

Eligibility notification and emergency request notification

3.2 IDEATION & BRAINSTORMING

GROUP IDEA

ABSTRACT

The necessity of blood has become a significant concern in the present context all over the world. Due to a shortage of blood, people couldn't save themselves or their friends and family members. A bag of blood can save a precious life. Statistics show that a tremendous amount of blood is needed yearly because of major operations, road accidents, blood disorders, including Anemia, Hemophilia, and acute viral infections like Dengue, etc.For them, plasma is needed to recover their illness. Our Purpose is to build a platform with with IBM Cloud which will jointly help to provide the quickest solution to find blood or plasma donor. Closest blood or plasma donors of the same group in a particular area can be explored within less time and more efficiently.

Providing the eligible donor list to patient's relatives to find the donor and providing the plasma availability from nearest plasma savings plant to hospitals helps to get plasma earlier

Accurate and exact location of the plasma donor or details of the nearest plasma donor is very much important in the emergency situations

Emergency notifications or alert messages helps to find the donors immediately, because it helps to find volunteers to donate the plasma and encourage his/her friends to donate plasma

Eligibility of the donor is based on some factors. So to check if donor is eligible to donate the plasma it is very important to check the criteria based on the vaccination, age, height, weight and etc...

The verification of the patient's detail helps the donors satisfy and explains how it helps the patient recover via the plasma donations.

Harshini S

- Providing the accurate and updated user data with contact details helps to find the plasma donor easily.
- The Plasma Availability of nearest plasma saving plant also important to save the life.

Aravindh R

- The accurate location of the plasma donor helps to create the plan to save the life .
- The emergency notifications to request of the plasma donor helps to get donors in easy way.

Amrita varsheni A

- The correct updated list of donors helps to find plasma donor easily.
- The availability of the donor list is mainly accessed by the hospital as it helps in case of emergency.

Deepak M

- After some vaccination the donors are not eligible to donate plasma, so there is an important check for eligibility.
- Not only request of plasma donations is notified, also the eligibility notification is send to self confirm the eligibility.

Anantharamar A

- The easy understandable application is helping to save life most of the time.
- Verification of the patient details is also important . Because, sometimes rumours make donors irritated.

3.3 PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	People who are in need of plasma are increasing day by day. Plasma is necessary to help our body to recover from injury, prevent infection, distribute nutrients and remove waste, while moving throughout our circular system. It is not that people don't want to donate blood, but they have no idea where to donate. We are designing a platform that contains all the information regarding Plasma donation.
2.	Idea / Solution description	Our application aims to serve a communication tool between plasma donors and organizers. To become a member of our system, donors need to create their profile by providing information such as name, email, password, phone number, blood group and exact location from "Google Map" which are integrated with our application. This application always keep updating the current location of the donor.
3.	Novelty / Uniqueness	This application automatically shows only eligible plasma donors (age criteria and previously donated donors) who are nearby. Also does request verification of the user.
4.	Social Impact / Customer Satisfaction	This Application will make a revolutionary changes to the medical system as people will be able to donate plasma and serve the mankind. It can also help the people to know about the benefits of plasma donation, so that their small contribution can help one person to save his/her life.
5.	Business Model (Revenue Model)	There are many private sectors and NGO's, who organize plasma donation camps. Even collaboration with companies like Biolife, and other pharmaceutical companies use plasma to make treatment for conditions such as immune deficiencies and bleeding disorder in order to increase revenue.
6.	Scalability of the Solution	This application has the ability to handle more donors and provide users with good user experience. It handles the traffic, responding accurately and reacting to the growing number of request.

3.4 PROPOSED SOLUTION FIT

DEFINE CS,FIT INTO CC

Customer segment:

Who is our user?

The adults between age limit 18 to 57 and Medical ERP

Customer Constraints:

What constraints prevent your user from taking action of their choices?

Alocholic,HIV,Cancer patients and Some vaccination, recently donated peoples not allowed

Available Solution:

What are available solution in current scenario?

Websites and mobile application

EXPLORE AS DIFFERENTIATE,

FOCUS ON J&P,TAP INTO BE,UNDEERSTAND RE

Jobs to be Done:

Which job is be done do you address your users application?

Donor data,accurate location and Plasma availabilty,verfication

Problem Root Cause:

What is real reason of problem?

No Awareness about the plasma donation and inaccurate data

Behaviour:

What does the user do to address problem and get the job done?

Users asks to relatives and friends circle in emergency

FOCUS ON J&P,TAP INTO BE ,UNDEERSTAND RE

IDENTIFY STRONG TR & EM

Triggers:

What triggers to the user?

The emotions trigger the user in emergency

Emotion Before/After:

How the user feel?

helpless,depression> try to involve in plasma donation

Your Solution:

What is your solution to solve these problems?

Emergency plasma request message ,Donor accurate data with location, verfication of request and Plasma availability

Channels of Behaviour:

What kid of actions to customers take in online /offline?

Offline:

The users can check the eligiblity to donate

Online:

access all benefits

IDENTIFY STRONG TR & EM

4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

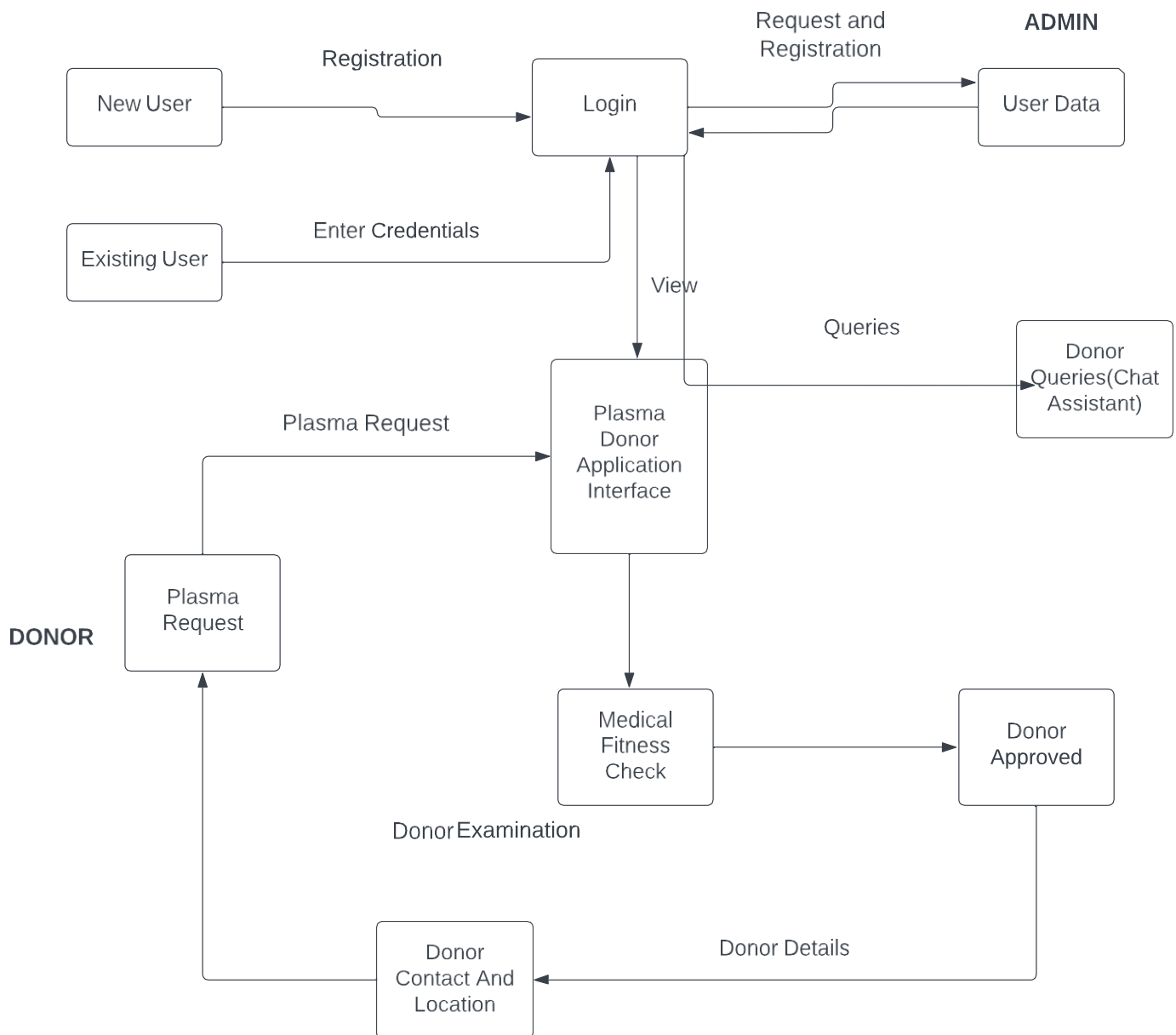| S.NO	COMPONENTS	DESCRIPTION	TECHNOLOGIES
1.	USER INTERFACE	How user interacts with the application	HTML,CSS,JavaScript,Angular Js, React JS etc
2.	APPLICATION LOGIC - I	Logic for a process in the application	JAVA /PYTHON
3.	APPLICATION LOGIC - II	Logic for a process in the application	IBM Watson STT service
4.	DATABASE	Data type ,Configuration etc..	IBM Watson Assistant
5.	CLOUD DATABASE	Database services on Cloud	IBM DB2, IBM Cloudant
6.	FILE STORAGE	File storage requirments	IBM Block storage or Local Storage
7.	EXTERNAL API -1	Purpose of the External API used in the application	IBM Location API or GOOGLE Map API
8.	EXTERNAL API -2	Purpose of the External API used in the application	Aadhar API,etc
9.	INFRASTRUCTURE	Application of deployment on local system /Cloud • Local Server Configuration • Cloud server configuration	Local,Cloud Fountry,Kubernets etc...

FUNCTIONAL REQUIREMENTS

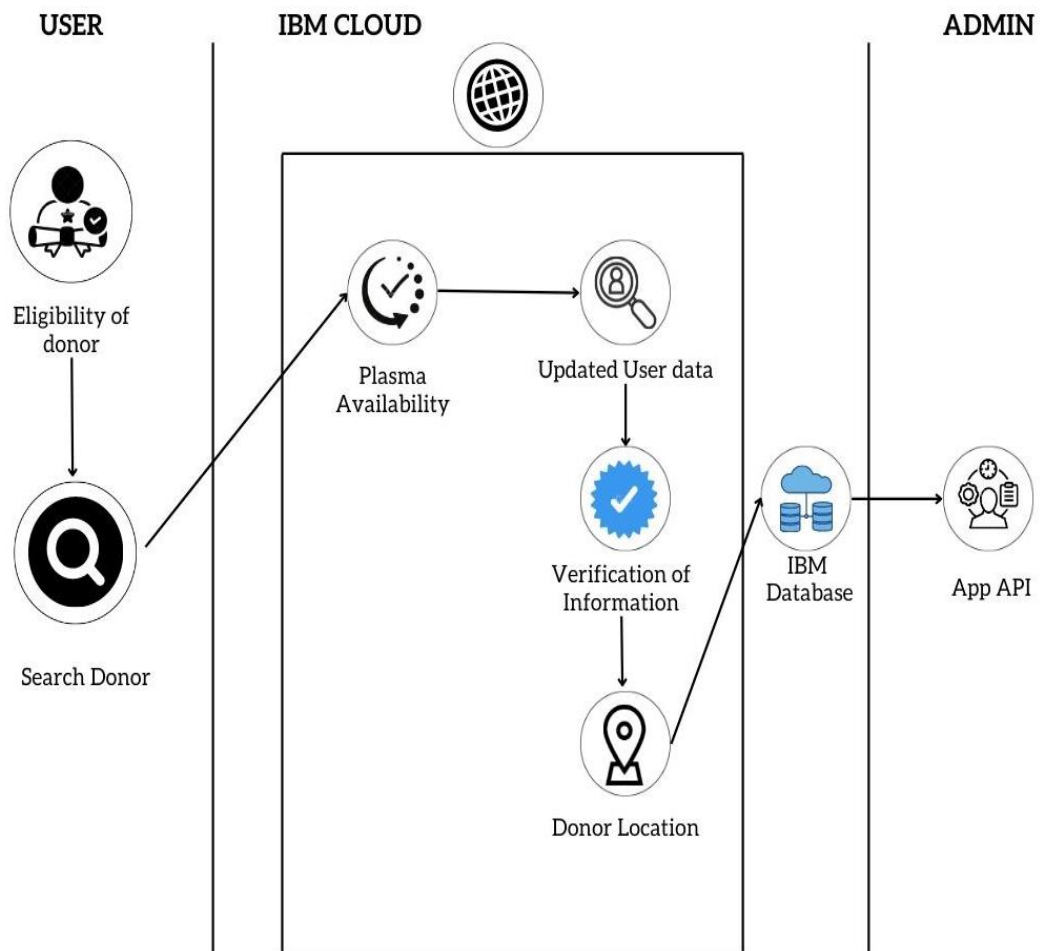| S.NO	COMPONENTS	DESCRIPTION	TECHNOLOGIES
1.	OPEN SOURCE FRAMEWORKS	List of open source framework used	Technology of Opensource Framework
2.	SECURITY IMPLEMENTATIONS	List of all the Security and access controls implemented ,use of Firewalls Etc..	SHA -26,Encryptions,IAM Controls
3.	SCALABLE ARCHITECTURE	Justify the Scalability of the architecture	Technology Used
4.	AVAILABILITY	Justify the availability of the application	Technology Used
5.	PERFORMANCE	Design consideration for the performance of the application	Technology Used

NON-FUNCTIONAL REQUIREMENTS
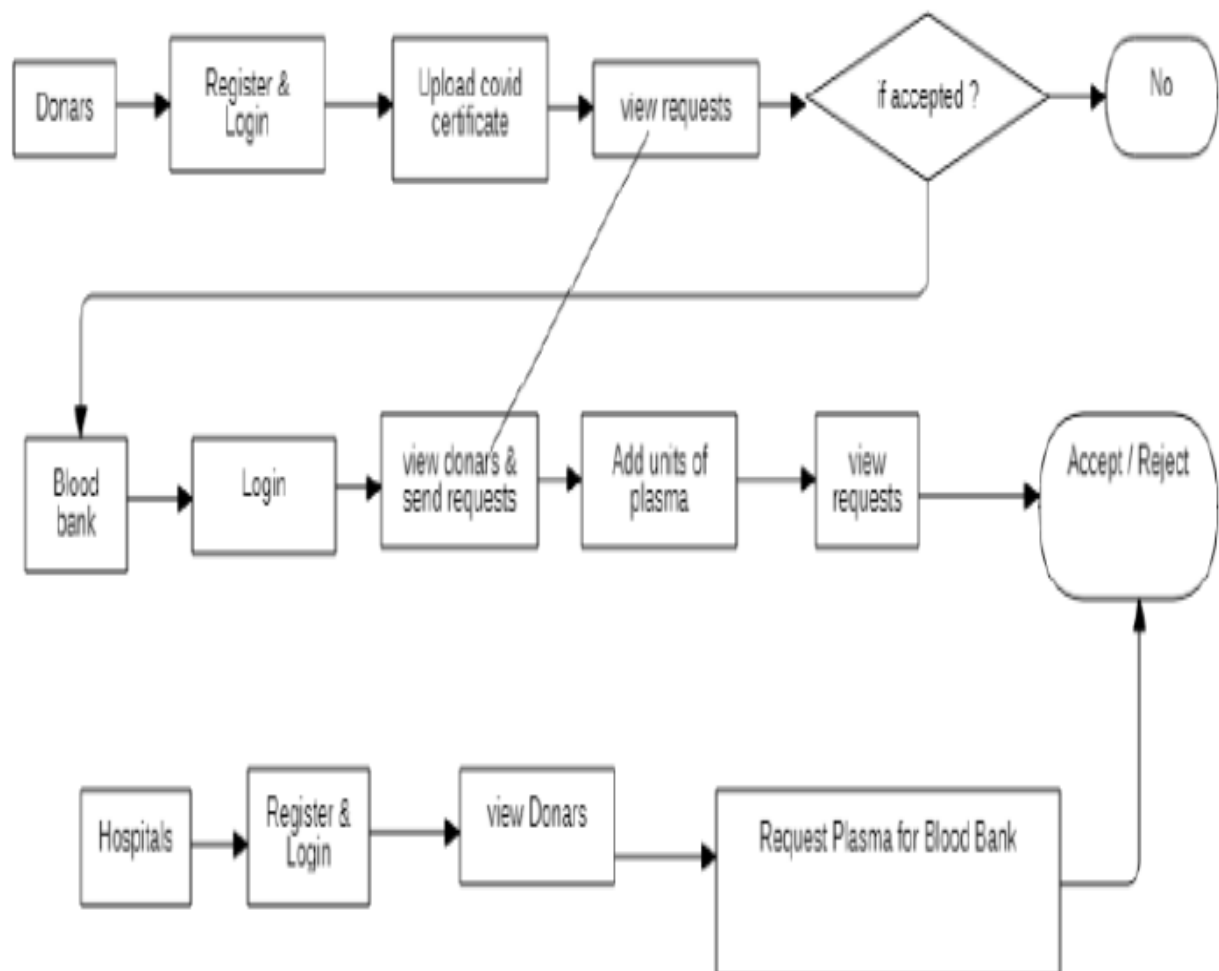
5. PROJECT DESIGN

5.1 DATAFLOW DIAGRAMS

DATAFLOW DIAGRAM

5.2 SOLUTION & TECHNICAL ARCHITECTURE

USER   **IBM CLOUD**   **ADMIN**

Eligibility of
donor

Plasma
Availability

Updated User data

Verification of
Information

Search Donor

Donor Location

IBM
Database

App API

TECHNICAL ARCHITECTURE

SOLUTION ARCHITECTURE

5.3 USER STORIES

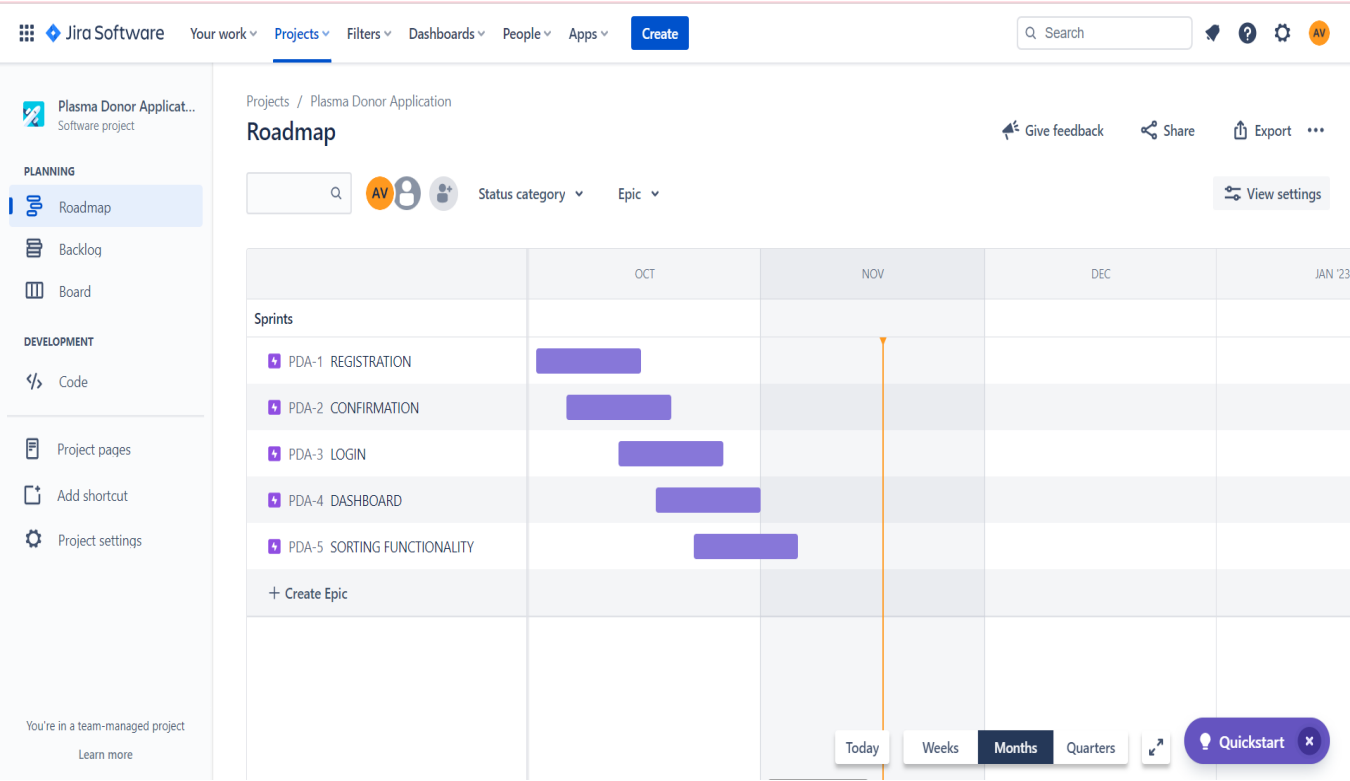| User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
End User (Mobile Normal user)	Registration	USN-1	As a user, I can register for the application by entering my phone number, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive OTP once I have registered for the application	I can receive OTP & click confirm	High	Sprint-1
	Login	USN-3	As a user, I can log into the application by entering phone number& password or phone number & OTP		High	Sprint-1
	Dashboard Plasma	USN -4	As a user, I can search the plasma donor based on my requirements. Also check my eligibility.	I can search and get the contact details about the donors	High	Sprint-1
End User (Web Normal user)	Registration	USN-1	As a user, I can register for the application by entering my phone number, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive OTP once I have registered for the application	I can receive OTP & click confirm	High	Sprint-1
	Login	USN-3	As a user, I can log into the application by entering phone number& password		High	Sprint-1
	Dashboard	USN -4	As a user, I can search the plasma donor based on my requirements. Also, I can check my eligibility	I can search and get the contact details about the donors	High	Sprint-1
End User (Web Hospital User)	Registration	USN-1	As a hospital user, I can register for the application by entering my hospital email id, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a hospital user, I will receive OTP once I have registered for the application	I can receive OTP & click confirm	High	Sprint-1
	Login	USN-3	As a hospital user, I can log into the application by entering email id & password		High	Sprint-1
	Dashboard	USN -4	As a hospital user, I can create the emergency request and I can search the plasma donor	I can create the emergency request and I can check plasma availability	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 SPRINT PLANNING & ESTIMAATION

SPRINT	FUNCTIONAL REQUIREMENT	USER STORY NUMBER	USER STORY/TASK	STORY POINTS	PRIORITY	TEAM MEMBERS
SPRINT-1	REGISTRATION	USER -2	AS A USER, I CAN REGISTER FOR THE APPLICATION BY ENTERING MY EMAIL, AND PASSWORD, AND CONFIRMING MY PASSWORD.	15	HIGH	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-2	CONFIRMATIO N	USER -5	AS A USER, I WILL RECEIVE A CONFIRMATION EMAIL ONCE I HAVE REGISTERED FOR THE APPLICATION	5	MEDIUM	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-3	LOGIN	USER -1	AS A USER, I CAN LOG INTO THE APPLICATION BY ENTERING MY EMAIL & PASSWORD	10	HIGH	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-4	DASHBOARD	USER -4	AS A USER, I CAN LOG INTO THE APPLICATION BY ENTERING MY EMAIL & PASSWORD	10	HIGH	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-5	SORTING FUNTIONALITY	USER -6	AS A USER, I CAN SEARCH REQUEST AND A QUICK SNAP IS DISPLAYED IN THE DASHBOARD	10	MEDIUM	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A

6.1 SPRINT DELIVERY SCHEDULE

SPRINT	FUNCTIONAL REQUIREMENT	USER STORY NUMBER	STORY POINTS	STATUS	PRIORITY	TEAM MEMBERS
SPRINT-1	REGISTRATION	USER -2	15	COMPLETED	HIGH	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-2	CONFIRMATION	USER -5	5	COMPLETED	MEDIUM	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-3	LOGIN	USER -1	10	COMPLETED	HIGH	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-4	DASHBOARD	USER -4	10	COMPLETED	HIGH	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A
SPRINT-5	SORTING FUNTIONALITY	USER -6	10	COMPLETED	MEDIUM	ARAVINDH R ANANTHARA MAR A DEEPAK M HARSHINI S AMRITA VARSHENI A

6.1 REPORT FROM JIRA

7. CODING & SOLUTIONING (With Codes)

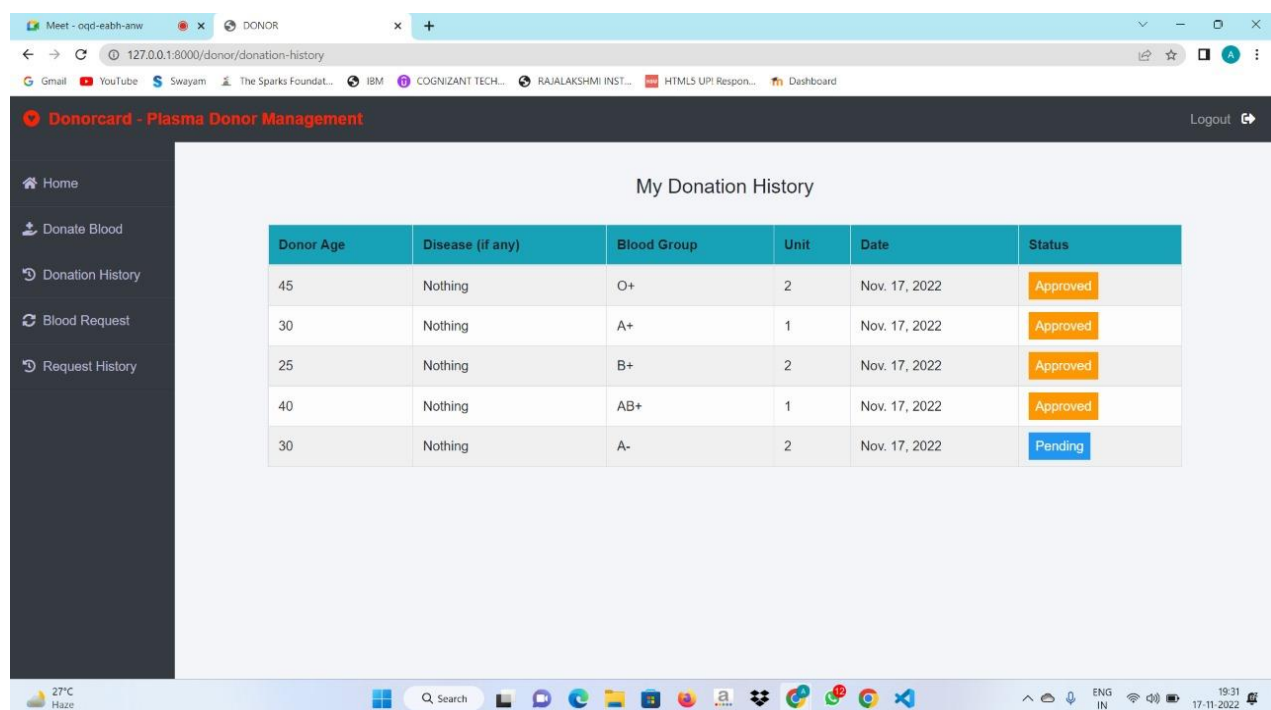## 7.1 Feature 1 (Plasma Request & Approval)

The plasma request and approval is done in our application. The patient enters the details required based on the condition. The donor enters the details for giving plasma then, the admin compares the details based on requirements the admin accepts or rejects the request.

7.2 Feature 2 (Types of User Accounts)

In our application there are three profile sections which consist of admin, donor, patient in which each profile has certain details required and then they can login and see the status of the plasma whether it is pending ,accepted or rejected.

8. TESTING

8.1 TEST CASES

ADMIN LOGIN

| Username | admin@gmail.com |
| Password | ·········· |

LOGIN

DONOR SIGNUP

First Name	deepak
Last Name	mani
email	mani@gmail.com
Password	········
Blood Group	O+
Address	chennai
Mobile	9475826354
Profile Pic	Choose File sendgrid.jpeg

REGISTER

Already have an account ? Click here to login

DONOR LOGIN

| email | xyz@gmail.com |
| Password | •••••••• |

LOGIN

Does not have an account ? Click here to register

PATIENT SIGNUP

First Name	aravind
Last Name	ravi
email	ravi@gmail.com
Password	••••••••
Age	35
Blood Group	O-
Disease	covid
Doctor Name	prasad
Address	chennai
Mobile	8734567345
Profile Pic	Choose File sendgrid.jpeg

REGISTER

Already have an account ? Click here to login

9. Results

These highlighted app performance metrics only scratch the surface of the quantitative and qualitative data you can gather about an app. With the overwhelming number of app metrics that you can track, picking and choosing what measurements are right for your plasma donation management.

9.1 Performance Metrics

App performance metrics related to user acquisition help you to know where to focus your marketing efforts and how to tap into new user bases. Acquisition metrics range from app store rankings to insights on how users became aware of your app.

10. Advantages & Disadvantages

Advantages:

a. Records are maintained **digitally.**
b. **Quick** request for plasma donation.
c. More **Awareness** in Medical Procedure
d. It helps you find places to donate and set up appointments.
e. It also stores data about your blood donations so you can see how much you've donated and when it's time to **donate again**.

Disadvantages:

a. **Data Privacy** – The health apps continuously collect and analyse the health data of the person. The threat to the exposure of personal information by the hacker and sharing with the third parties is a major concern.

b. **Accuracy of Data** – The information and advice provided by healthcare apps is also an important concern with healthcare apps. Different apps use different

methods and tools to analyse health data. In some cases, the data measured with the apps are found to be varying when compared with the MedTech devices.

11. Conclusion

What started out as an idea to help out mid-pandemic has grown into something much bigger and much better. We are a group of young individuals that work together to go beyond the benchmark.

We are here to learn and grow as a collective group. We accept people from all walks of life without judgement based on caste, religion, sexual orientation, gender and background. We believe in respecting all perspectives and opinions and engaging in meaningful conversations on a plethora of topics. We are all part of the same generation which will allow us to relate to each other on a social level. At the end of the day, we appreciate hard work and a good attitude.

12. Future Scope

a. We can build App Centric Experience (both android & iOS), goal of donorcard is to increase plasma/blood donation and save lives.

b. Donors can get benefits of free blood report in their hand device itself.

13. Appendix

GITHUB LINK

https://github.com/IBM-EPBL/IBM-Project-22712-1659856907