PROJECT REPORT

FOR

PLASMA DONOR APPLICATION

TEAM ID:PNT2022TMID32997

1.INTRODUCTION

1.1 Project Overview

A plasma is a liquid portion of the blood, over 55% of human blood is plasma. Plasma is used to treat various infectious diseases and it is one of the oldest methods known as plasma therapy. Plasma therapy is a process where blood is donated by recovered patientsin order to establish antibodies that fight the infection. In this project plasma donor application is being developed by using AWS services. The services used are AWS Lambda, API gateway, DynamoDB, AWS Elastic Compute Cloud with the help of these AWS services, it eliminates the need of configuring the servers and reduces the infrastructural costs associated with it and helps to achieve serverless computing. For instance, during COVID 19 crisis the requirement for plasma increased drastically as there was no vaccination found in order to treat the infected patients, with plasma therapythe recovery rates were high but the donor count was very low and in such situations it was very important to get the information about the plasma donors. Saving the donor information and notifying about the current donors would be a helping hand as it can savetime and help the users to track down the necessary information about the donors.

1.2 Purpose

As we all know, the traditional methods of finding plasma, one has to find out for oneself by looking at hospital records and contacting donors have been recovered, sometimes may not be available at home and move to other places. In this type of scenario, the health of those who are sick becomes disastrous. Therefore, it is not considered a rapid process to find plasma. The main purpose of the proposed system, the donor who wantsto donate plasma can simply upload their covid19 traced certificate and can donate the plasma to the blood bank, the blood bank can apply for the donor and once the donor has accepted the request, the blood bank can add the units they need and the hospital can also send the request to the blood bank that urgently needs the plasma for the patient and can take the plasma from the blood bank.

2.LITERATURE SURVEY

2.1 Existing problem

There are many people who are willing to donate plasma and who need plasma. But there is not any accessible way to help them to find plasma donation centers in real- time. So, the problem is not the lack of donors, but finding the right sponsor at the right time. If someone needs plasma, they seek plasma first from family members, then from hospitals and the nearest plasma bank. If they can't process plasma in these ways, it's verydifficult for them to contact another for a short-term plasma draw. This is a problem that Iwant to solve through this application. Instead of just providing plasma to people in need with an outdated list of regular plasma donors who may or may not be available to help, This application reaches the right people the moment users find Out.

2.2References

1. **BLOODR: blood donor and requestermobile application**

Author: Vamsi Krishna Tatikonda and Hosam El-Ocla

Donors can be individuals and blood banks. Donor users can register to the application to receive notification about blood donation requests when their blood type is required for an admitted patient to a clinic. In the online registration, users need to provide information about their blood type and address. Oncethe user login, he would be able to see the latest blood donation requests in their city/region using “BlooRequests Feed”. Each notification contains information about the required blood type and the clinic address together with a request status as pending if the donation is not done yet. If someone has donated, then the request status is marked as success so that potential donors would receive an updated notificationindicating that the blood donation has been made and there is no further donation is required for this particular request. Blood donation has a significant impact on iron stores in frequent donors, particularly females. Several measures are necessary to prevent, detect, and treat iron deficiency in donors. These

include less frequent donations by donors most susceptible to iron deficiency, and better education of both donors and their physicians about iron needs associated with blood donation. Regular blood donors may require a course of iron supplements to replenish the iron lost in blood donation. These individuals can often return to blood donation, after an adequate course of iron supplementation (17). As a result, donor may track

his/her donation history details using “Donation History” to avoid such risky intensive donations before that the body can makeup its lost red blood cells. Donors can invite friends to register to the application using “Invite Friends” to increase the number of donors. When a donor is notified about a blood request, he/she can book an appointment with the clinic that requested the donation using the “Book Appointment feature”.

2. Blood component

Author: Denuis O'Neil (1999)

The Amount of human body weight comes from blood. For adults, it is 4-6 litres of blood. This essential liquid plays
an important role in transporting oxygen and nutrients to cells and removing carbon dioxide, ammonia and other waste products. Blood is a very common tissue composed of over 4000 different types of components.

3. COPAL-19: Plasma Donor App

source : News Desk-07/09/2020

Doctors of AIIMS with the help of IIT Delhi students have developed an app called COPAL-19 to track real- time COVID-19 patients in AIIMS, as they can become potential plasma donors after 28 days of recovery. The app will have details of patients who have already been discharged from AIIMS, those currently undergoing treatment and their blood groups. This information will help patients in need of plasma therapy to get it on time without any hassle. Once the app goes live, anyone will be able to register as a plasma donor by simply downloading the app and filling in the details in a simple format. AIIMS blood bank is also linked with the app so they will also get the details of the needy patient and help him/her get the plasma. Patients can also register themselves and get details of plasma donors matching their blood group.

4.A Free Health Screening

Author: Dr. DeSimone

Before you are allowed to donate, your vital signs will be checked to make sure you are fit enough for the procedure. This exam might turn up a condition that needs medical attention, such as high blood pressure or a heart arrhythmia like atrial fibrillation. In addition, you'll be screened for infectious diseases you may be unaware of.

"If we detect an issue with your vital signs or another health issue, we would direct you to go to a physician at that point to be checked," Dr. DeSimone says.

The health screening will also reveal if you have a rare blood type. This information can be useful if you ever face surgery or another medical situation in which a transfusion may required. Plus, you'll have the satisfaction of knowing your donation is particularly needed.

5.How to Motivate Whole Blood Donorsto Become Plasma Donors

Author: Gaston Godin and Marc Germain

This study tested the efficacy of interventions to recruit new plasma donors among whole blood donors. Asample of 924 donors was randomized to one of three conditions: control; information only by nurse; and information plus self-positive image message by nurse (SPI). Participants in the control condition only
received a leaflet describing the plasma donation procedure. In the two experimental conditions the leaflet was explained face-to-face by a nurse. The dependent variables were the proportion of new plasma donorsand the number of donations at six months. Overall, 141 (15.3%) new plasma donors were recruited at six months. There were higher proportions of new plasma donors in the two experimental conditions comparedto the control condition (); the two experimental conditions did not differ. Also, compared to the control condition, those in the experimental conditions (all) gave plasma more often (information only by nurse: ; SPI:); the SPI intervention significantly outperformed () the information only by nurse condition. The resultssuggest that references to feelings of SPI such as feeling good and being proud and that giving plasma is arewarding personal experience favour a higher frequency of plasma donation.

2.3Problem Statement Definition

This system aims at connecting the donors & the patients by an online application. By using this application, the users can either raise a request for plasma donation or requirement. Similar to blood donors there also exist plasma donors where there exists problems like in case of emergency needs the most important life saver necessity is plasma , Plasma Banks are the main providers of plasma who receives blood from

various donors, monitors the plasma groups database of emergencies and makes 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 the 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 to the donor and the user can find plasma availability nearby him/her. The urgent time of a plasma requirement, users can quickly check for plasma banks, hospitals or donors as per req irement matching a

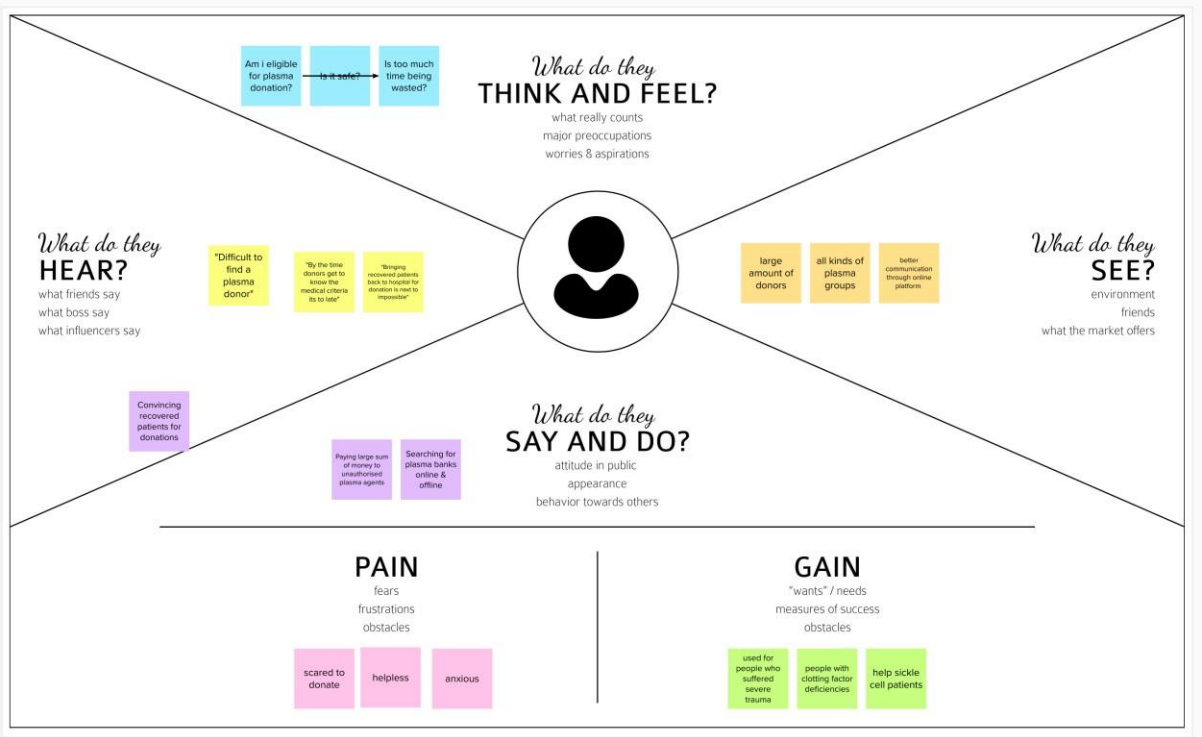
particular or related and reach out to them through the App.

3.IDEATION & PROPOSED SOLUTION

3.1.Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's
behaviours and attitudes.

It is a useful tool to helps teams better understand their users.
Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.



3.2.Ideation & Brainstorming

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- **10 minutes** to prepare
- **1 hour** to collaborate
- **2-8 people** recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

A Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

C Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

Open article →

1 Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

PROBLEM
Another challenge was to eradicate the fear and stigma associated with the therapy, in a majority of the population.

PROBLEM
Considering the severity of the situation the biggest challenge was to achieve the goals within a tight deadline of 2 weeks.

PROBLEM
by the time they are able to find a donor the patient's health gets deteriorated.

PROBLEM
Since the ICMR approved the use of CPT for the treatment of COVID-19 patients, the demand for plasma has increased

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

2 Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

FAQs section to get all details regarding Plasma

Shares the location of the donor

User can search specifically for Donors

TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

3.3.Proposed Solution

S.No.	Parameter	Description

1.	Problem Statement (Problem to be solved)	During Coronavirus emergency the necessity for plasma expanded radically as there were no immunization found to treat the contaminated patients, with plasma therapy the recovery rates where high but the donor count was very low and in such situations it was very important to get the information about the plasma donors. Saving the contributor data and telling about the ongoing givers would be some assistance as it can save time and assist the clients with finding the vital data about the contributors.
2.	Idea / Solution description	This proposed system aims at connecting the donors & the patients by an online application. By using this application, the users can either raise a request for plasma donation or requirements.
3.	Novelty / Uniqueness	A User Interface is simple for users to understand.The user immediately need the plasma for their treatment but the plasma is not available in nearby hospitals, then user can use this application to raise request and directly contact the donor , request them to donate the plasma. Hospitals can also raise request donors for donation.
4.	Social Impact / Customer Satisfaction	We are living in a modern world and everything can be accessed online. Even though there are many application there is no proper application for plasma donation . Many of them wish to donate blood and plasma but they are unaware about donation and how they can donate. This application provides opportunity to those who want to donate plasma.

5.	Business Model (Revenue Model)	This application is accessible by everyone . It is free.Because of the trouble in finding givers who match a specific blood bunch, this application empowers clients to enlist individuals who wish to give plasma and keep their data in a data set.working with the government we can utilize an application to help those needing plasma.
6.	Scalability of the Solution	When there is a emergency then plasma request is send to everyone. Once the donor is ready to donate receiver is notified about donation. Receiver can contact the donor. With this app donor can know the eligibility to donate and making it easier to locate suitable donor at right time.

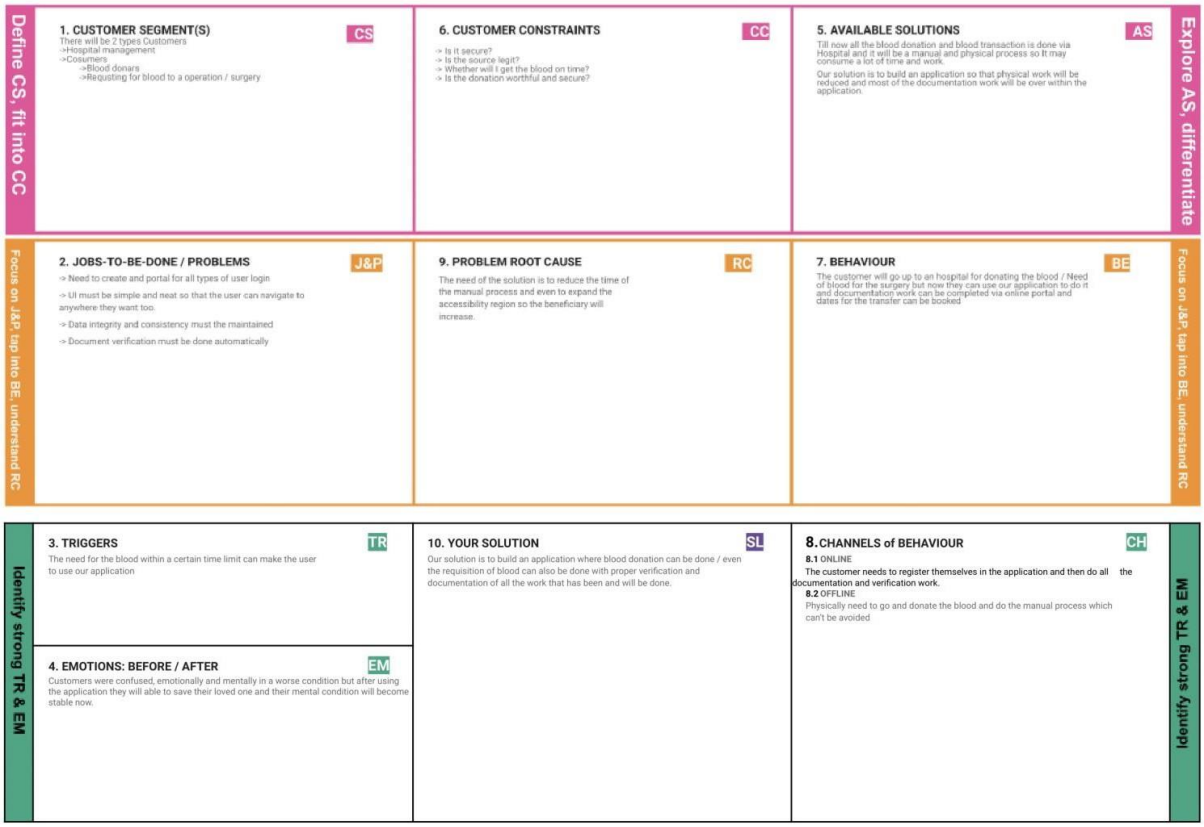
3.4.Problem Solution fit

The Problem-Solution Fit simply means that you have found a problem with your customer and thatthe solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why

Purpose:

- Solve complex problems in a way that fits the state of your customers.
- Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- Understand the existing situation in order to improve it for your target group.

Template:



4.REQUIREMENT ANALYSIS

4.1.Functional requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Website
FR-2	User Confirmation	Confirmation via Email
FR-3	User Login	Login using Registered email Id
FR-4	Sent Request	If plasma is required, the receiver will contact the donor
FR-5	Contact Donor	Contact the donor directly if a phone number is given
FR-6	View donation camps	View the list of donation camps happening nearby

4.2.Non-Functional requirement

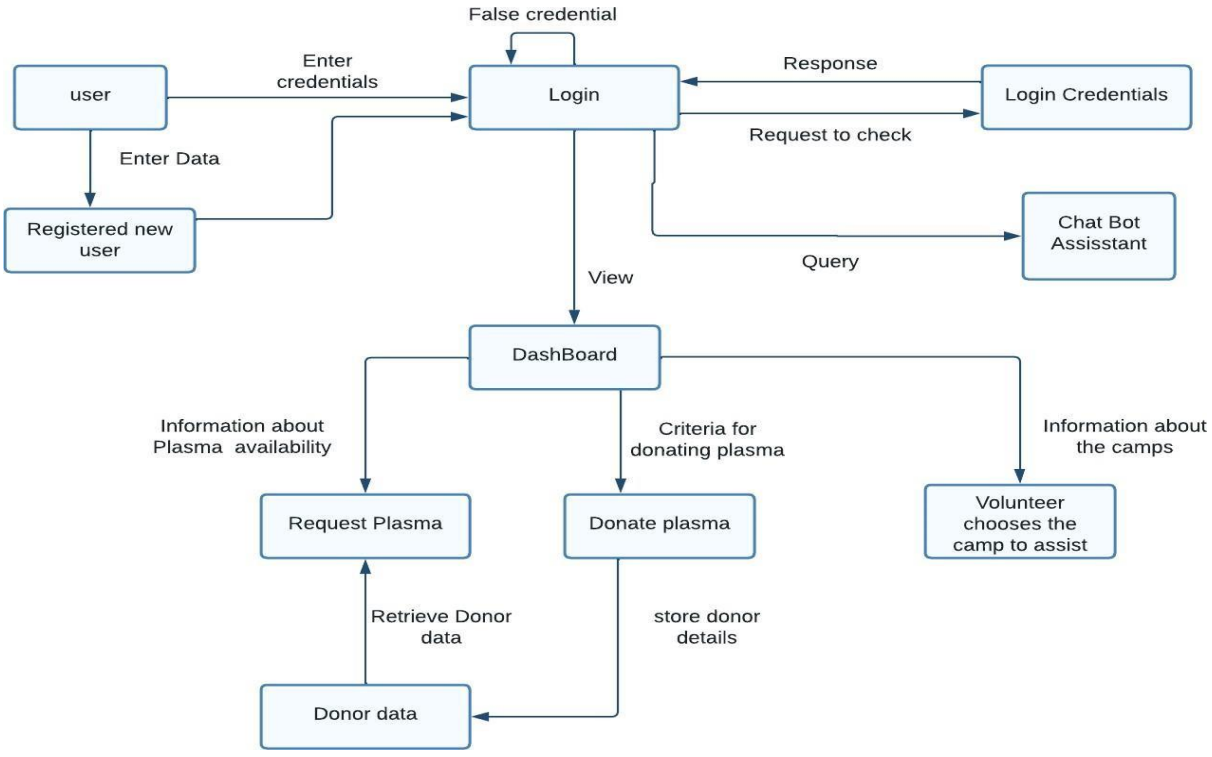
Following are the non-functional requirements of the proposed solution.

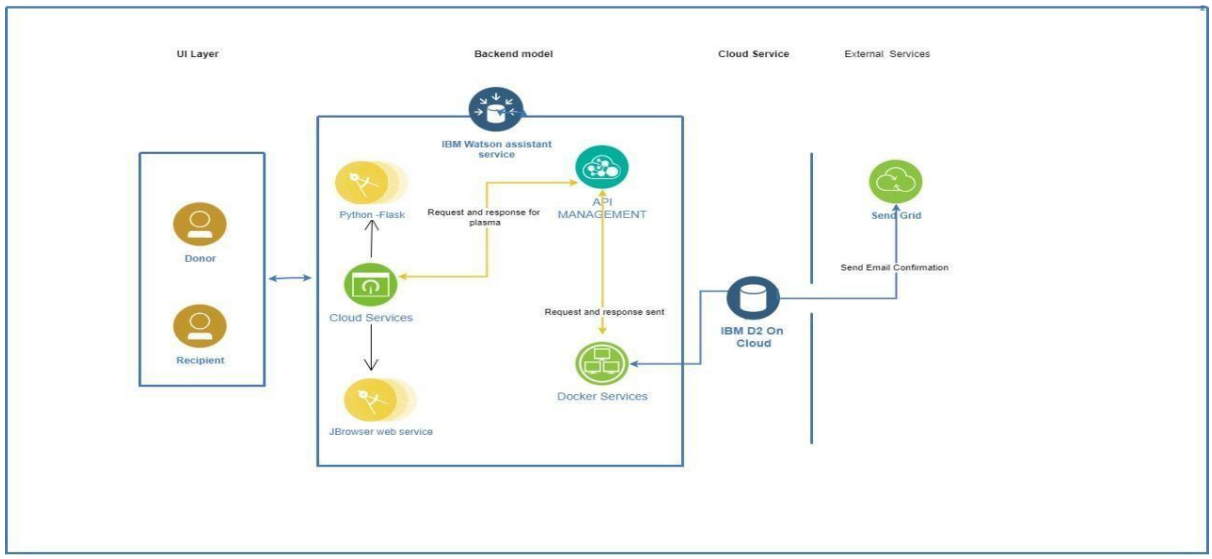
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The user interface of the plasma donor system must be well-designed and welcoming.

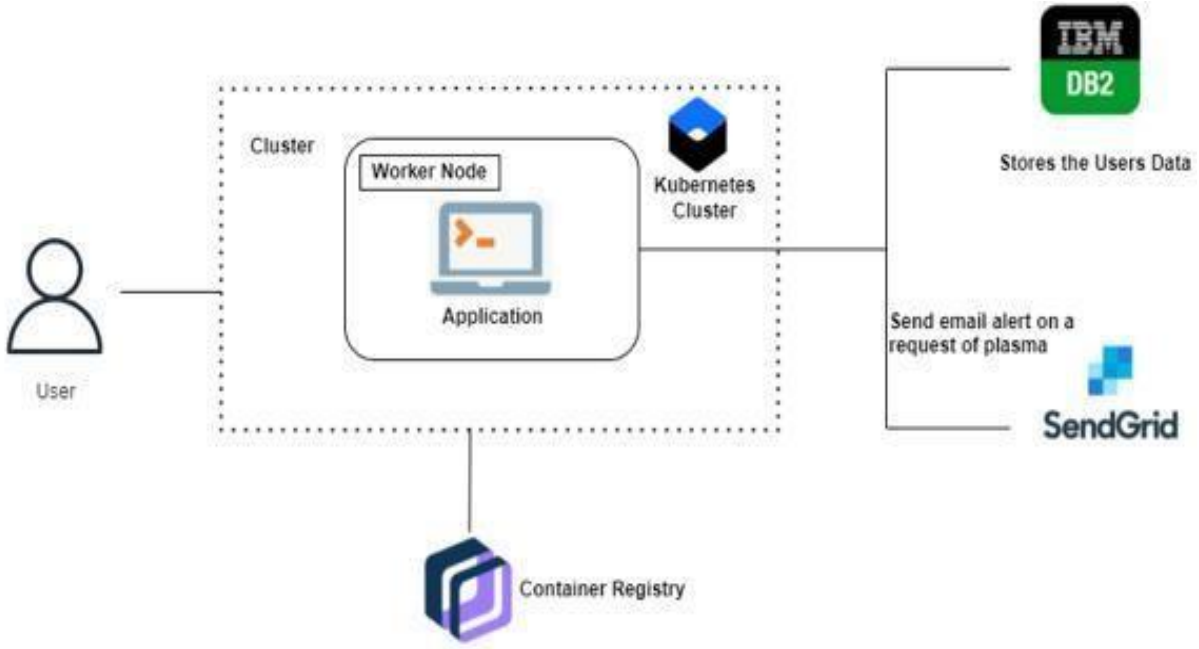
NFR-2	**Security**	Data storage is required by security systems, just like it is by many other applications. Databases are able to keep all the donor information that is viewedby applications. It must be secured with email Id and password.
NFR-3	**Reliability**	The system has the ability to work all the times without failures apart from network failure. A donor can have the faith on the system. The authorities will keeps the privacy of all donors in a proper manner
NFR-4	**Performance**	The Plasma donor System must perform well in different scenarios. The system is interactive and delays involved are less.
NFR-5	**Availability**	The system, including the online components, should be available 24/7.
NFR-6	**Scalability**	The system offers the proper resources for issue solutions and is designed to protect sensitive information during all phases of operation.

5.PROJECT DESIGN

5.1Data Flow Diagrams







5.2.Solution & Technical Architecture

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	• The user creates an account or registers in the UI. • Goes through the UI and view details	HTML, CSS,Python Flask
2.	Chatbot	• Used to clarify user queries	IBM Watson Assistant
3.	Data maintenance	For storing,maintaining,modifying and retrieving the user's details	MySQL
4.	Confirmation Email	Sending a confirmation email to users they have registered for donation and to check the availability of plasma	SendGrid
5.	Cloud Database	For storing the appointment ,donation details and user's details	IBM DB2
6.	File Storage	File storage requirements	IBM Block Storage
7.	Infrastructure (Server / Cloud)	To deploy an Application on Local System	Kubernetes

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python flask micro framework is used.	Python Flask
2.	Security Implementations	Mandatory Control(MAC) and Kubernetes is used.	SHA-256, Encryptions, IAM Controls, OWASP ,Kubernetes
3.	Scalable Architecture	3-Tier architecture is used.	Web Server-HTML,CSS Application Server-Python Flask Database Server-IBM DB2
4.	Availability	Using Load Balancer to distribute network traffic across servers.	IBM Load Balancer
5.	Performance	Request and respond facility within a second. User-friendly API	IBM Content Delivery Network

5.3.User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Gmail	I can receive confirmation notifications through Gmail	Medium	Sprint-1
	Login	USN-4	As a user, I can log into the application by entering email & password	I can access into my User profile and view details in dashboard	High	Sprint-1
	Dashboard	USN-5	As a user,I can send the proper requests to donate and obtain plasma.	I can receive appropriate notifications through email	High	Sprint-1
Customer (Web user)	Login	USN-6	As a user,I can register and log into the application by entering email & password to view the profile	I can access into my User profile and view details in dashboard	High	Sprint-1
	Dashboard	USN-7	As a user,I can send the proper requests to donate and obtain plasma.	I can receive appropriate notifications through email	High	Sprint-1
Customer Care Executive	Application	USN-8	As a customer care executive,I can try to address user's concerns and questions	I can view and address their concerns and questions	Medium	Sprint-2
Administrator	Application	USN-9	As an administrator I can help with user-facing aspects of a website, like its appearance, navigation and use of media.	I can change the appearance and navigation in a user friendly manner	Medium	Sprint-3
		USN-10	As an administrator, I can involve working with the technical side of websites.	I can help with such as troubleshooting issues, setting up web hosts, ensuring users have access and programming servers	Medium	Sprint-1

6.PROJECT PLANNING & SCHEDULING

6.1.Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story points	Priority	Team Members
Sprint 1	User Registration	USN-1	As a user, I can register for th application by entering my email, password confirming my password and phone number..	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 1	User Login	USN-2	As a user, I can log into the application by entering username & password.	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 1	Access Website	USN-3	User should be able to access application using browser	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 2	Dashboard	USN-4	The user upon logging in views the application dashboard where he/she can use all the application's services.	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 2	Request For Blood plasma	USN-5	The user who is in nee of blood plasma ca request for blood b specifying the blood type.	20	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj

Sprint 2	Switch User Roles	USN-6	As a user, he/she can switch roles between Donor and Receiver.	20	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 3	View Plasma Request	USN-7	A donor receives an Email of about the receiver's details of the same blood type.	20	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 3	View Donor Details	USN-8	The receiver can view the list of Donors of the blood type requested.	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 4	Logout Process	USN-9	The User will be able to Logout of the application.	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj
Sprint 4	Bot service in the website	USN-10	The user can use Bot Service to request for Blood Plasma and also switch between roles.	10	High	B.Manoharan M.Abdul Wahab R.Keerthivasan S.Gowthamraj

6.2.Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Sprint Release Date (Actual)
Sprint-1	30	6 Days	25 Oct 2022	30 Oct 2022	30 Oct 2022
Sprint-2	30	6 Days	1 Nov 2022	6 Nov 2022	6 Nov 2022
Sprint-3	30	6 Days	8 Nov 2022	13 Nov 2022	13 Nov 2022
Sprint-4	30	5 Days	14Nov 2022	18 Nov 2022	18 Nov 2022

7.CODING & SOLUTIONING

7.1.FEATURE 1

https://github.com/IBM-EPBL/IBM-Project-41278-1660640873/tree/main/Project%20Develpment%20phase/Sprint1

It consists of two modules landing and sign up

Landing- it is a main web page of our model

Sign up-In this module, users can register their name as a donor. If a certain age limit is satisfied their registration process for plasma donors will be accepted.

7.2.FEATURE 2

https://github.com/IBM-EPBL/IBM-Project-41278-1660640873/tree/main/Project%20Develpment%20phase/sprint2

Login- Here we discussed about login module,

In this module, users can login as a donor and they can update their availability status.

Dashboard-In this module we discussed about dashboards which shows all the available donors and other resources of web page

7.3.FEATURE 3

https://github.com/IBM-EPBL/IBM-Project-41278-1660640873/tree/main/Project%20Develpment%20phase/Sprint3

Chatbot- in this module Chatbot is created which helps the user to know more about plasma donation.

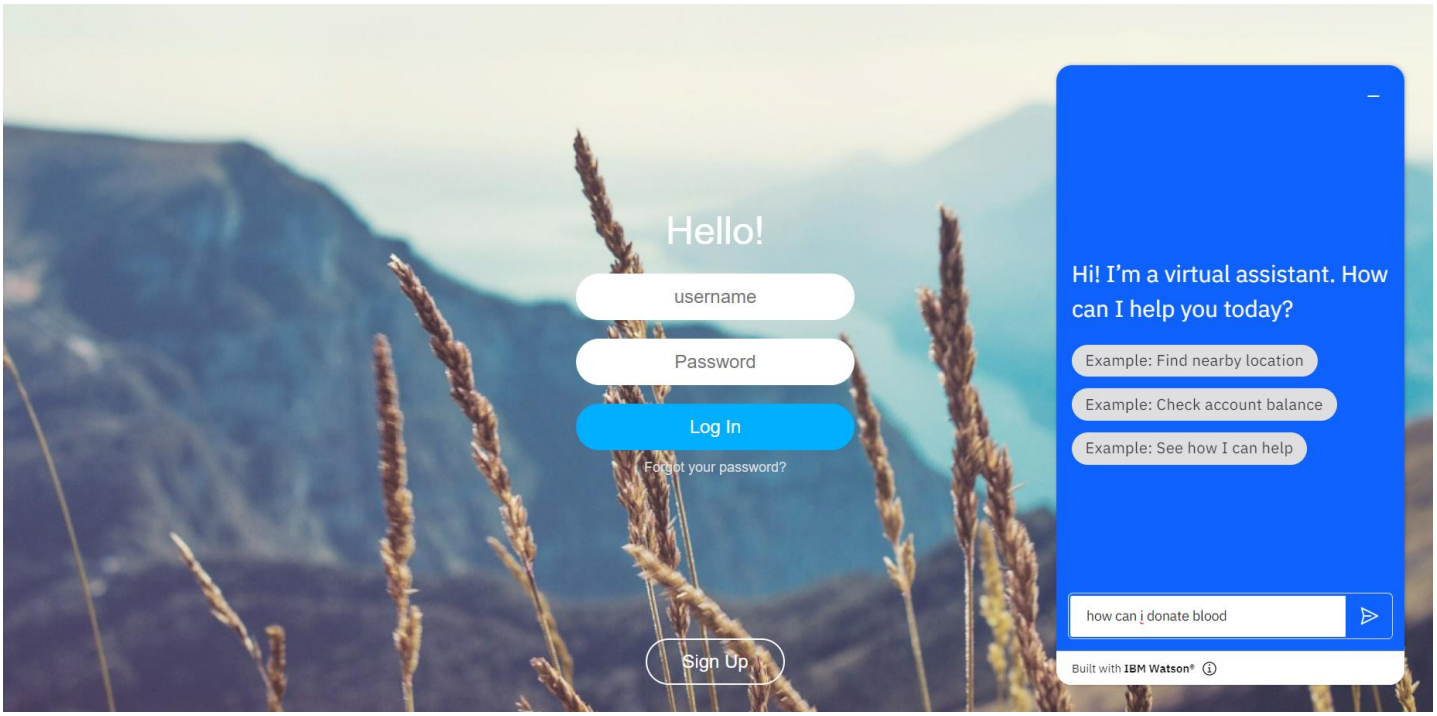
7.4.FEATURE 4

https://github.com/IBM-EPBL/IBM-Project-41278-1660640873/tree/main/Project%20Develpment%20phase/Sprint4

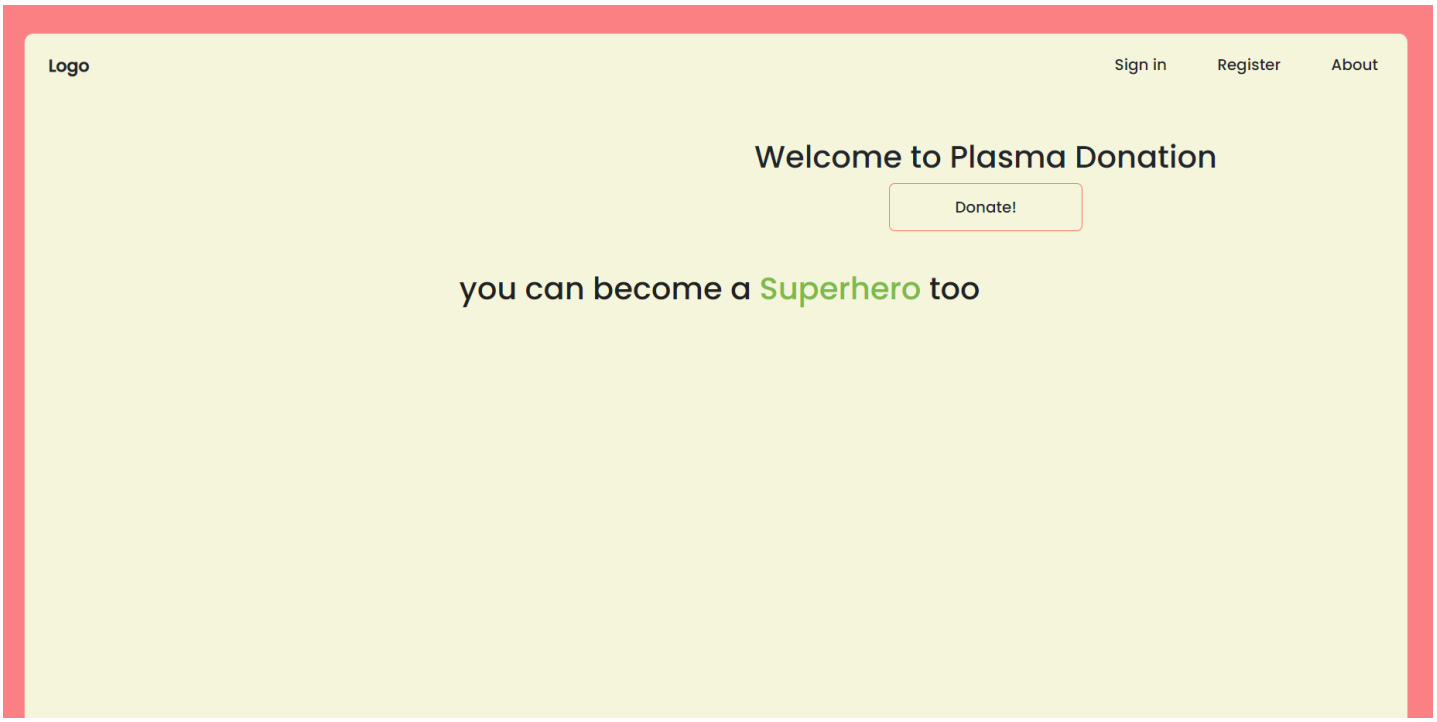
In this process we make a database connectivity for register , login and update of donor information, and also contains the the image with help of using docker.

8.TEST CASES

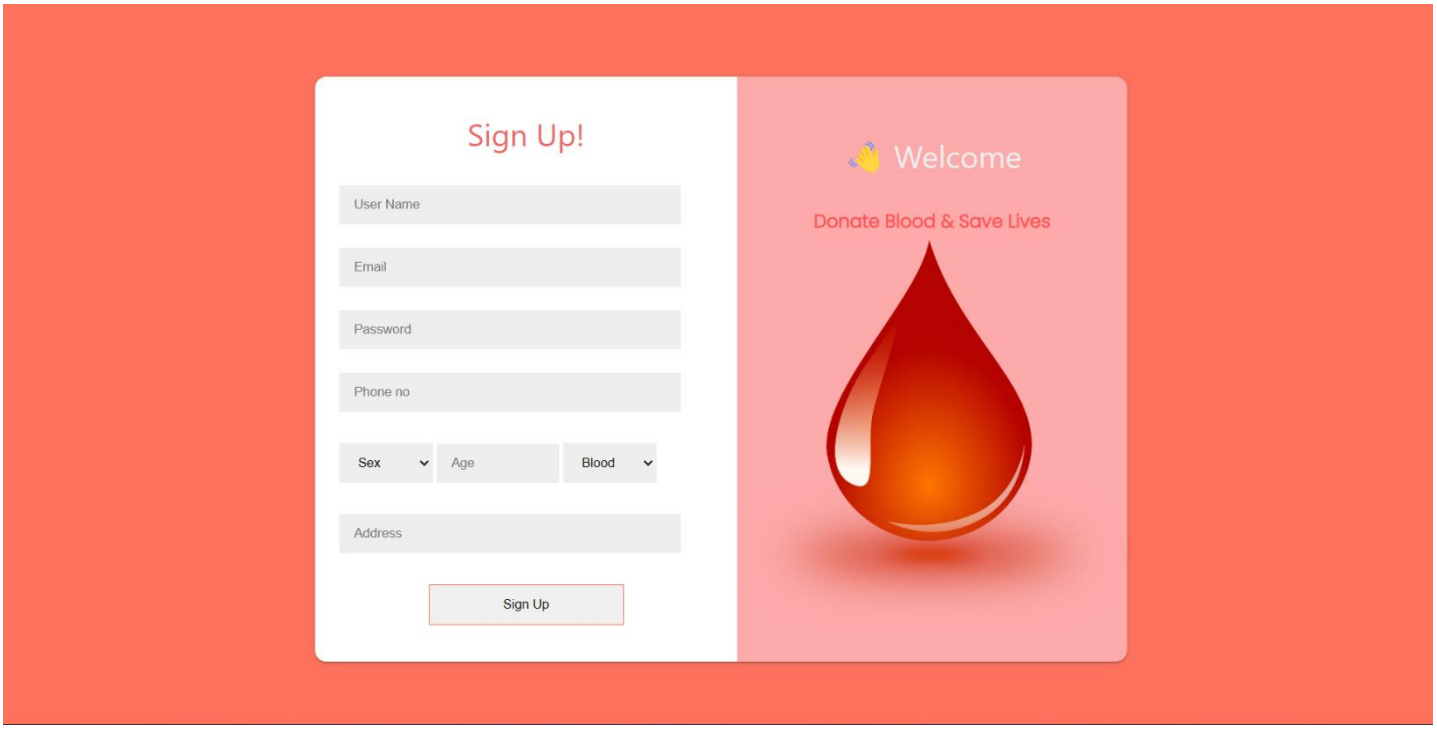
8.1.CHATBOT WORKING

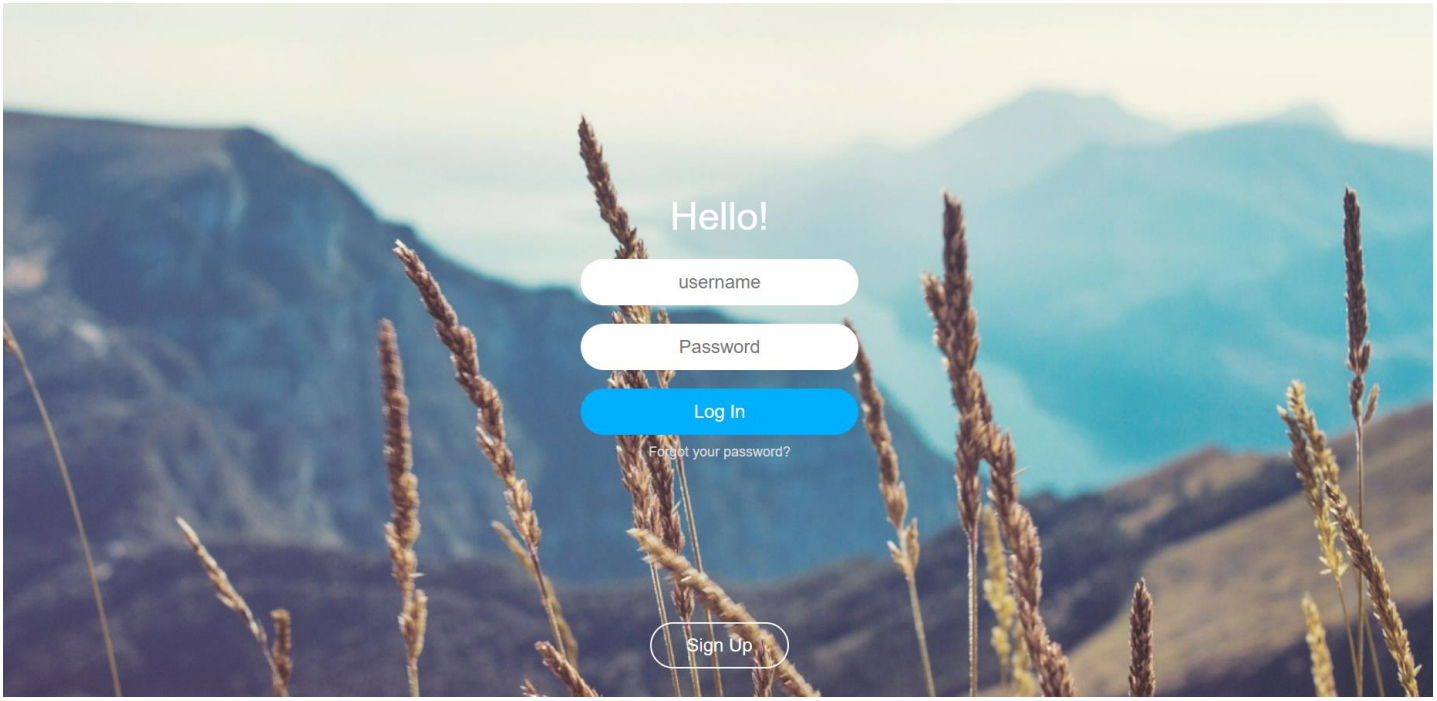


8.2.DONOR REGISTRATION

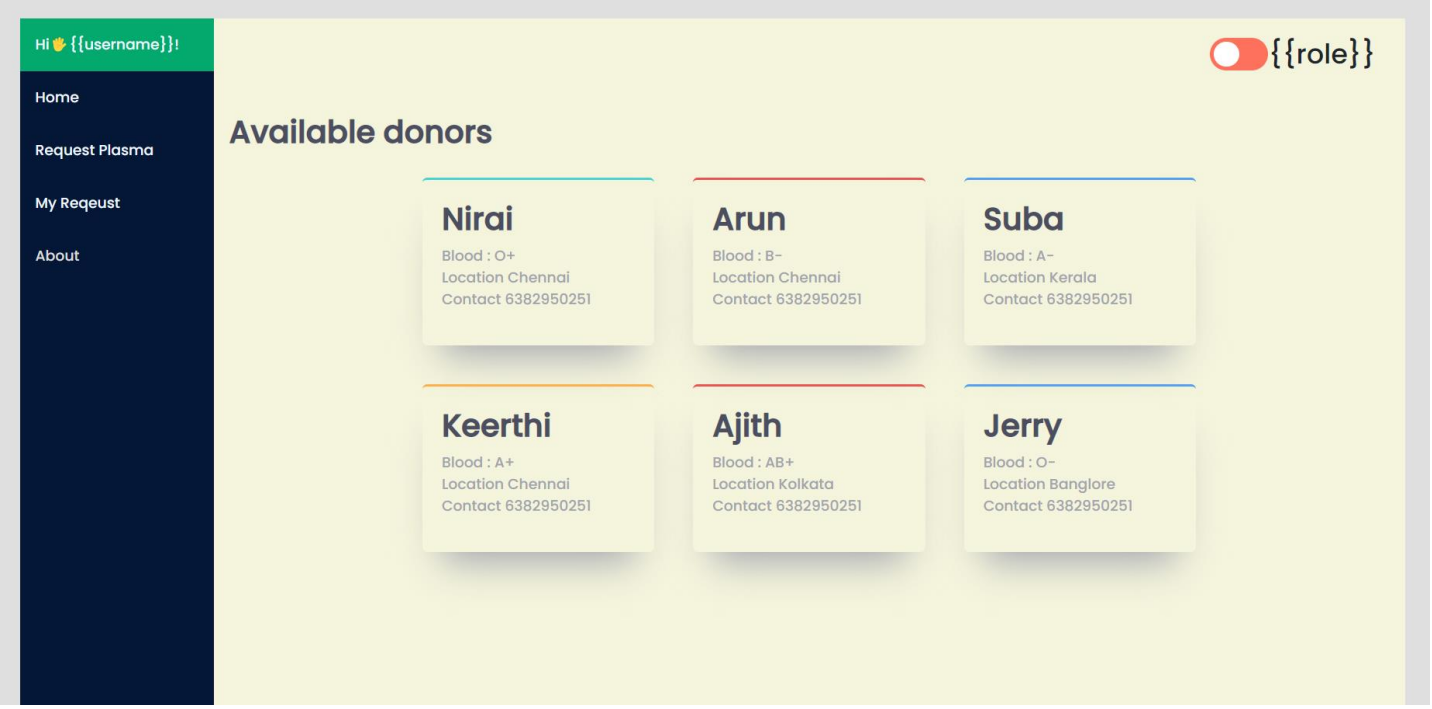


8.3.DONOR LOGIN


Sign Up!
User Name
Email
Password
Phone no
Sex
Age
Blood
Address
Sign Up
Welcome
Donate Blood & Save Lives

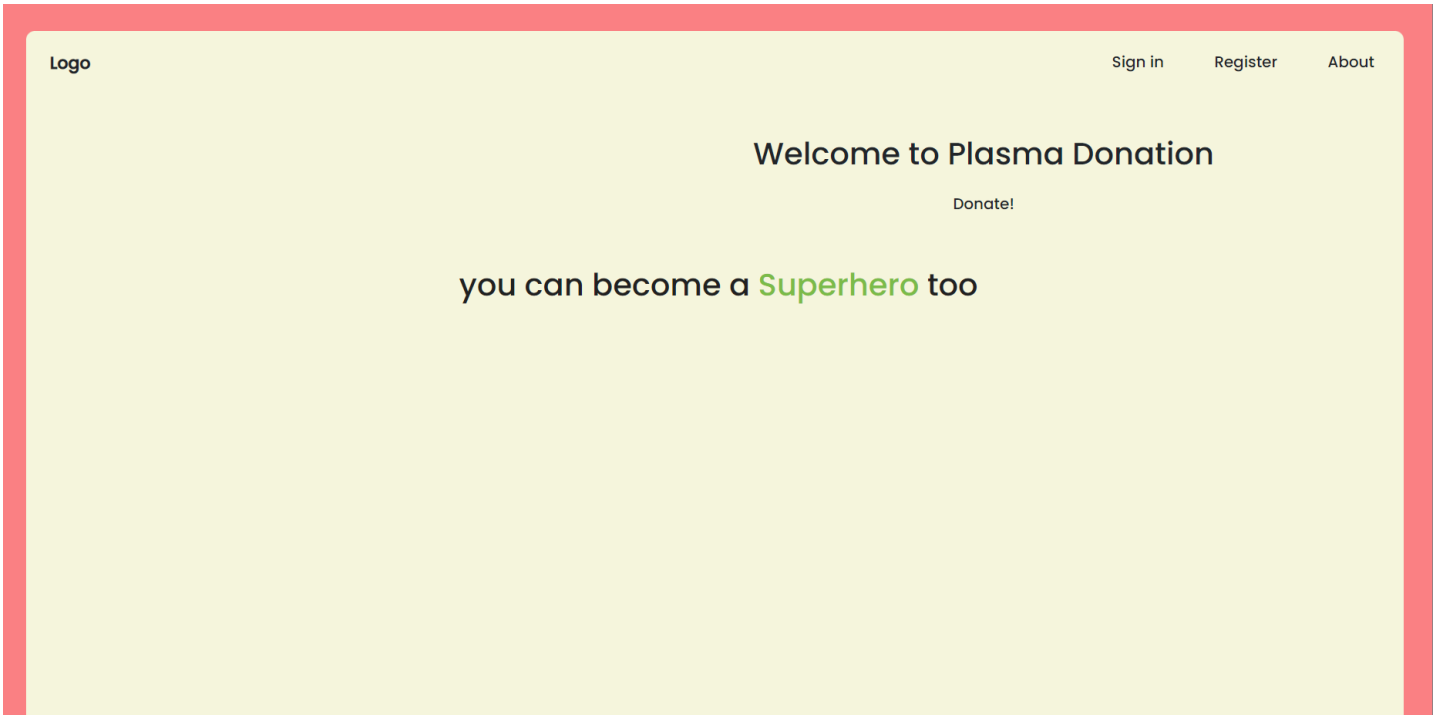

Hello!
username
Password
Log In
Forgot your password?
Sign Up

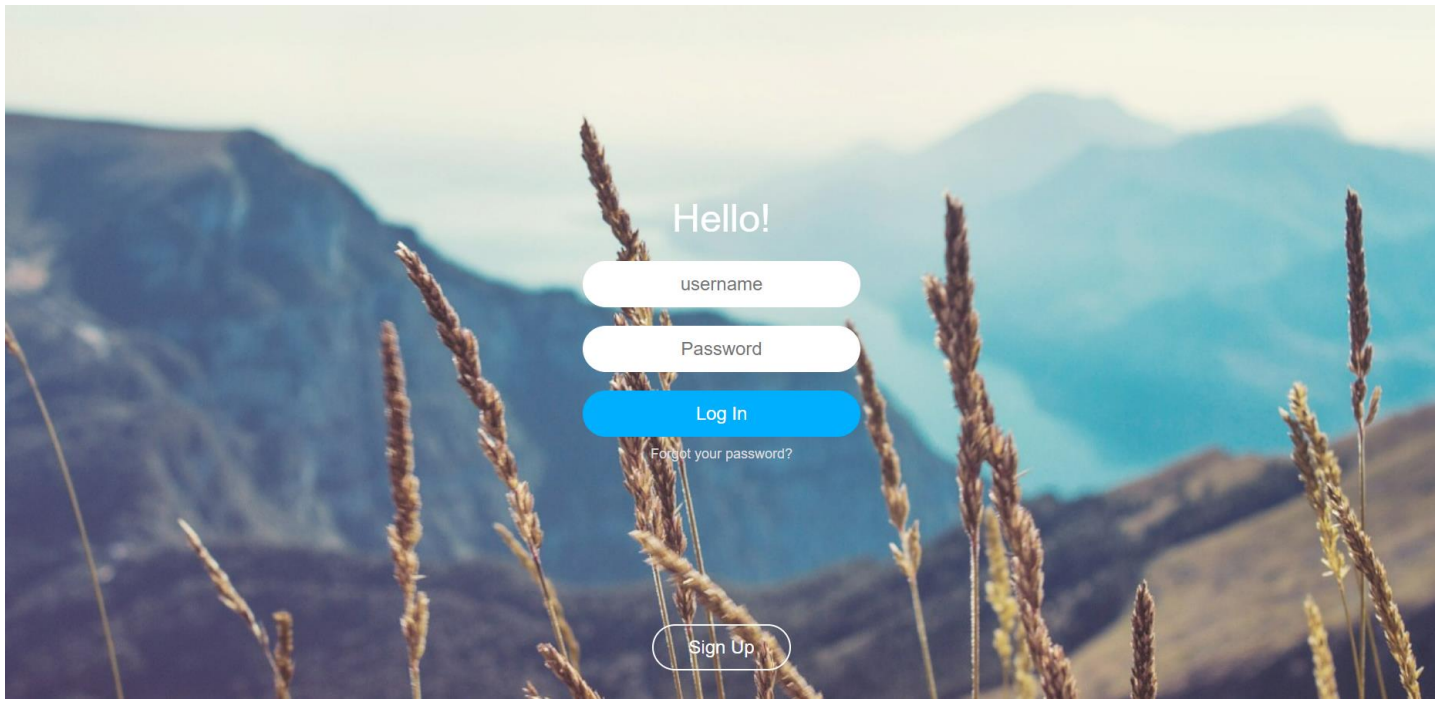
8.4.DONOR ADDER

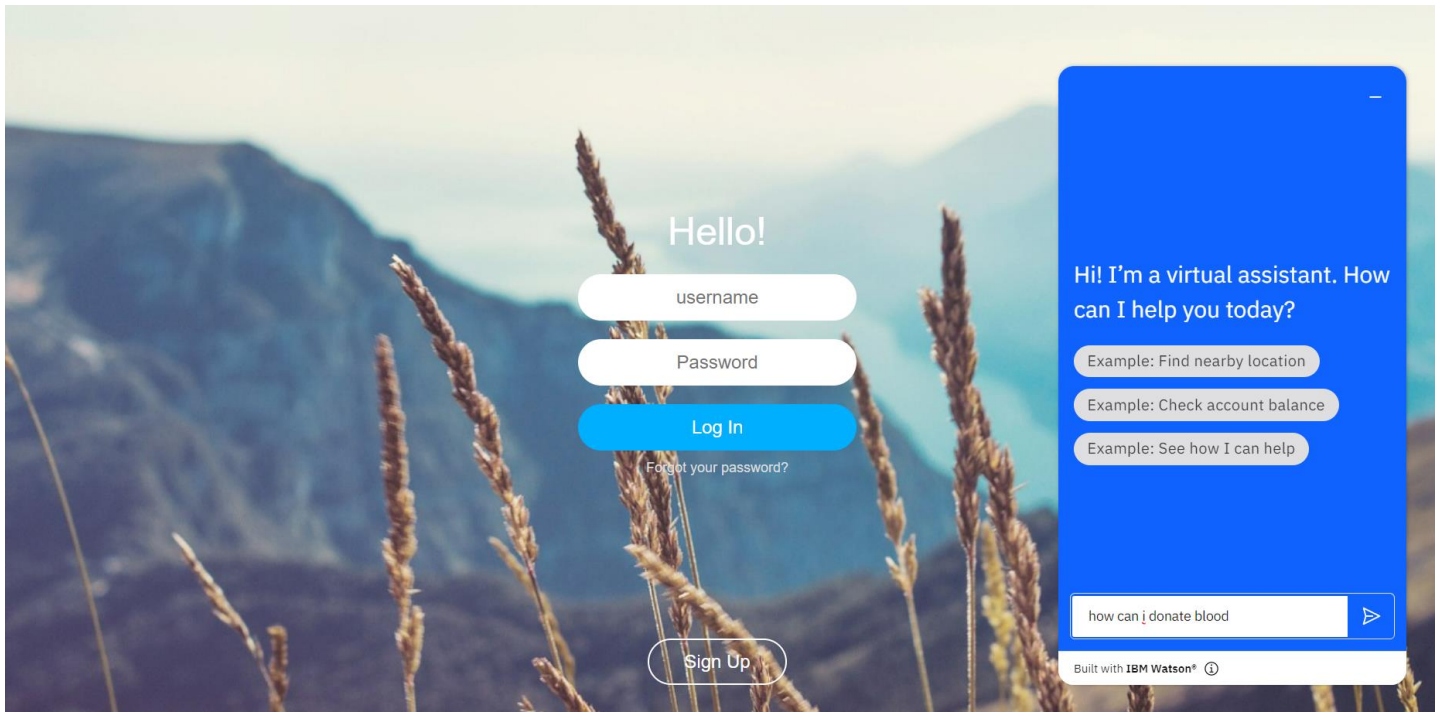


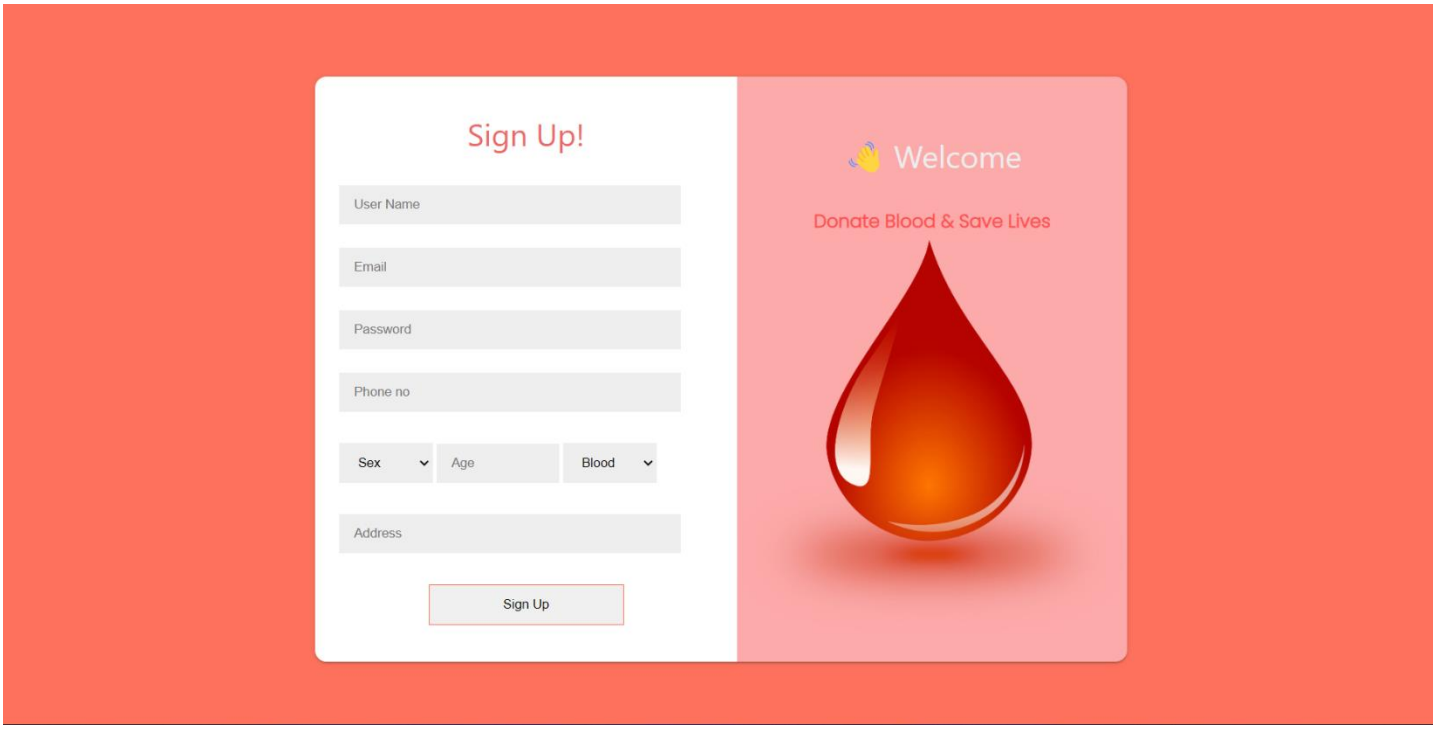
9.RESULT

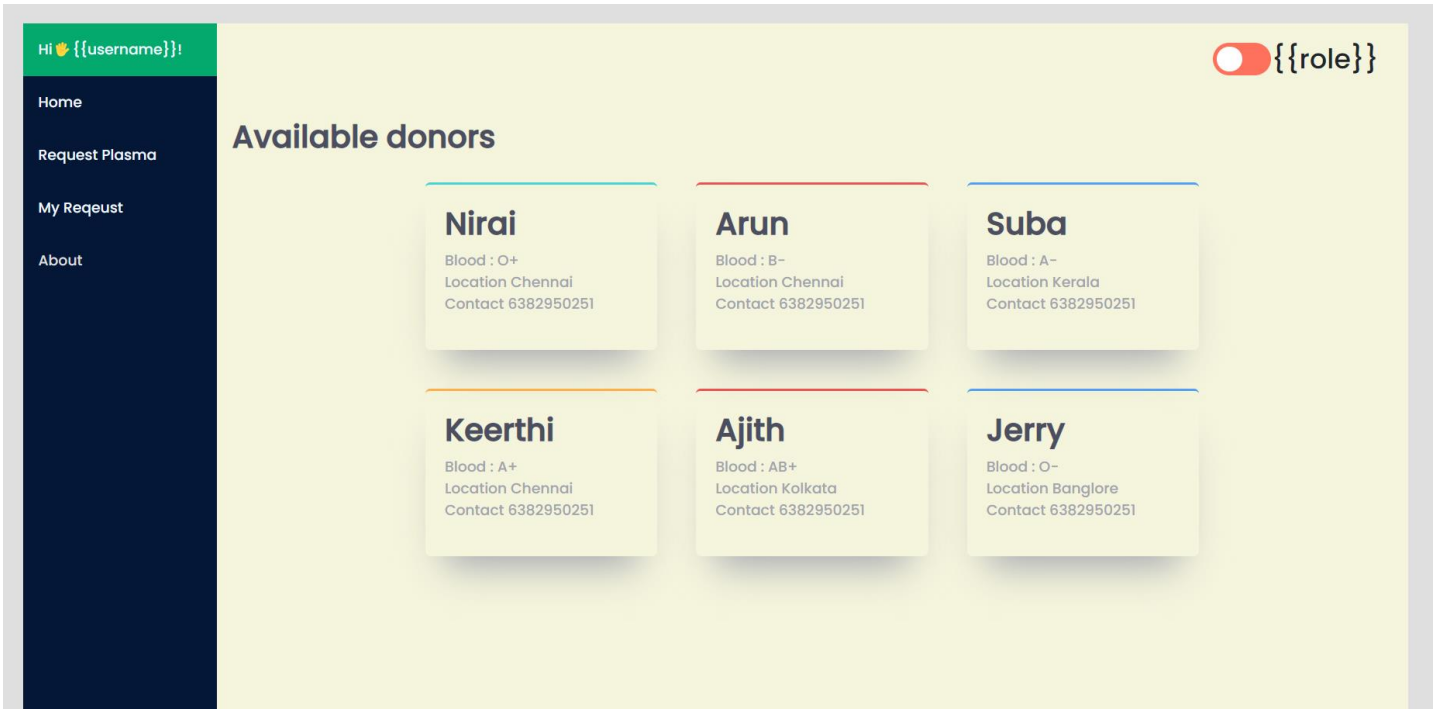
WELCOME TO PLASMA DONATION!>




Hello!
username
Password
Log In
Forgot your password?
Sign Up


Hello!
username
Password
Log In
Forgot your password?
Sign Up
Hi! I'm a virtual assistant. How can I help you today?
Example: Find nearby location
Example: Check account balance
Example: See how I can help
how can i donate blood
Built with IBM Watson®





10.ADVANTAGE & DISADVANTAGE

- Easy connecting donors and recipients makes plasma donation way more proficient.
- Prime motive of the app is to solve the perpetual shortfall of plasma donors.
- It connects plasma donors and recipients through a single and scalable platform.
- Effortless access: Users on this platform will be able to use the app with just One-click.

11.CONCLUSION

The efficient way of finding plasma donors for the infected people is implemented using the plasma donor website that is hosted on Cloud platform. To ensure the smooth functioning of the website operations. I have hosted the website on a cloud platform to

make sure the operationsservice.

are running successfully to deploy the application cloud.

11. FUTURE ENHANCEMENTS

Upgrading the UI that is more user-friendly which will help many users to access the website and also ensures that many plasma donors can be added into the community. Using elastic load balancer, it helps to handle multiple requests at the same time which will maintain the uptime of the website with negligible downtime.

12. APPENDIX

GITHUB LINK:

https://github.com/IBM-EPBL/IBM-Project-41278-1660640873

DEMO LINK: