plasma donor Web application

A PROJECT REPORT

Submitted by

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in partial fulfilment for the award of degree of

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We would like to express our special thanks of gratitude to our **Faculty Mentor** and **Industry Mentor** for their support and guidance in completing our project on the plasma donor Web application

We would like to extend our gratitude to the **IBM** for **Nalaiya Thiran** project for providing us with all the facility that was required.

It was a great learning experience. We would like to take this opportunity to express our gratitude.

DATE:

16/11/2022

TEAM MEMBERS:

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1.ABSTRACT

The world is suffering from the COVID 19 crisis and no vaccine has been found yet.. But there is another scientific way in which we can help reduce mortality or help people affected by COVID19 by donating plasma from recovered patients. In the absence of an approved antiviral treatment plan for a fatal COVID19 infection, plasma therapy is an experimental approach to treat COVID19-positive patients and help them faster recovery. Therapy is considered competent. In the recommendation system, the donor who wants to donate plasma can donate by uploading their COVID19 certificate and the blood bank can see the donors who have uploaded the certificate and they can make a request to the donor and the hospital can register/login and search for the necessary things. plasma from a blood bank and they can request a blood bank and obtain plasma from the blood bank.

2.INTRODUCTION

The main goal of our project is to design a user-friendly web application that is like a scientific vehicle from which we can help reduce mortality or help those affected by COVID19 by donating plasma from patients who have recovered without approved antiretroviral therapy planning for a deadly COVID19 infection, plasma therapy is an experimental approach to treat those COVID-positive patients and help them recover faster. Therapy, which is considered reliable and safe. If a particular person has fully recovered from COVID19, they are eligible to donate their plasma.

As we all know, the traditional methods of finding plasma, one must 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 wants to donate plasma 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

3. LITERATURE REVIEW

Several experiments have been carried out over the years by different groups of researchers. Here are some of the following groups:

[1] Denuis O'Neil (1999). "Blood component" Archived from the original on June 5, 2013. Normally, certain amount of human body weight comes from blood. For adults, it is 4-6 litresof 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.

[2] ways to keep your plasma healthy, Original Archived November 1, 2013, Accessed November 11, 2011. Plasma donation is one of the most accepted practices for saving lives,While earning a few dollars. The whole process can take some time, but it's well worth it once you experience it a few times. Accepting money in exchange for plasma is welcome. It's a move when you feel like you're not just a hero, but you're adding value to yourself. The term "healthy" does not mean only in the absence of disease. It also means that you are healthy enough.

[3] Ripathis S, Kumar V, Prabhakar A, Joshi S, Agarwal A (2015). "Microscale Passive Plasma Separation: A Review of Design Principles and Microdevices," J. Micromech Micro 25 (8): 083001; Plasma separation is of great importance in the fields of diagnosis and healthcare. Due to the lagging transition to microscale, these recent trends are a rapid shift towards shrinking complex macro processes

4) METHODOLOGY

1. Project Identification and Selection

In this project, we aimed to develop an online blood bank system which will focus mainly on managing the donor's blood information. Anyone who is interested in blood donation can donate the blood at the hospital or blood donation centers.

2. Project Initiation and Planning

To begin the project, we have gathered user requirement of this system and prepare the scope and objective. The results from this phase are scope and limitation, objectives, cost and benefits, feature of the proposed system and user interface design.

3. Analyzing System needs

We have studied and identified problems of existing system, then we develop data flow diagram for the existing system. We also develop data flow diagram (DFD) and entity relation diagram (E-R diagram) for the proposed system

4. Designing the Proposed System

Based on the analysis phase, we converted E-R diagram into relational database model and created data dictionary and DFD and user interface are designed in this process.

5. Development of the Proposed System

In this phase, we are going to convert the design of proposed system to computer software, which includes computer programming using phpMyAdmin as a software tool written in PHP, which is intended to handle the administration of MySQL, and translating the design specifications into the computer code.

6. Testing the Proposed System

This step is the process of testing whether the programming code will work correctly with the conditions in our system or not. In this phase, we will fix bugs in order to produce a system with maximum performance.

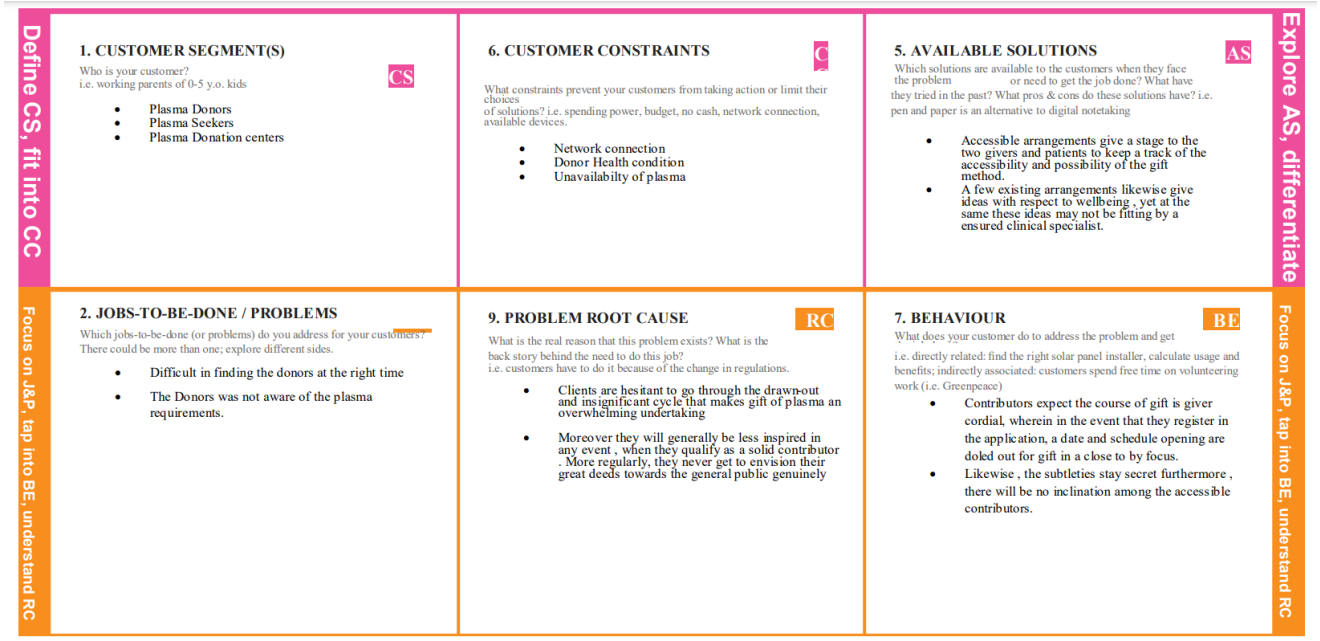
7. Implementing the Proposed System

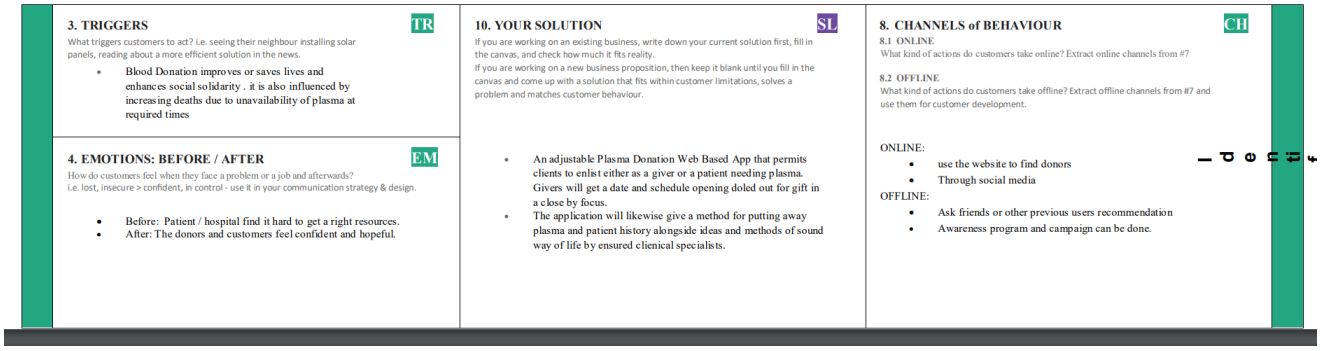
We wish to launch this system on the internet, so that donors are able to view their blood donation records online and administrators can create, update, delete, and query records convenient

5. PROJECT PHASE

A) PHASE 1

PROBLEM SOLUTION





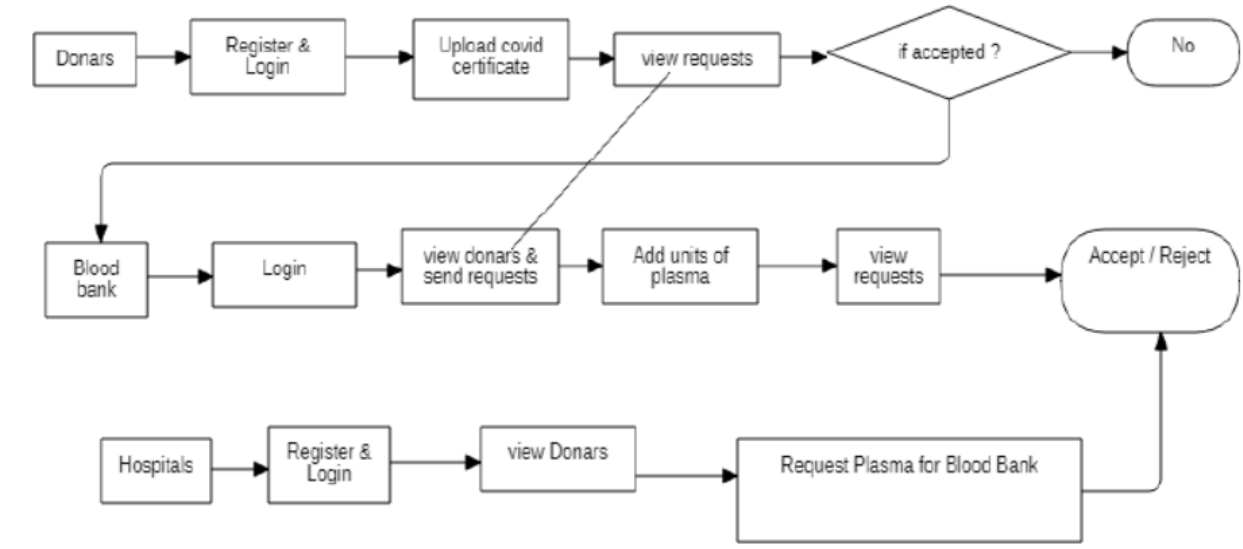
PROPOSED SOLUTION:

In this proposed system, a donor who wants to donate plasma can simply upload their recovered covid19 certificate and can donate the plasma to a blood bank. The blood bank after checking the donor certificate can make a request to the donor when the donor accepts the request, they can add the required number of units they need. The hospital can send a request to the blood bank that needs the patient's emergency plasma and to get the plasma from the blood bank.

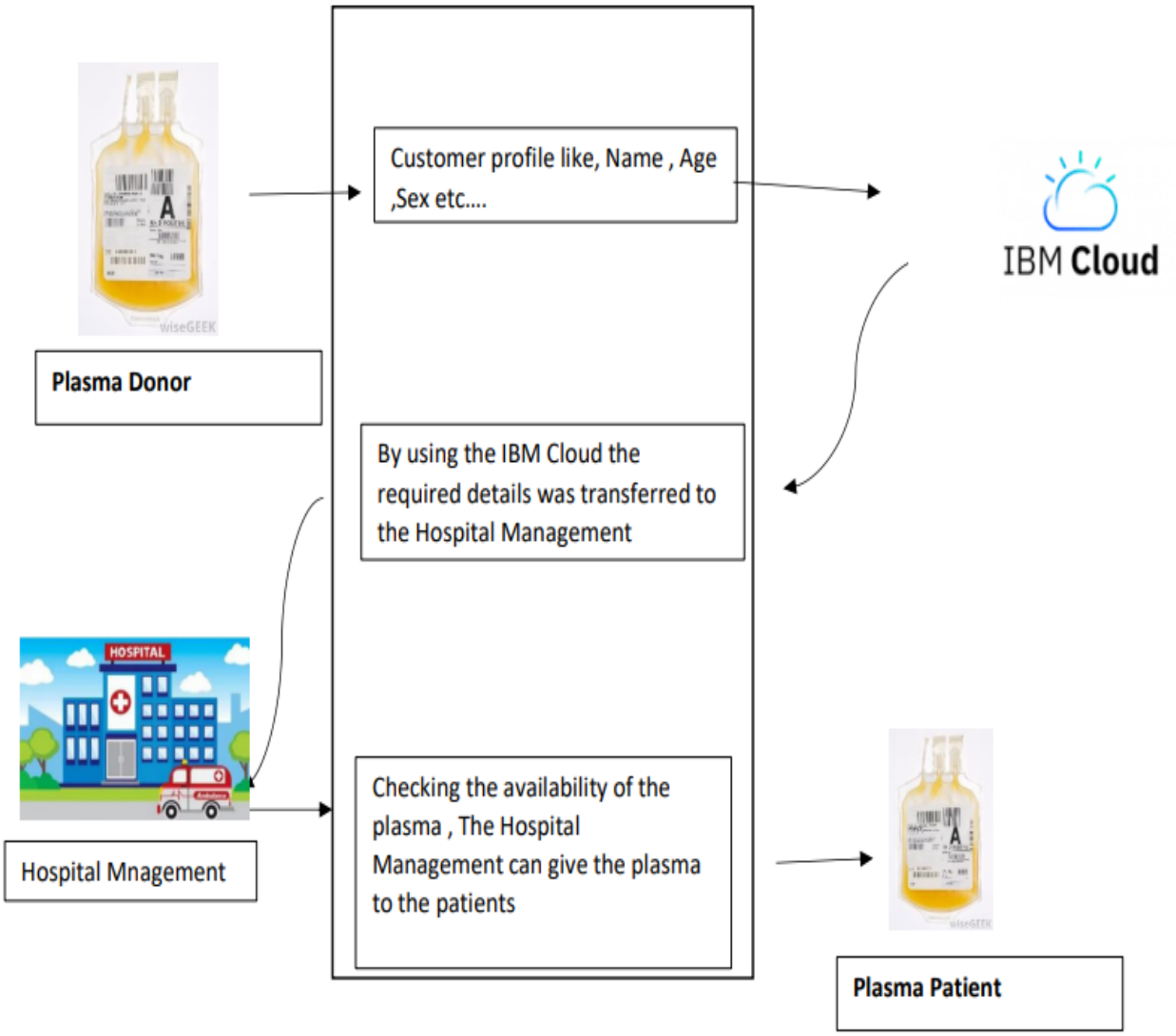
Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	• Obtaining data about the availability of plasma in the Hospitals, blood banks and recipient's blood • This system proposed here aims at connecting the donors and the patients by an online application.
2.	Idea/Solution description	• This application will link all the donors, control a plasma transfusion service and create a Database to hold data on stocks of plasma in each area • By using this application, the users can either raise a request for plasma donation or they can Donate to the people that want.
3.	Novelty / Uniqueness	• This application make sure to have a constant availability of the all types of plasma for the Patients.
4.	Social Impact / Customer Satisfaction	• It helps the donors to donate plasma for required recipients • Which will help to save a lot of lifes

5.	Business Model (Revenue Model)	• The need of the plasma was increasing day by day , so it will help lot of people to create a revenue
6.	Scalability of the Solution	• The demand of the plasma can able to control by this application, it will provide a simple way to connect the Donors and the Patients

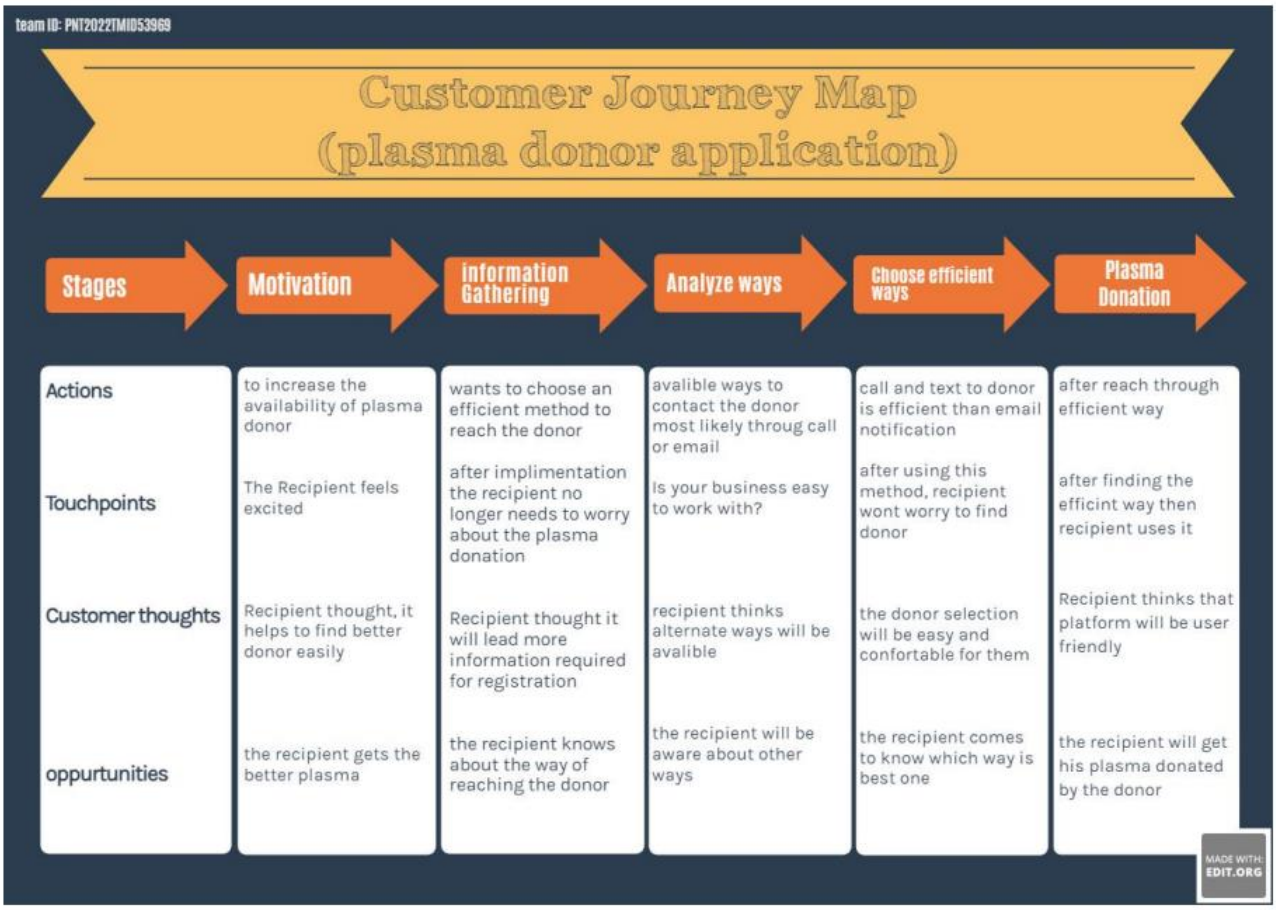


SOLUTION ARCHITECTURE:



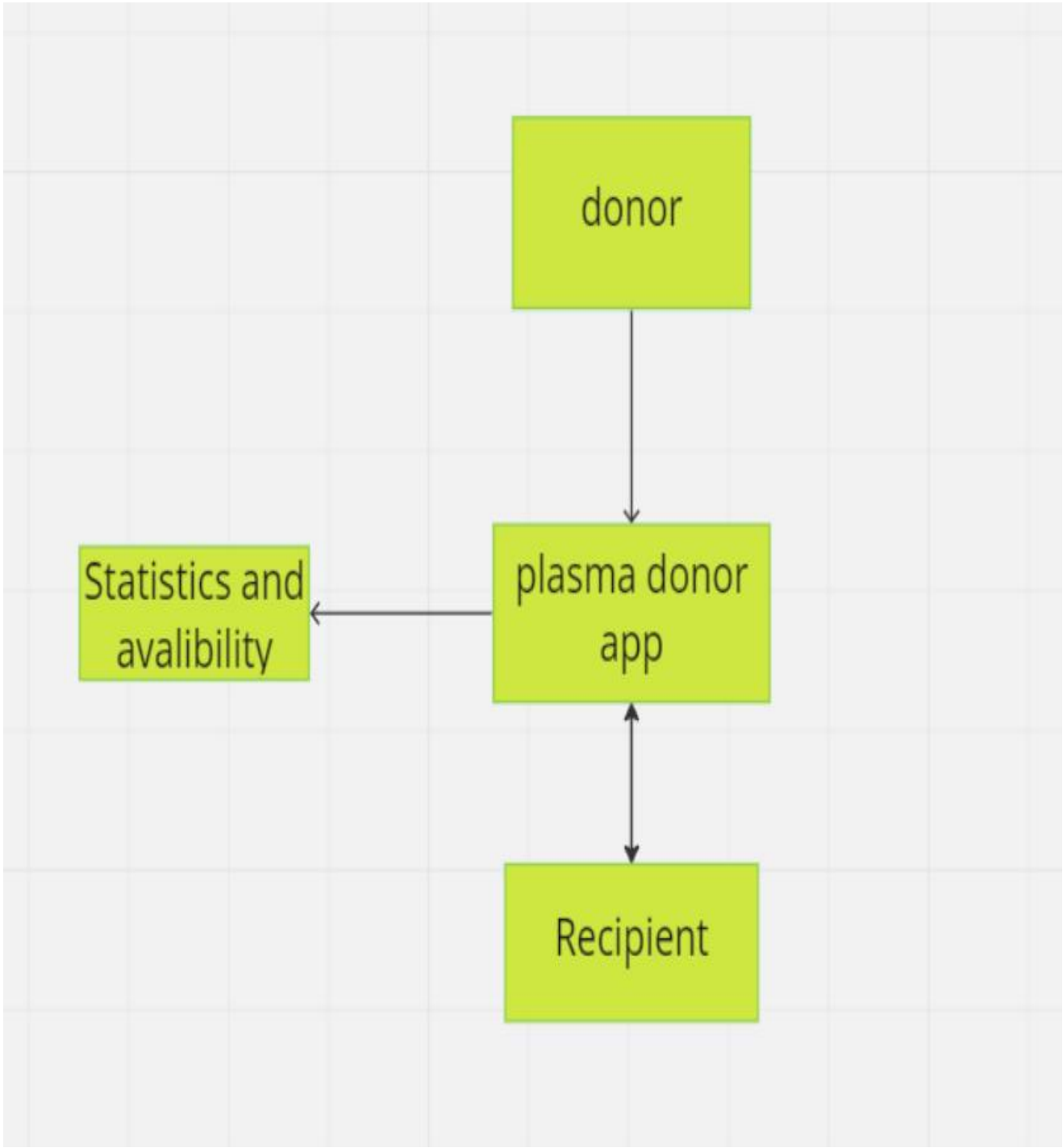
B) PHASE 2 :

CUSTOMER JOURNEY

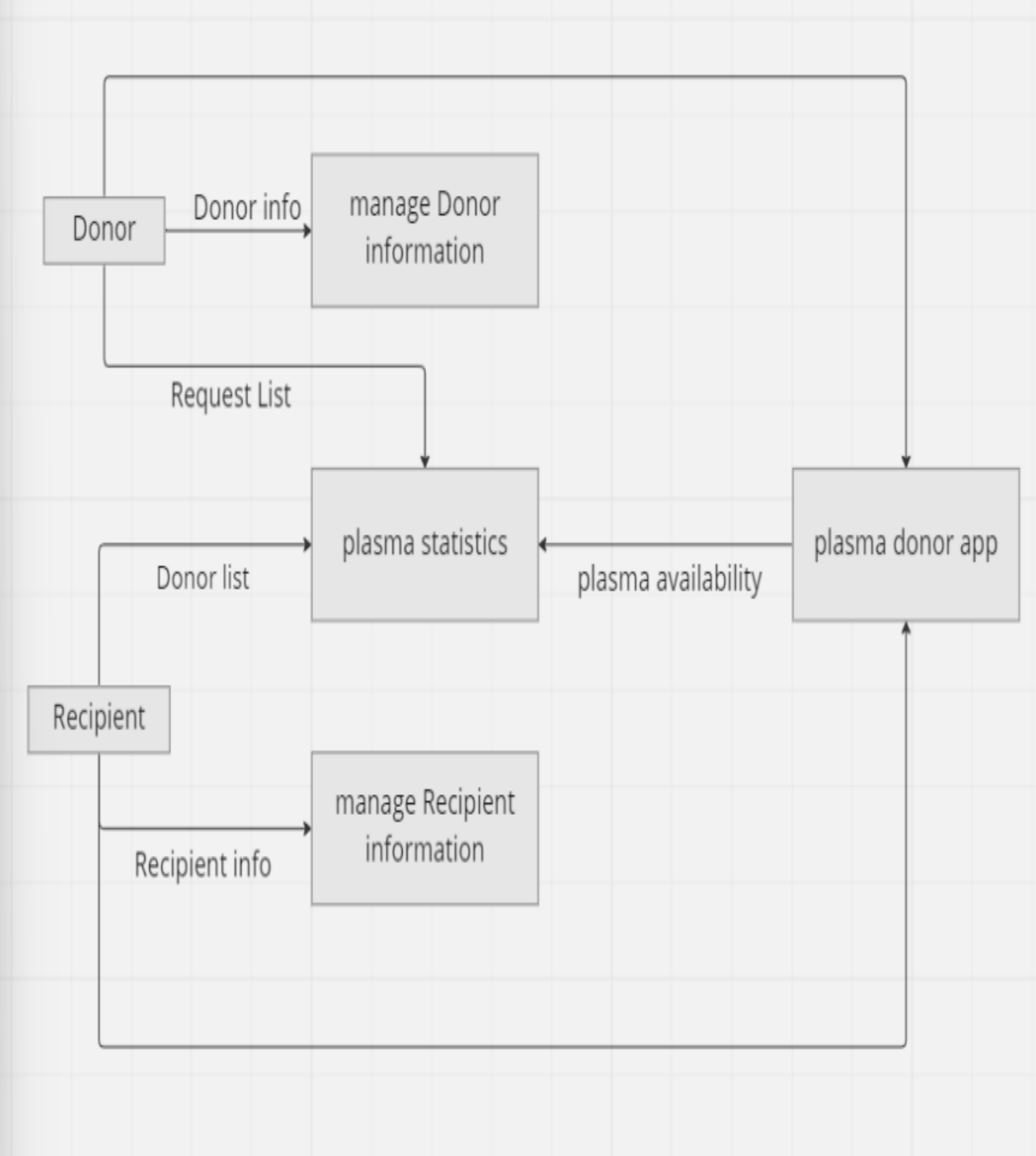


Data Flow Diagram & User Stories

Flow 0:



Flow 1:


Donor
Donor info
manage Donor information
Request List
plasma statistics
plasma donor app
Donor list
plasma availability
Recipient
manage Recipient information
Recipient info

USER STORIES:

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
User (Donor)	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
	Sign in	USN-2	As a user, I will receive confirmation email once I have registered for the application and login	I can receive confirmation email & click confirm	High	Sprint-2
	Donation list	USN-3	As a user, I can register for the application and see the request and receive request.	I can register & see the requests and accept or reject it	high	Sprint-3
User (Recipient)	Registration	USN-4	As a user, I can register for the application through Gmail	I can access my account / dashboard	High	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can receive confirmation email & click confirm	High	Sprint-2
	Plasma Request	USN-6	As a user, I can enter into the application and find the donor and request for plasma.	can register & access the dashboard with Login and request plasma.	medium	Sprint-3
	Find donor	USN-7	Being a patient, I can access the application and find the plasma donor	I can access it on the dashboard	high	Sprint 3
Administrator	Sign in	USN-8	I can login into the app as an admin	I can access the app details	high	Sprint 1
	Maintain Database	USN-9	I can see the exact details of the donor and the recipient	I can access the database	low	Sprint 2

SOLUTION REQUIRMENT:

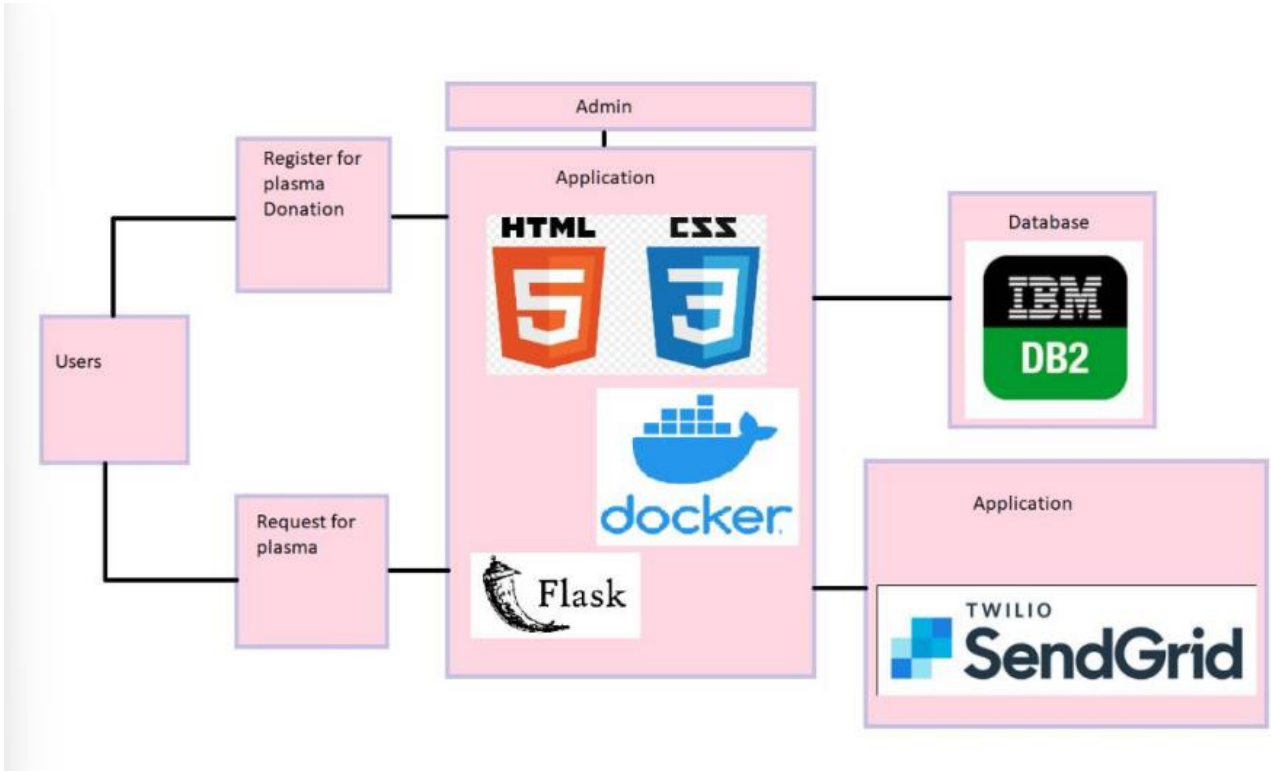
FUNCTIONAL REQUIREMENT:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Gmail Registration through Form (WebApp)
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Certification	After the donor donates plasma, we will give them a certificate of appreciation and authentication.
FR-4	Statistical data	The availability of plasma is given in the page as an availability status, which will be helpful for the users.
FR-5	User Requesting Plasma	Users can request to donate plasma by filling out the request form on the page. Once the request is submitted, they will get an email verification.
FR-6	reporting requirements	Users can use the search bar to look up information about where our camps are being held and other topics.
FR-7	Visual Assistants	A virtual assistant is deployed in as a overlay software agent that can carry out tasks to provide services on behalf of a person in response to basic inquiries When users enter their inquiries, the system will respond with information about plasma and details of plasma donation.

NON-FUNCTIONAL REQUIREMENT:

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The user interface should be modern and user friendly to all age groups.
NFR-2	**Security**	it should be secured with 2FA authentication and other basic methods such as username and passwords
NFR-3	**Reliability**	The system should be made in such a way that it is reliable in its operations and for securing the sensitive details.
NFR-4	**Performance**	Users should have a proper Internet Connection.
NFR-5	**Availability**	As it is a health system it should be deployed and accessible 24x7
NFR-6	**Scalability**	The application has the ability to handle growing numbers of users and load without compromising on performance and causing disruptions to user experience

TECHNICAL ARCHITECTURE:



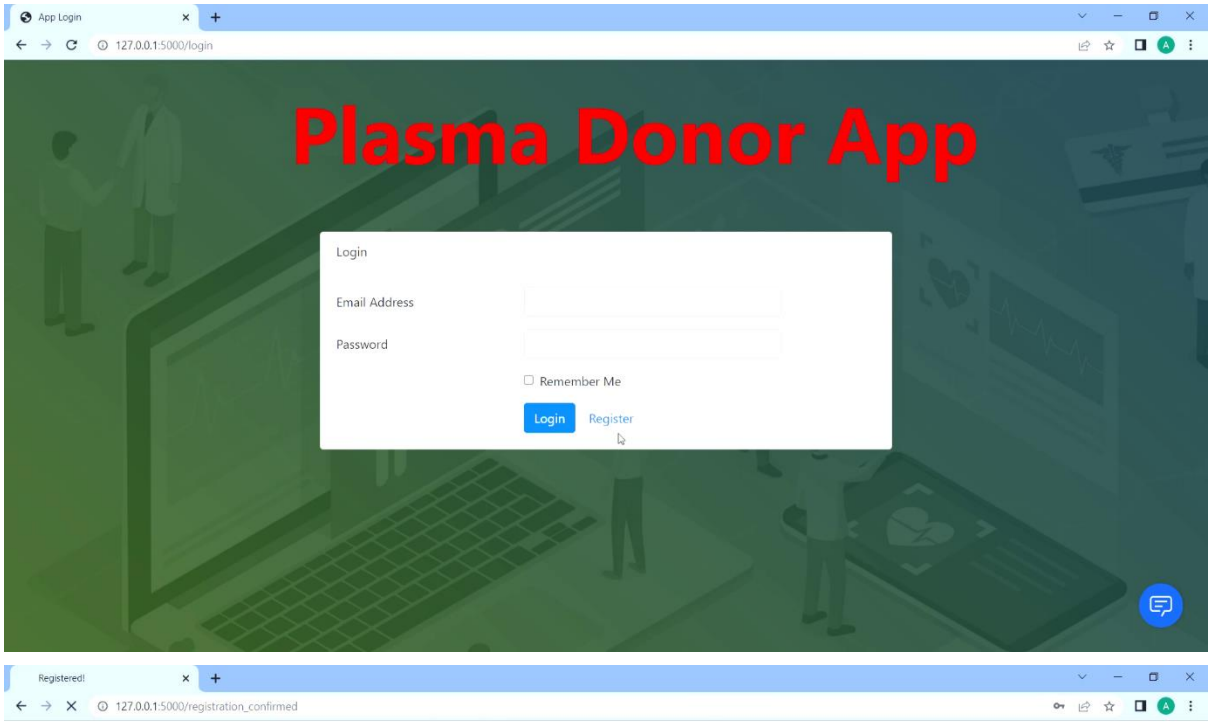
S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python – flask is an open-source framework used to develop the application.	Python -flask
2.	Security Implementations	Container registry and Kubernetes Cluster are used for encryption of data.	Container registry and Kubernetes Cluster
3.	Scalable Architecture	Kubernetes Cluster, it makes containers to run across multiple machines and environments. Which also prevents downtimes do to hardware problems	Kubernetes Cluster
4.	Availability	Kubernetes Cluster provides all time availability. Additionally using Cloudflare networks to reduce DDOS attacks	Kubernetes and Cloudflare
5.	Performance	Docker improves the application performance	Docker

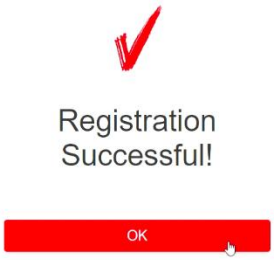
Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Framework used for designing the application.	Python - flask
3.	Application Logic-2	Communication between users and the application via mails	SendGrid
4.	Application Logic-3	Docker is an open source platform for building, deploying, and managing containerized applications.	Docker
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	They make it easier for your developers to store, manage and deploy container images.	Container Registry
9.	External API-2	User data verification system to verify if they have any medical records and is healthy to donate plasma	checking database API
10.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: will be linked to IBM cloud with port forwarding available network Cloud Server Configuration: IBM cloud to host the local server	Local, Cloud Foundry, Kubernetes, etc.

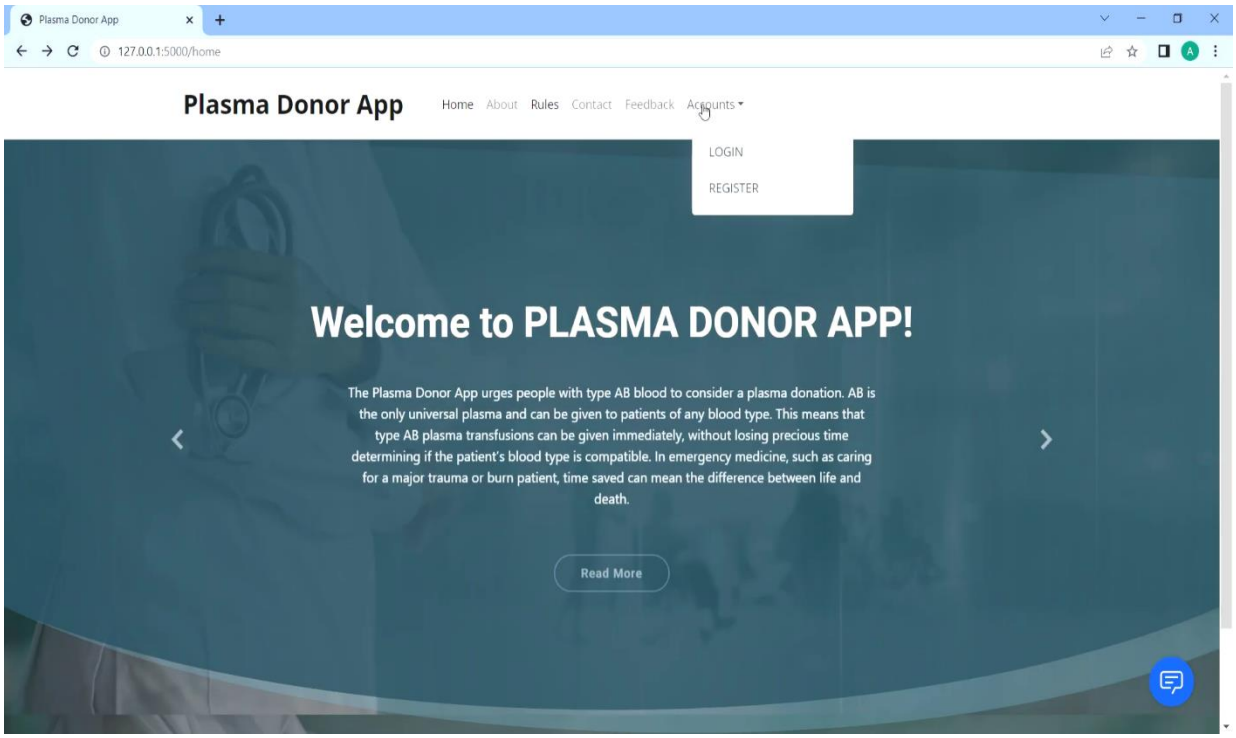
6)PROJECT DEVELOPMENT PHASE

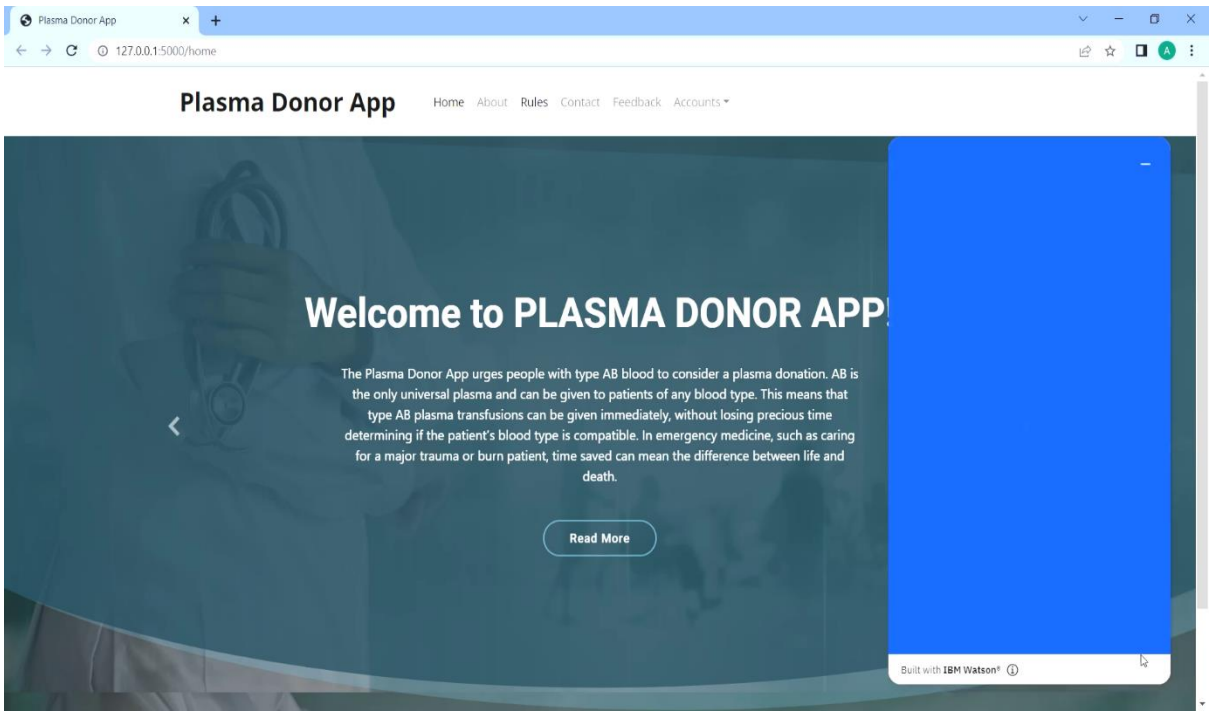
a) LOGIN PAGE





b) HOME PAGE


Plasma Donor App
127.0.0.1:5000/home
Plasma Donor App
Home
About
Rules
Contact
Feedback
Accounts
LOGIN
REGISTER
Welcome to PLASMA DONOR APP!
The Plasma Donor App urges people with type AB blood to consider a plasma donation. AB is the only universal plasma and can be given to patients of any blood type. This means that type AB plasma transfusions can be given immediately, without losing precious time determining if the patient's blood type is compatible. In emergency medicine, such as caring for a major trauma or burn patient, time saved can mean the difference between life and death.
Read More


Plasma Donor App
127.0.0.1:5000/home
Plasma Donor App
Home
About
Rules
Contact
Feedback
Accounts
Welcome to PLASMA DONOR APP!
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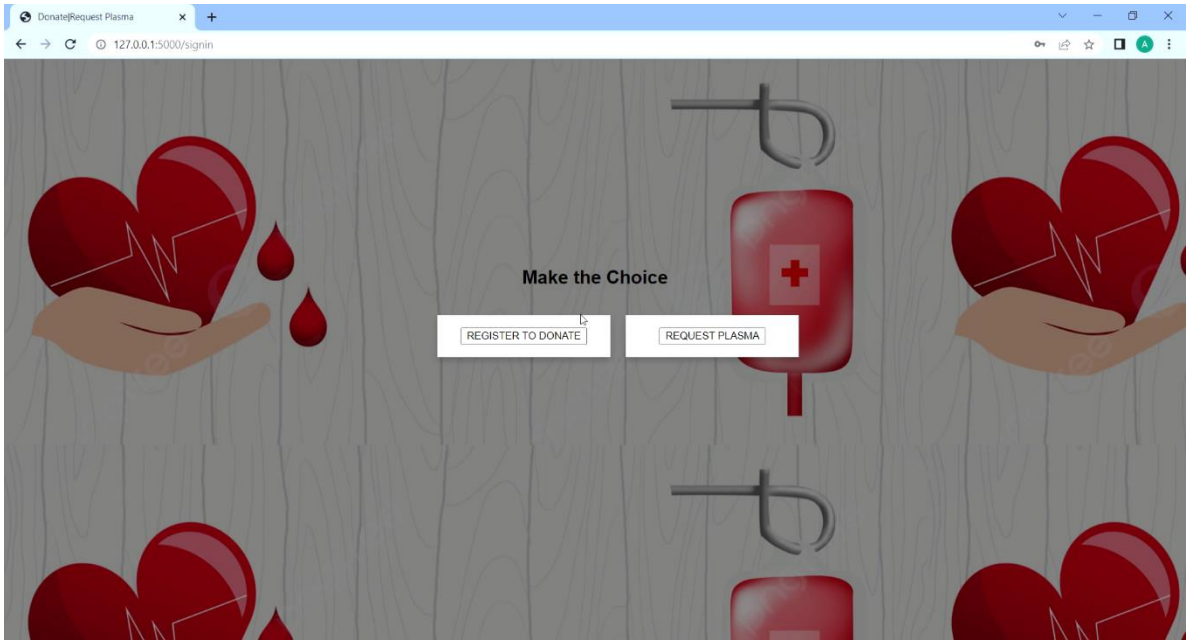
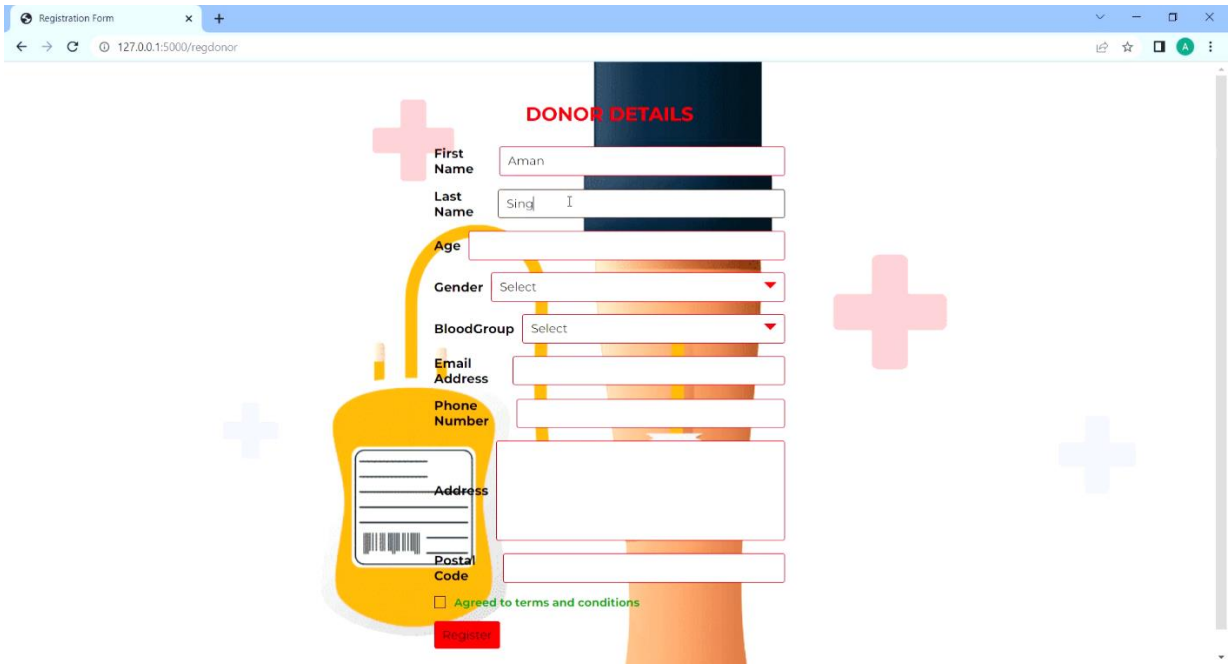
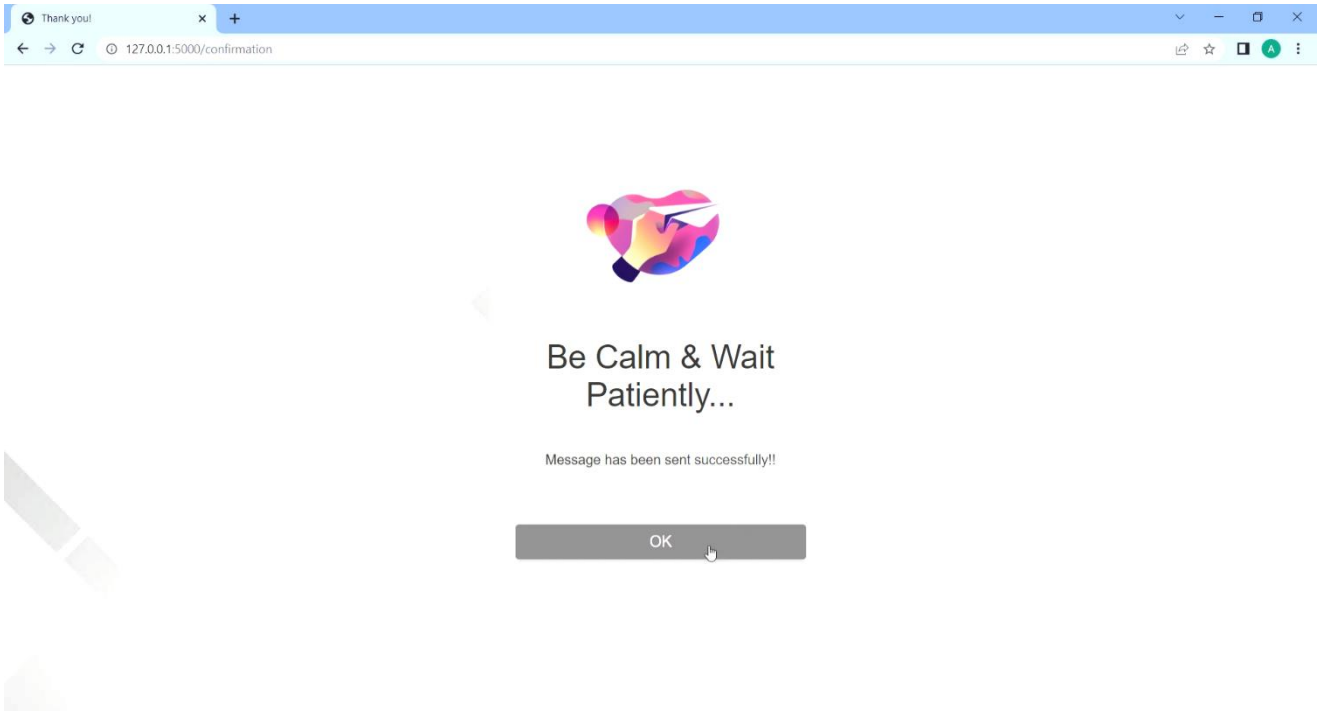
Read More
Built with IBM Watson®

c) PLASMA REGISTRATION PAGE AND RULES

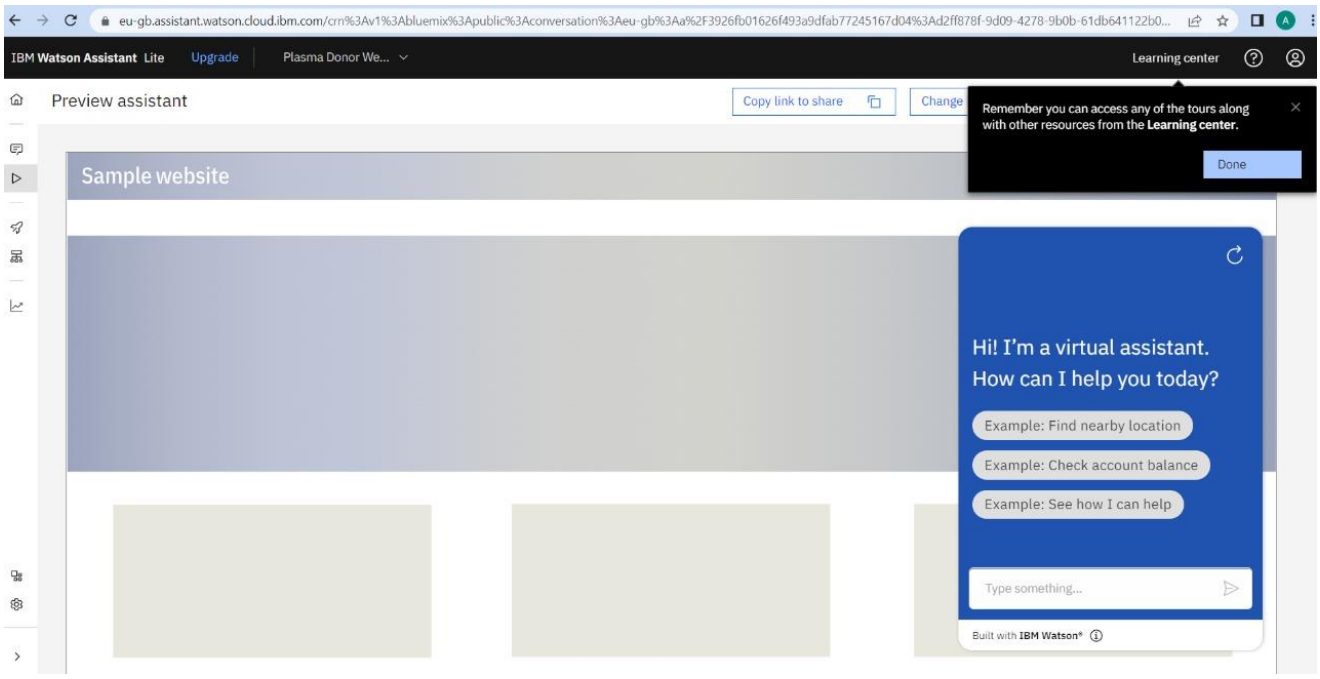


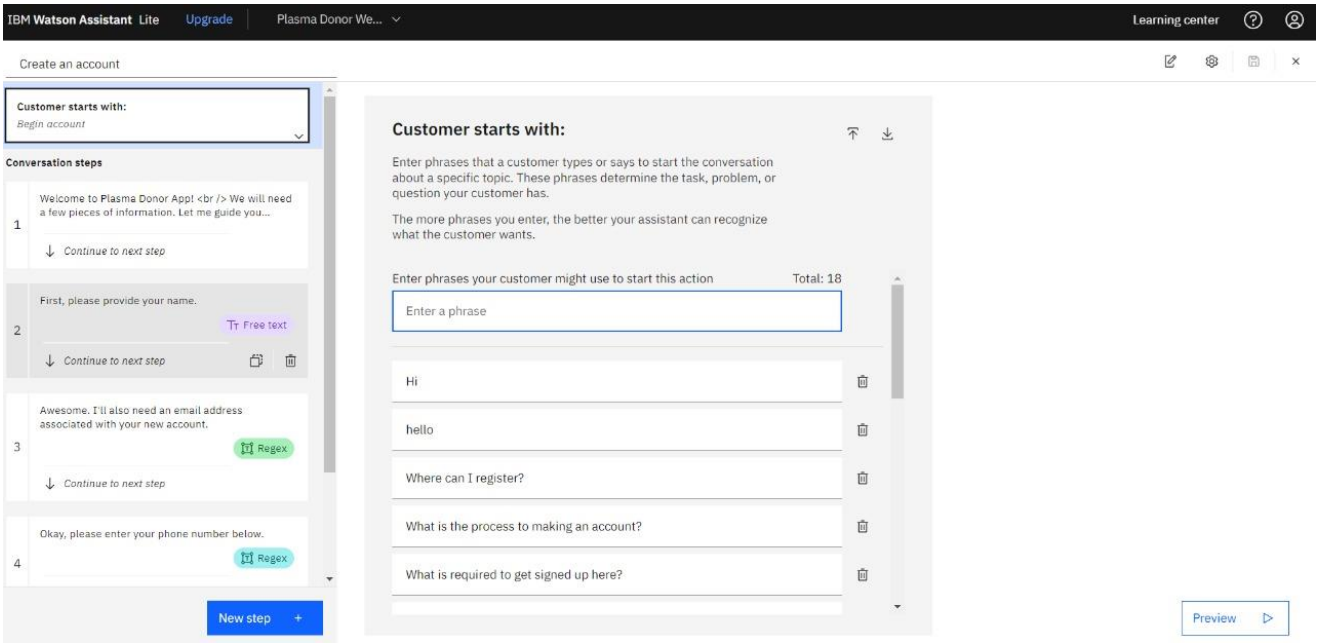


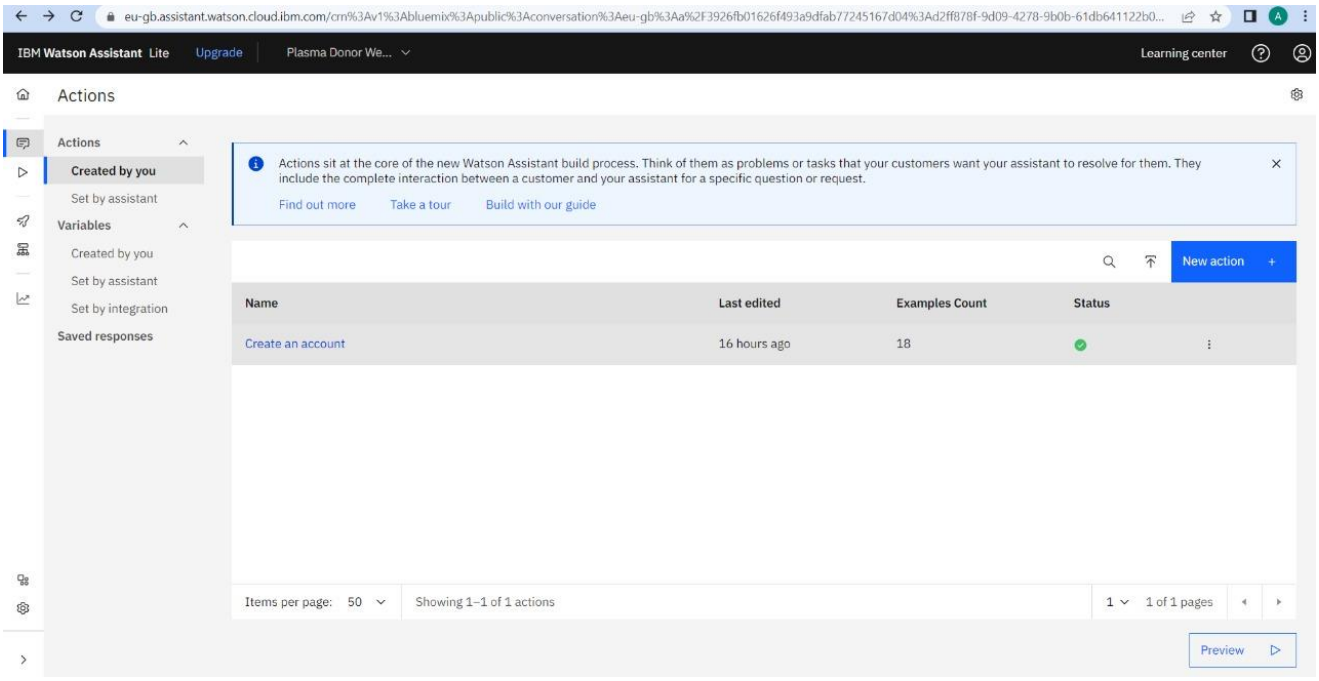

Donor Details
127.0.0.1:5000/requestdonor
DONOR DETAILS
First Name
Last Name
Age
Gender
Blood Group
Email Address
phone number
Address
Bhuvanesh J 22 Male O bhuvaneshj@gmail.com 9654789865 Vannarpettai Message
Kishore R 32 Male A kishore@gmail.com 6687958985 Madurai Message
Jeffrey Benison 29 Male B jeff@gmail.com 8889898685 Chennai Message
Aman Singh 20 Male O aman@gmail.com 6398521470 Tirunelveli Message

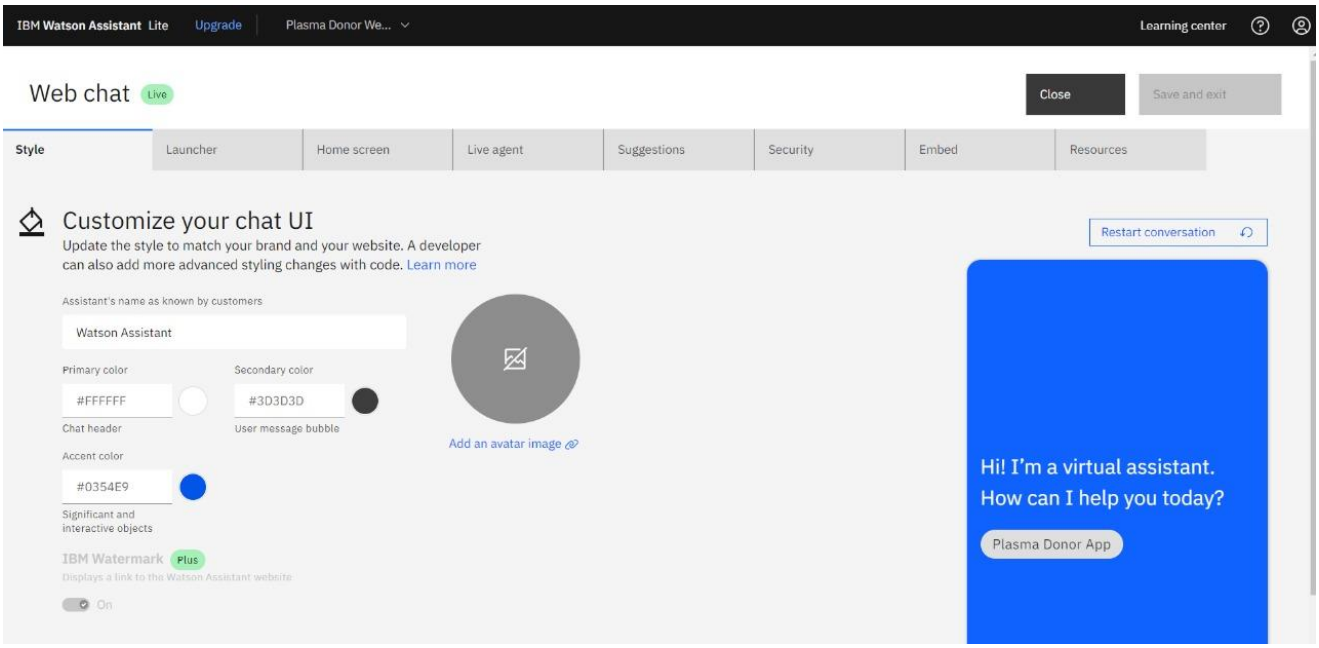

Thank you!
127.0.0.1:5000/confirmation
Be Calm & Wait Patiently...
Message has been sent successfully!!
OK

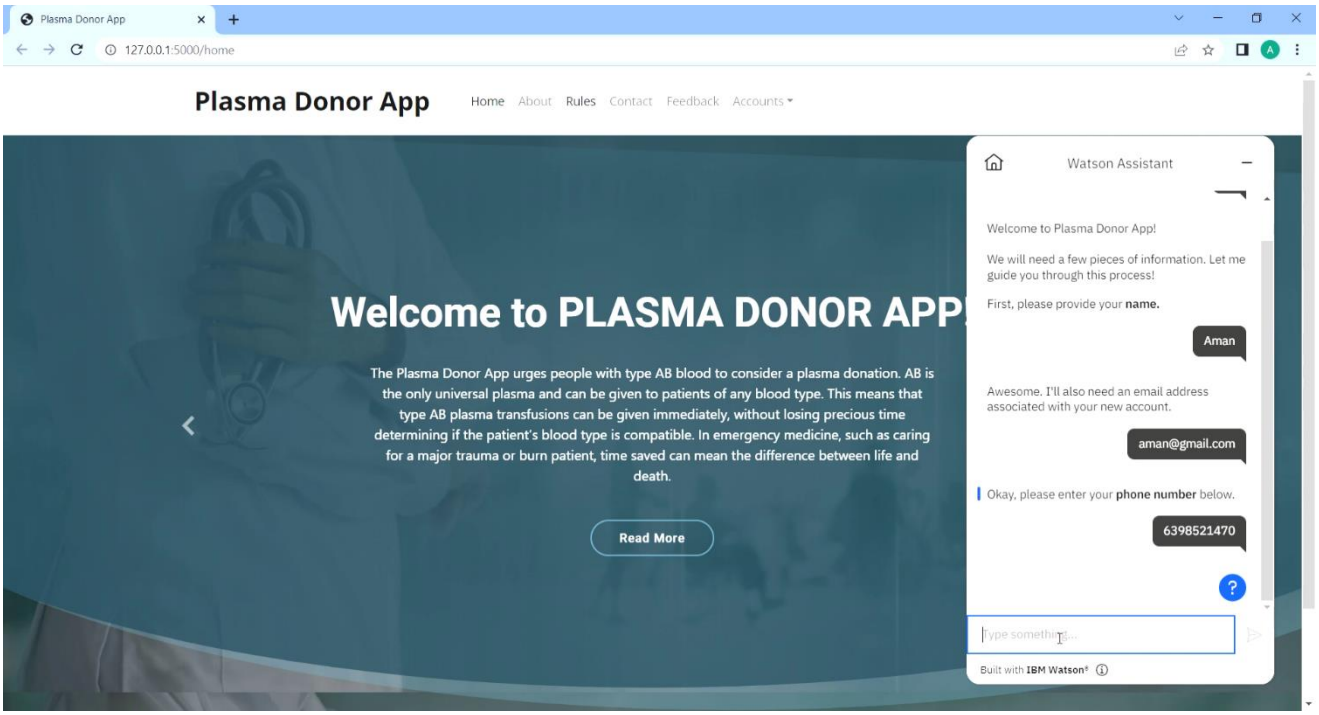
d)CHAT BOT


IBM Watson Assistant Lite
Upgrade
Plasma Donor We...
Learning center
Preview assistant
Copy link to share
Change
Remember you can access any of the tours along with other resources from the Learning center.
Done
Sample website
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
Type something...
Built with IBM Watson*

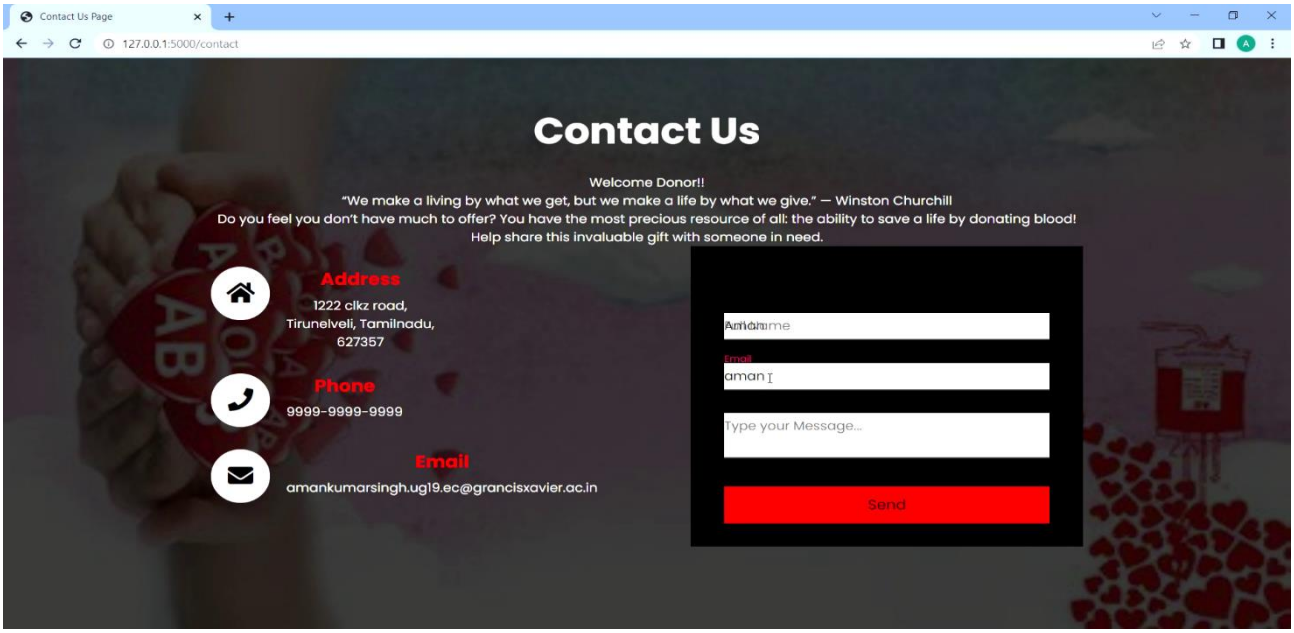

IBM Watson Assistant Lite
Upgrade
Plasma Donor We...
Learning center
Create an account
Customer starts with:
Begin account
Conversation steps
1
Welcome to Plasma Donor App!
 We will need a few pieces of information. Let me guide you...
Continue to next step
2
First, please provide your name.
Free text
Continue to next step
3
Awesome. I'll also need an email address associated with your new account.
Regex
Continue to next step
4
Okay, please enter your phone number below.
Regex
New step
Customer starts with:
Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.
The more phrases you enter, the better your assistant can recognize what the customer wants.
Enter phrases your customer might use to start this action
Total: 18
Enter a phrase
Hi
hello
Where can I register?
What is the process to making an account?
What is required to get signed up here?
Preview

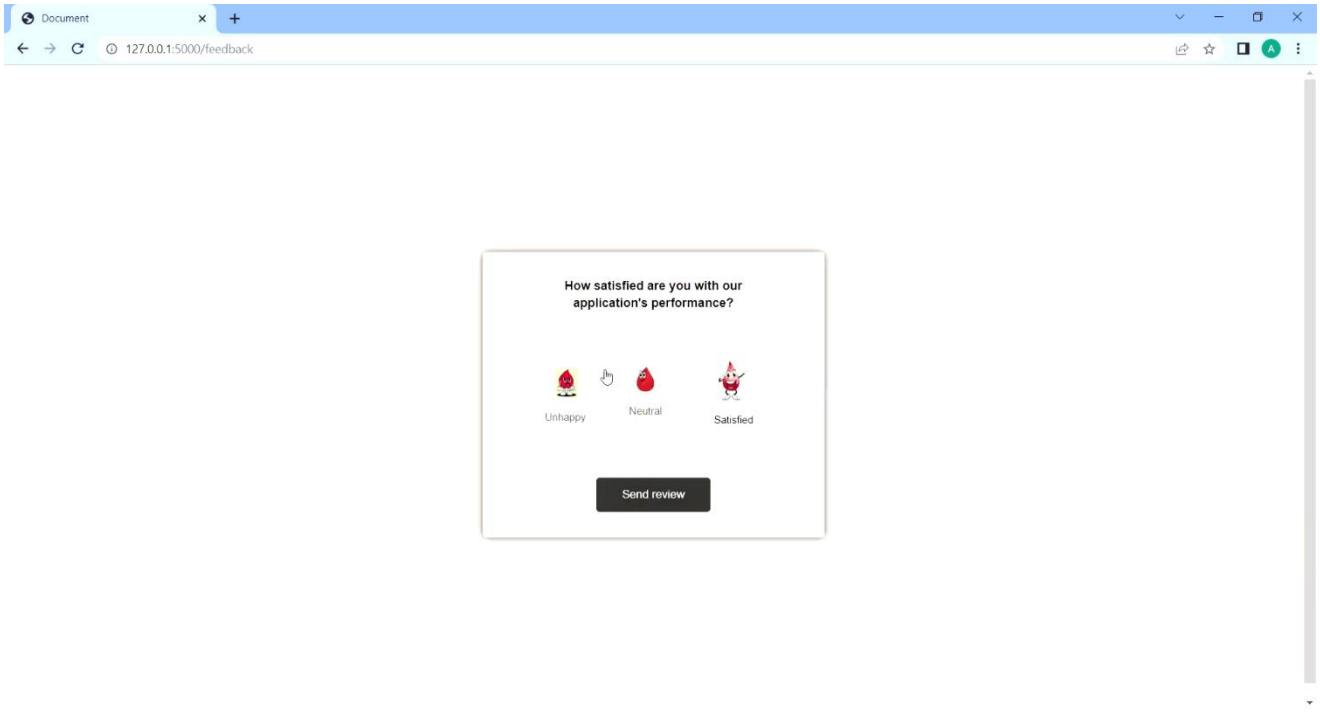

eu-gb.assistant.watson.cloud.ibm.com/crn%3Av1%3Abluemix%3Apublic%3Aconversation%3Aeu-gb%3Aa%2F3926fb01626f493a9dfab77245167d04%3Ad2ff878f-9d09-4278-9b0b-61db641122b0...
IBM Watson Assistant Lite
Upgrade
Plasma Donor We...
Learning center
Actions
Actions
Created by you
Set by assistant
Variables
Created by you
Set by assistant
Set by integration
Saved responses
Actions sit at the core of the new Watson Assistant build process. Think of them as problems or tasks that your customers want your assistant to resolve for them. They include the complete interaction between a customer and your assistant for a specific question or request.
Find out more
Take a tour
Build with our guide
New action
Name
Last edited
Examples Count
Status
Create an account
16 hours ago
18
Items per page: 50
Showing 1–1 of 1 actions
1
1 of 1 pages
Preview


IBM Watson Assistant Lite
Upgrade
Plasma Donor We...
Learning center
Web chat
Live
Close
Save and exit
Style
Launcher
Home screen
Live agent
Suggestions
Security
Embed
Resources
Customize your chat UI
Update the style to match your brand and your website. A developer can also add more advanced styling changes with code. Learn more
Assistant's name as known by customers
Watson Assistant
Primary color
#FFFFFF
Chat header
Secondary color
#3D3D3D
User message bubble
Accent color
#0354E9
Significant and interactive objects
Add an avatar image
IBM Watermark
Plus
Displays a link to the Watson Assistant website
On
Restart conversation
Hi! I'm a virtual assistant. How can I help you today?
Plasma Donor App



e) CONTACT US FEEDBACK




Document
127.0.0.1:5000/feedback
How satisfied are you with our application's performance?
Unhappy
Neutral
Satisfied
Send review

7)DISCUSSION

Here, we discuss how the blood donor application works with the three types of users.

Blood donor

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. Once the user login, he would be able to see the latest blood donation requests in their city/region using "Blood Requests ". 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 notification indicating that the blood donation has been made and there is no further donation is required for this 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 donation 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. 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 make up its lost red blood cells. Donors can invite friends to register to the application using "Invite Friends" to increase 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 "Book Appointment feature".

Blood requester (patients through clinic)

When a patient needs a blood, the clinic where he/she is admitted would request registered volunteers in the same or nearby city/state to donate using the "Send Request" of the app. For example, assuming that a patient is admitted in a clinic in Toronto, those donors in Markham, Brampton areas may be notified too. Requester can send notification to donors as emergency/normal depending on the need of the

patient. In some cases, surgeries are scheduled in advance and the blood donation then, if needed, is marked as normal. Once a request is fulfilled, i.e., when a successful donation made, then the clinic can send updated notification to the previous recipients. The function “Blood Requests Feed” is to display requests from other clinics. To enhance the cooperation and communication between different clinics, “Blood Requests Feed” can be used at one clinic to pass the need of other clinics to those potential donors who are unaware of the BLOODR app. Clinics can also see their request history and donation history using “Request History” and “Donations History” features, respectively. Using the history, clinics can know how many requests they requested and how many donations made and analyze the data for further research. Clinics are informed about the appointments scheduled by donors through using “Appointments”. As a result, this application can be helpful for clinics to send request to donors, keep track of requests and donations history, and view donor’s appointments with a clinic.

Admin

Admin user can manage users and analyze data. User management includes adding/deleting co-admin users using “Admin Users” feature shown in. Admin can track the list of donations made at all clinics using “View Donations”. This donations’ follow up can be used to alert those donors who have frequent donations to avoid risks explained earlier. Admin can also view all requests made by clinics “View Requests”. This can be used to alert donors (registered or not) in situations where the donations are not enough to fairly respond to the increasing number of requests. Admin can see the registered donors list using “Donors List” to alert/delete those donors, if necessary, who are inactive for a period of time. Also, admin can encourage those limited number of donors in a specific area/city to invite their friends and relatives to register to the app. Admin can see the registered clinics using “Requesters List” to encourage those unregistered clinics to use this app. Using this data collected from all these admin features, admin can do data analysis.

8) CONCLUSION :

Plasma is a liquid portion of blood; it is a mixture of water, proteins and salts. Antibodies are proteins made by the body in response to an infection. People fully rescued from COVID19 are encouraged to donate plasma, which can help to increase the lifespan of other patients because their plasma contains antigens which helps the affected person to recover faster. These immunoglobulins give your immune system a way to fight the virus when you are sick, so your plasma can be used to help others fight off illness. Individuals must fully resolve symptoms for at least 14 days prior are eligible to donate.

9)FUTURE SCOPE :

User interface (UI) can be improved in future to accommodate global audience by supporting different languages across countries. Data scraping can be done from different social networks and can be shown in the Blood Request Feeds. Appointments can be synchronized with Google and Outlook calendars for the ease of users.

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