Project Report

1. INTRODUCTION

1.1 Project Overview

The aim of the project is to create a Web Application using Cloud technology that have the ability to manage the data of donors, receivers and the blood bank.

Plasma is a liquid-portion of the donor's blood. The Blood is drawn from one arm and sent through a highly developed machine that collects the plasma. The donor's red blood cells and platelets are then returned to the donor along with some saline.

Plasma is an important part of the treatment for many serious health diseases. Plasma therapy is a process where blood is drawn from the recovered patients in order to ratify antibodies that fight against infections.

During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low. Saving the donor information and helping the needy by notifying the project.

1.2 Purpose

- Plasma donation is a vital part of worldwide healthcare. Plasma is the liquid component of our blood that espouse to 55% of our blood's total volume.
- Plasma is always necessary to help our body recover from injury, distribute nutrients, remove waste and prevent infection, while moving throughout your circulatory system.
- Plasma is used for clotting factors where people with continuous bleeding disorders are unable to clot blood properly, which may result in organ damage and even death.

- During plasma donation, blood is drawn from the donor's arm and run through an automated process that removes the plasma portion from the blood.
- The remaining red blood cells and platelets are then returned to the donor's arm with a small amount of saline to maintain the overall volume.
- Plasma donations are used for slightly more specific purposes than a general blood donation. The most common uses of plasma donations include individuals who have experienced a severe trauma, burn or shock, adults or children with cancer, and people with liver or clotting factor disorders.
- Donated plasma can be frozen and preserved for up to one year.
- Nearly 10,000 units of plasma are needed every single day in The United States of America, and plasma transfusions are often a gift for life.

2. LITERATURE SURVEY

2.1 Existing problem

- A plasma donation occurs when a person voluntarily has blood drawn and used for transactions and made into pharmaceutical medications by a process called fractionation (separation of whole-blood components). Donation may be of whole blood, or of specific components directly.
- During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low. Saving the donor information and helping the needy by notifying the current donors list, would be a helping hand. In regard to the problem faced, an application is to be built which would take the donor details, store them and inform them upon a request.
- Plasma donor management system is a web-based system that can assists the information of blood bag during its handling in the blood bank. With this system, the user of this system can key in the result of blood test that has been conducted to each of the blood bag received

by the blood bank. People who need blood are increasing day by day. People who have diseases like anemia or people who have gotten into accidents and run out of blood need constant supply of blood to sustain their life and there is not enough blood available for them. During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low.

- Saving the donor information and helping the needy by notifying the current donors list, would be a helping hand.
- In regard to the problem faced, an application is to be built which would take the donor details, store them and inform them upon a request. Plasma Donor Application is an android application that enables individuals who want to donate the blood to help the needy.
- It also enables blood donation camp organizers to record and store data for people who communicate with donors and it also provides centralized database.

Existing Solutions:

The key objectives of our work are:

•To build a platform between blood donor and receiver.

• To implement a hybrid approach of K-Means and Agglomerative clustering algorithm.

•To find the nearest blood donor in a specific region in the shortest possible time.

•To increase the number of voluntary unpaid blood donations significantly.

2.2 References

1. Python Flask
   https://flask.palletsprojects.com/en/2.2.x/

2. HTML
   https://developer.mozilla.org/en-US/docs/Web/HTML

3. CSS
   https://developer.mozilla.org/en-US/docs/Web/CSS

4. IBM Cloud

https://cloud.ibm.com/docs

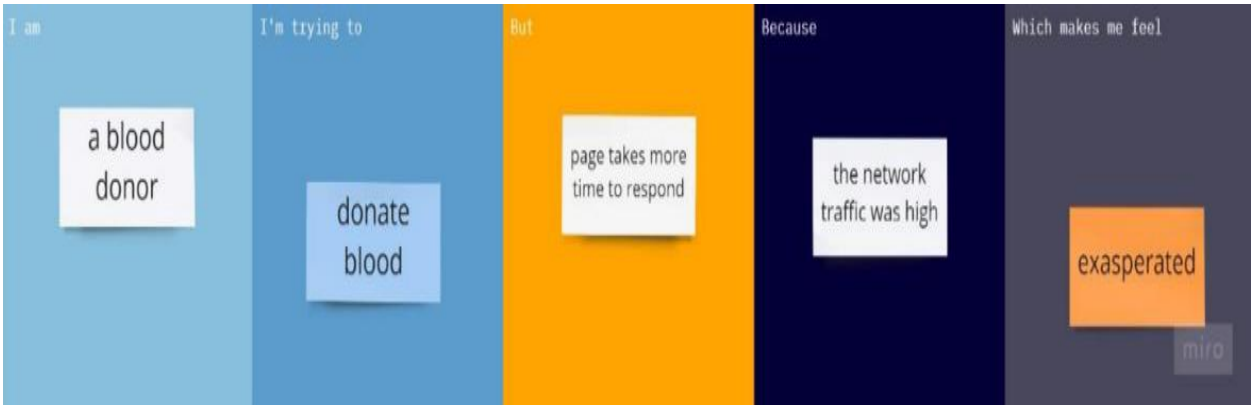
5. DOCKER
   https://docs.docker.com/

6. ibm_db
   https://www.ibm.com/docs/en/db2/11.5?topic=framework-application-development-db

2.3 Problem Statement Definition:

- During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low.
- Saving the donor information and helping the needy by notifying the current donors list, would be a helping hand.
- In regard to the problem faced, an application is to be built which would take the donor details, store them and inform them upon a request.

Customer Problem Statement Template:



Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	a Blood Donor	Donate blood	page takes more time to respond.	the network traffic was high.	exasperated
PS-2	a User	search blood donor	page takes more time to display.	It has large amount of datasets.	frustrated

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

3.2 IDEATION AND BRAINSTORMING

Plasma Donor Application

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

A plasma donation occurs when a person voluntarily has blood drawn and used for transactions and made into pharmaceutical medications by a process called fractionation (separation of whole-blood components).Donation may be of whole blood, or of specific components directly

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

Team lead - Shreya M V

An application that includes all the present date available plasma donors along with their detail to communicate.

To have a track of donors and to keep those donors during the demand.

Providing an easy and user friendly site for users.

Triggering the alert message when the Patient needs blood immediately.

Team Member 1 - Vijayavarshini R

Centralized transportation system along with all the hospitals and branches.

Sending E-mail notification to the user regarding the blood needs.

Keep a record of the blood donors and send them regular message about the blood needs.

Plasma donor management system is a web based system that can assists the information of blood bag during its handling in the blood bank.

Team Member 2 - Vigneshwaran S

People who have diseases like anemia or people who have gotten into accidents.

During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low.

In regard to the problem faced, an application is to be built which would take the donor details, store them and inform them upon a request.

Triggering the alert message when the Patient needs blood immediately.

Team Member 3 - ShyamPrasadh S

Plasma donor management system is a web based system that can assists the information of blood bag during its handling in the blood bank.

To have a track of donors and to keep those donors during the demand.

Centralized transportation system along with all the hospitals and branches.

Keep a record of the blood donors and send them regular message about the blood needs.

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, 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

Prediction and Analysis

Predicting the sucess ratio of donated donors.

Predicting the ratio of new users to donate blood.

Features

E-mails and SMS alert to the users regarding the immediate blood needs.

24*7 working of the website to help the patients.

Services

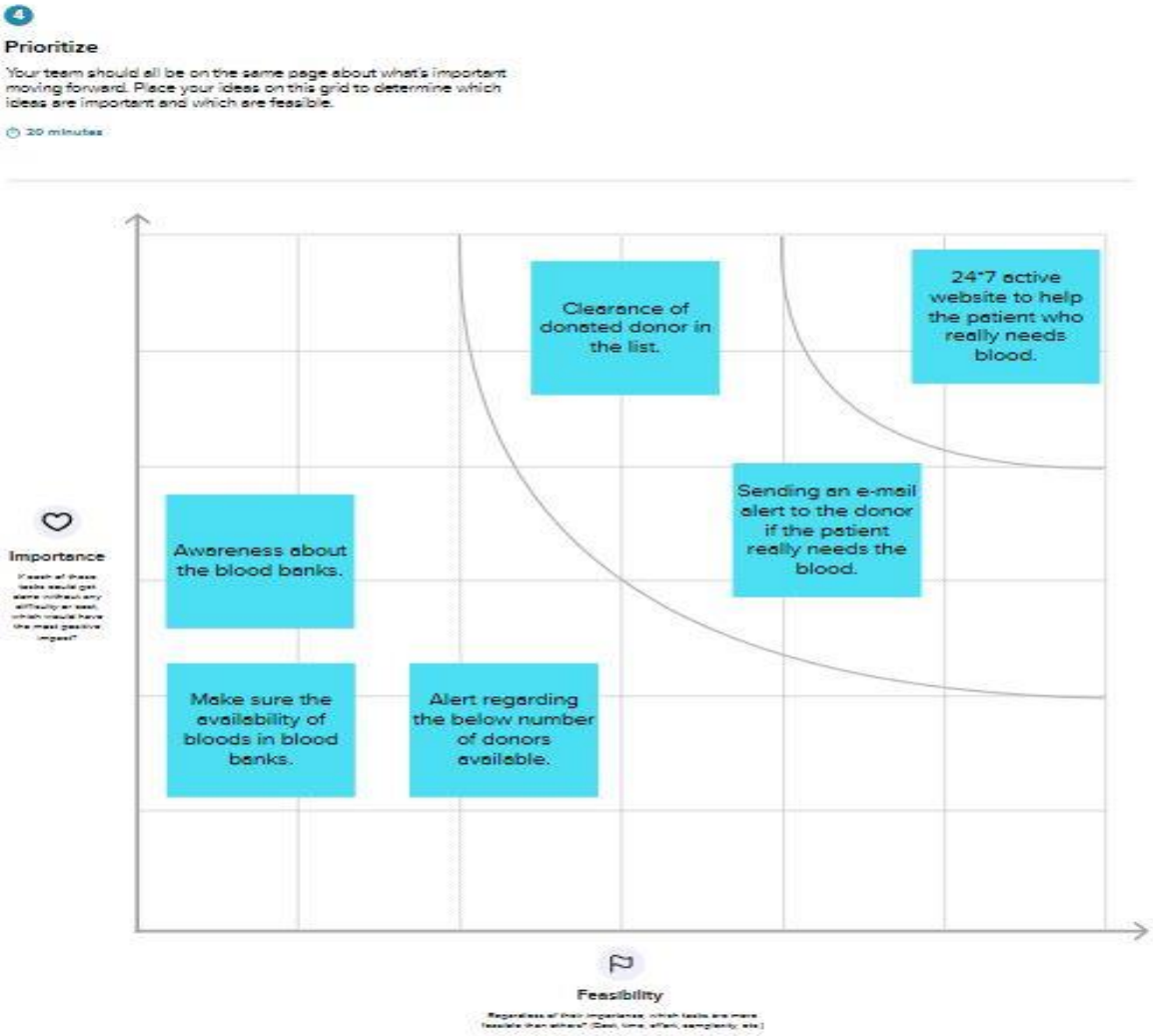
Online Website for patient who really needs a blood.

24*7 working of the website to help the patients.

Management

User feedback system management.

Managing the bloods in the blood bank and shows to the users.



3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	✓ During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low. ✓ Saving the donor information and helping the needy by notifying the current donors list, would be a helping hand. ✓ In regard to the problem faced, an application is to be built which would take the donor details, store them and inform them upon a request.
2.	Idea / Solution description	✓ This proposed system will have a daily update system whenever a product is sold or it is renewed more. ✓ The product availability is tracked daily and an alert system in again kept on to indicate those products which falls below the threshold limit. ✓ All the users can register their accounts after which they will be given a login credentials which they can use whenever they feel like searching for donors.
3.	Novelty / Uniqueness	✓ This application will useful to the patient who really needs the blood donors. ✓ Notifications will be sent to the users if any donors that the users have been looking for is not available so that the donor not be stocked up soon.
4.	Social Impact / Customer Satisfaction	✓ The users will be highly satisfied since the wasting of time while searching for an unavailable donor is reduced. ✓ The user satisfaction will be improved for getting appropriate response from the donors and that too immediately.
5.	Business Model (Revenue Model)	✓ Hereby we can provide a robust and most reliable Plasma Donor Application by using:

		1. Defined algorithm is used to search the appropriate donor and suggest the donors to the users. 2. To ensure the all time, any where availability of donors.
6.	Scalability of the Solution	✓ Each and every time the commitments will be updated and registration will be updated.

3.4 Problem Solution fit

1. CUSTOMER SEGMENT(S)

- Working peoples
- Organizations
- Students and families
- Common people with all ages can able to track their expenses.

3. TRIGGERS

- Realizing that excessive spending leading to lack of money in case of emergencies.
- Lack of Budgeting knowledge.

2. JOBS-TO-BE-DONE / PROBLEMS

- People have to track their expenses regularly.
- They need to keep their receipts and bills which shows their amount they spent.
- Also they need to manually add or remove the desired categories.

4. EMOTIONS: BEFORE / AFTER

Before

- Excessive expenditure
- Afraid of spending

After

- Being aware of what they are spending.
- Satisfied and happy with their budget expenditure.
- There will not be any frustrations any more since the process is quick and flexible.

5.CUSTOMER CONSTRAINTS

- Network Issues
- Data Privacy
- Spending power
- Available devices

8.AVAILABLE SOLUTIONS

People makes use of sticky notes or diary for calculating their expenditure.

Pros:

1. Didn't need any devices for calculations.

Cons:

1. Time consuming.
2. Manual errors occur sometimes.

6.PROBLEM ROOT CAUSE

- The root cause for this problem is the delay in the budget.
- There may be a chance of getting errors in human calculations.
- No one alerts if their spending exceeds particular limit.
- They do not have enough time for calculating their expenditure.

9.BEHAVIOUR

- People should know their budget for each month and set appropriate saving goals.
- Collect receipts regularly without fail.

7.YOUR SOLUTION

- A cloud-based web application which keeps track of user's personal expenses. This system attempts to free the user with as much as possible the burden of manual calculation and to keep the track of the expenditure.
- User just need to enter their day-to-day expenses. They also have an option to set the limit. If their expenditure exceeds that limit, notification will be sent through mail.
- This system also eliminates sticky notes, bills.

10.CHANNELS OF BEHAVIOUR

ONLINE

- Provide the details of day-to-day expenses.
- Select the area where customers use.
- Maintain the expenses for budgeting.

OFFLINE

- Maintain the required documents regularly.
- Inspect the expenses for budgeting.

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 Form
FR-2	User Confirmation	Confirmation via Email
FR-3	User Searches	Searches through Dashboard
FR-4	Stores Data	In a Database
FR-5	Displaying the Count	Counting Via Stats Page

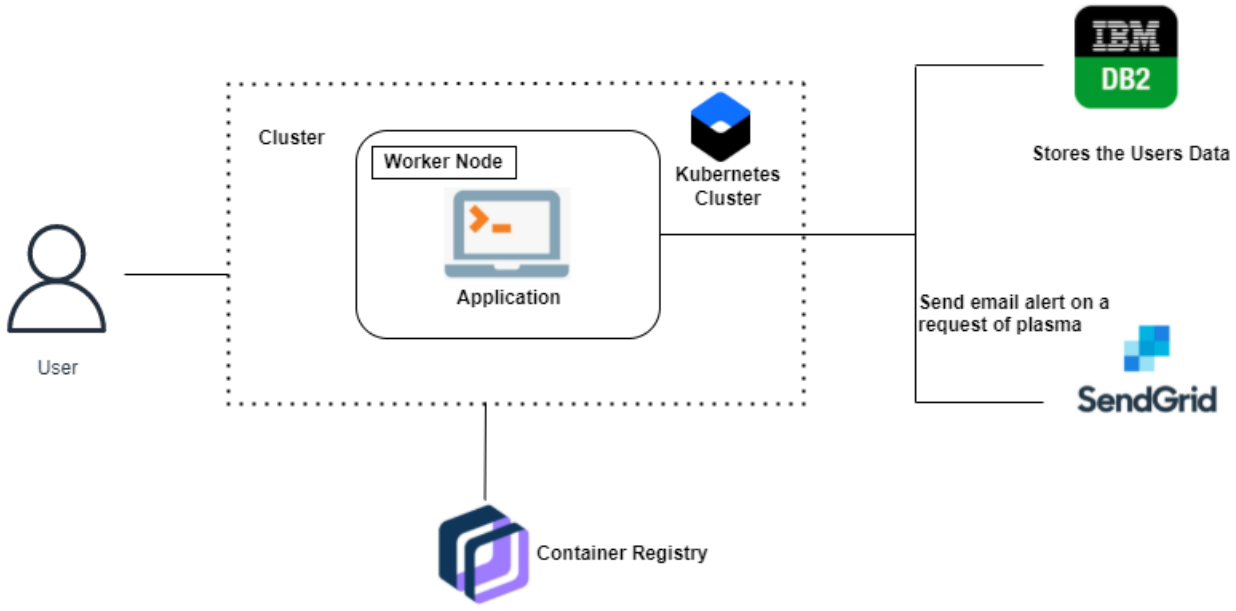
4.2 Non-Functional requirements

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

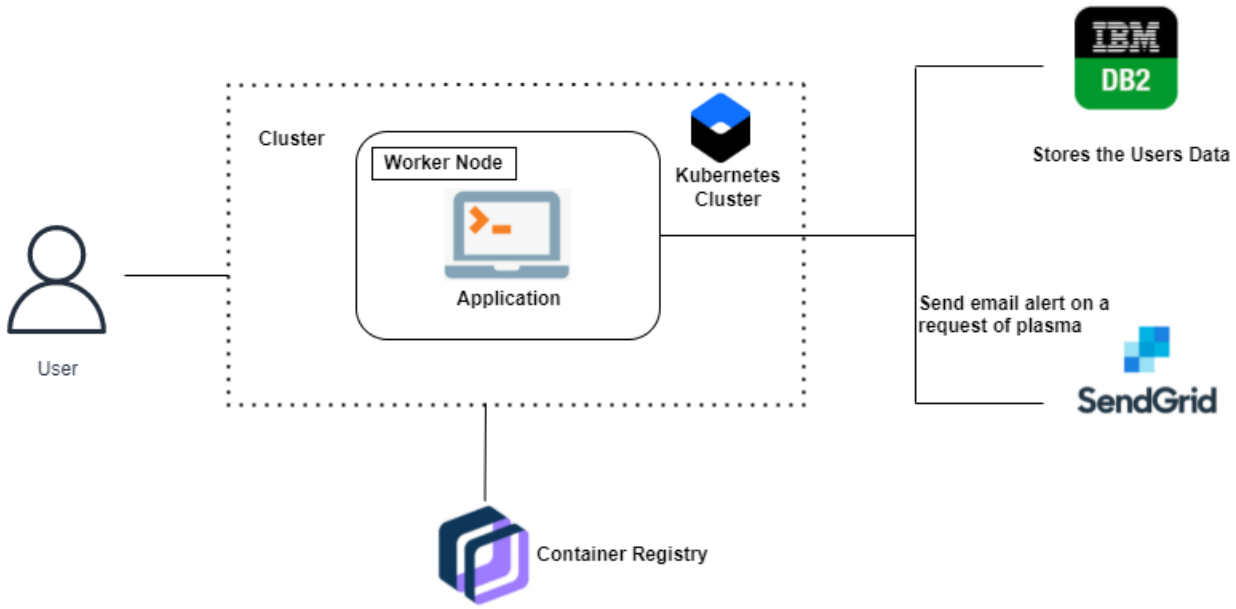
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Everyone can use the application with ease
NFR-2	**Security**	The user data was safe and secure in this application
NFR-3	**Reliability**	The application is trustful for blood donors and acceptors
NFR-4	**Performance**	The application can handle any number of users
NFR-5	**Availability**	The application will work for 24/7 and provides the user demand
NFR-6	**Scalability**	This will work as web application and mobile application

5. Project Design

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture



5.3 User Stories

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
	Login	USN-3	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-4	As a User dashboard will fit comfortably in a page.		Low	Sprint-1
Customer (Web 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
	Login	USN-3	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-4	As a User dashboard will fit comfortably in a page.		Low	Sprint-1
Administrator	Service	USN-1	As a User to get a required response.		High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

TITLE	DESCRIPTION	DATE
Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the, technical papers, research publications etc.	3 SEPTEMBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements	10 SEPTEMBER 2022
Ideation	List the by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility & importance.	10 SEPTEMBER 2022
Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, business model, social impact, scalability of solution, etc.	10 SEPTEMBER 2022
Problem Solution Fit	Prepare problem - solution fit document.	1 OCTOBER 2022

Solution Architecture	Prepare solution architecture document.	19 OCTOBER 2022
Customer Journey	Prepare the customer journey maps to understand the user interactions & experiences with the application.	15 OCTOBER 2022
Data Flow Diagrams	Draw the data flow diagrams and submit for review.	18 OCTOBER 2022
Technology Architecture	architecture diagram.	19 OCTOBER 2022
Prepare Milestone & Activity List	Prepare the milestones & activity list of the project.	28 OCTOBER 2022
Project Development - Delivery of Sprint-1, 2, 3 & 4	Develop & submit the developed code by testing it.	IN PROGRESS..

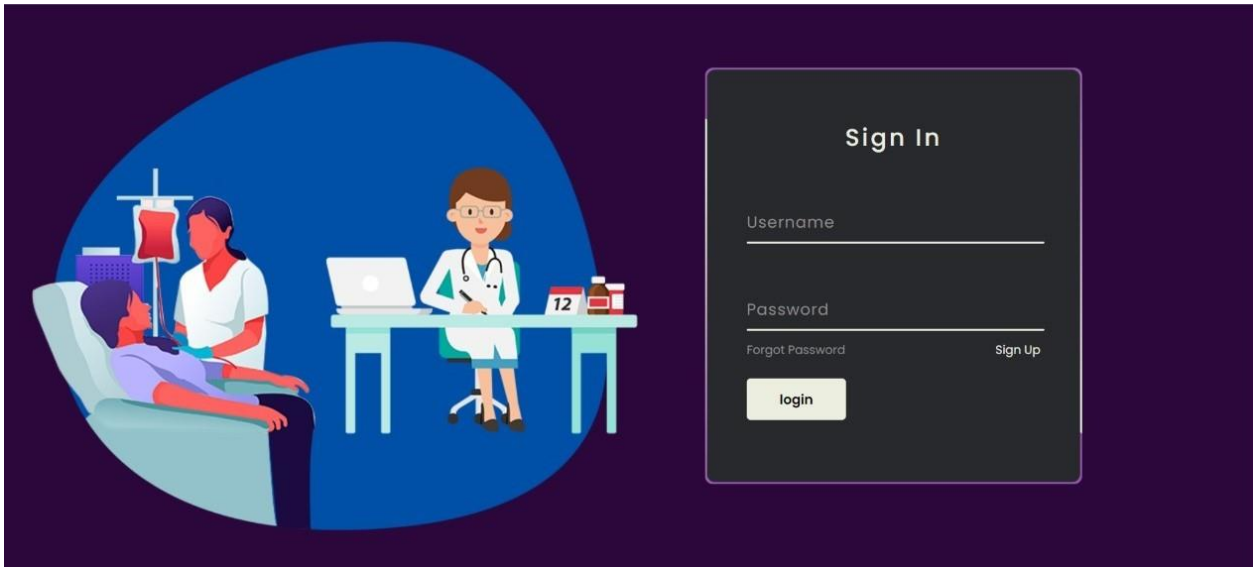
6.2 Sprint Delivery Schedule

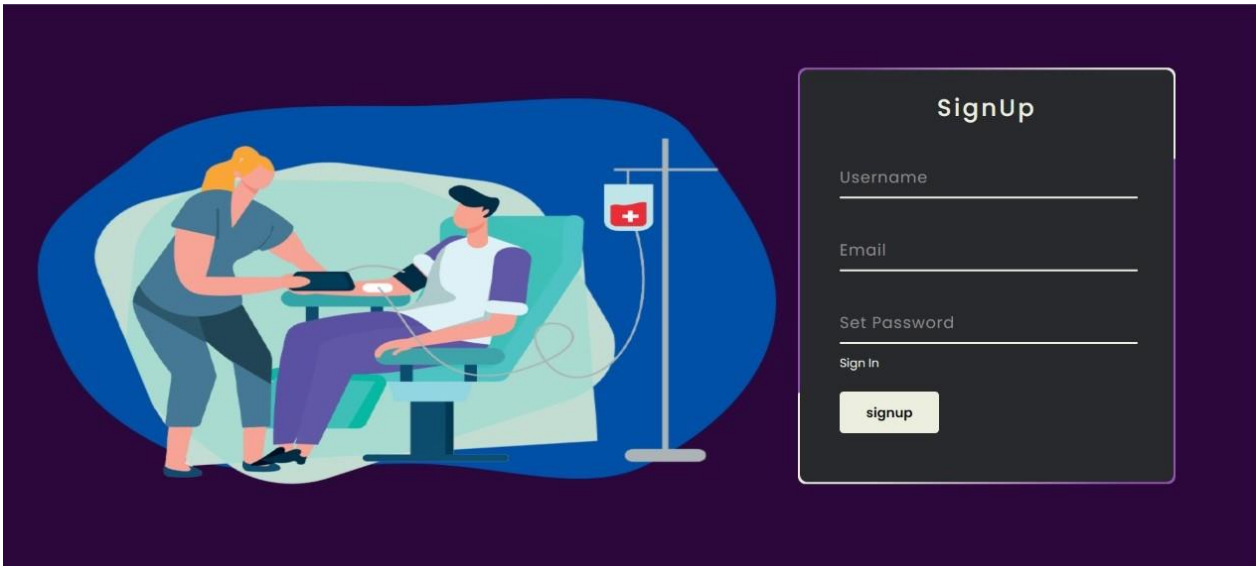
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password	2	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application.	1	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	1	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-2	Dashboard	USN-1	As a user dashboard will fit comfortably in a page.	1	Low	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-3	Register	USN-1	Blood bank can register a bank name and search for blood donors.	1	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-3	Login	USN-2	Blood bank can login with the credentials to see the list of donors.	1	High	Shreya M V Vijayavarshini R

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
						Vigneshwaran S Shyam Prasadh S
Sprint-3	Donor List	USN-3	Blood bank can login with the credentials to see the list of donors.	1	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-4	Register	USN-1	Donors can register a bank name and search for blood donors.	2	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-4	Login	USN-2	Donors can login with the credentials to see the list of donors.	1	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S
Sprint-4	Donor List View	USN-3	Blood bank can login with the credentials to see the list of donors.	1	High	Shreya M V Vijayavarshini R Vigneshwaran S Shyam Prasadh S

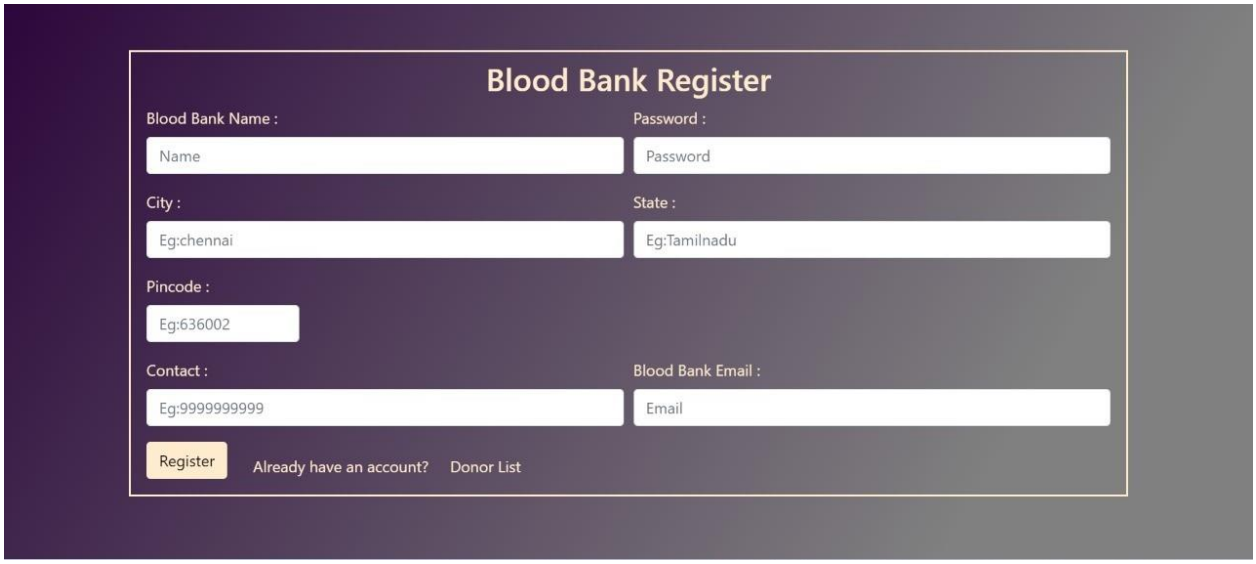
7. CODING & SOLUTIONING (Explain the features added in the project along with code)

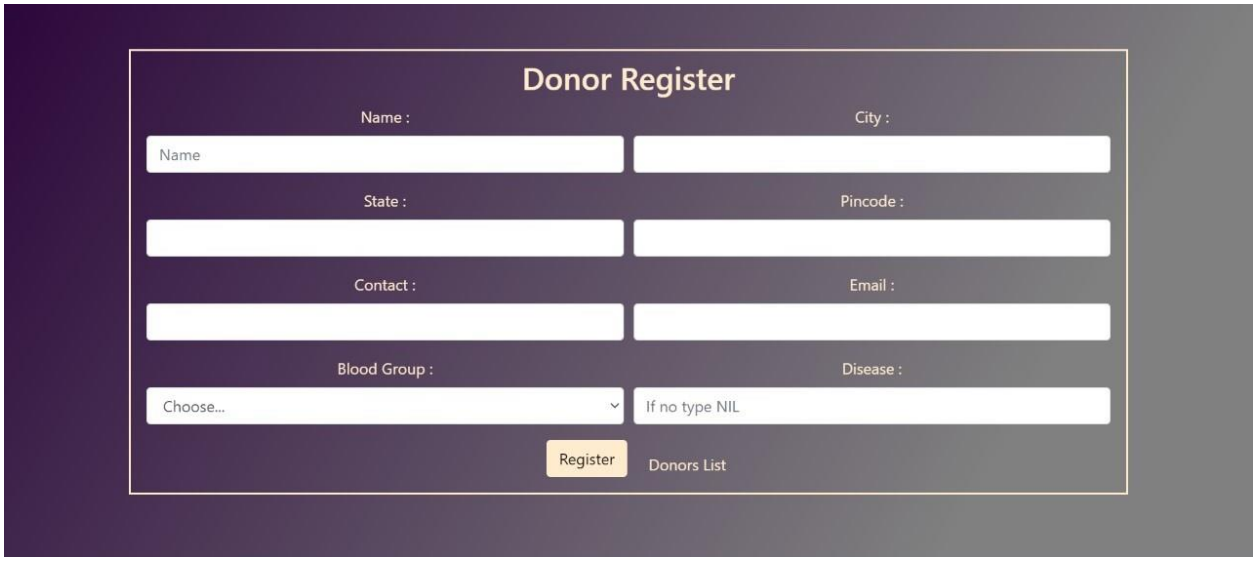
7.1 Feature 1



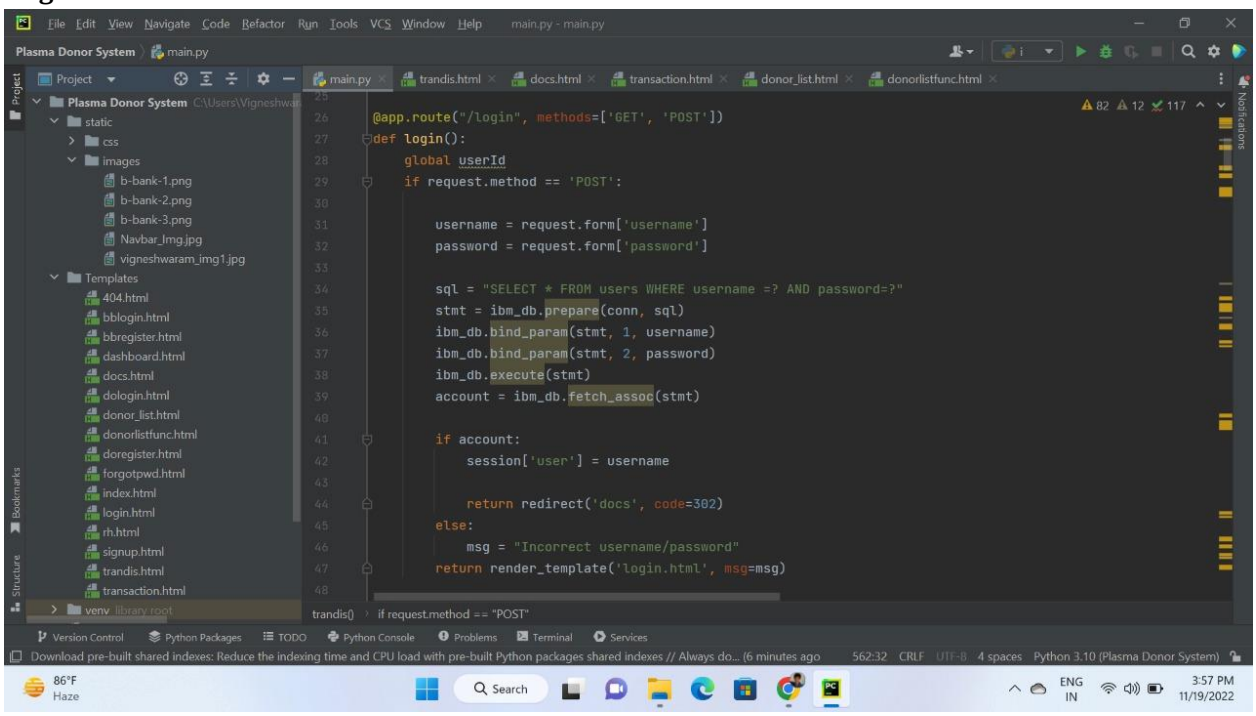


7.2 Feature 2

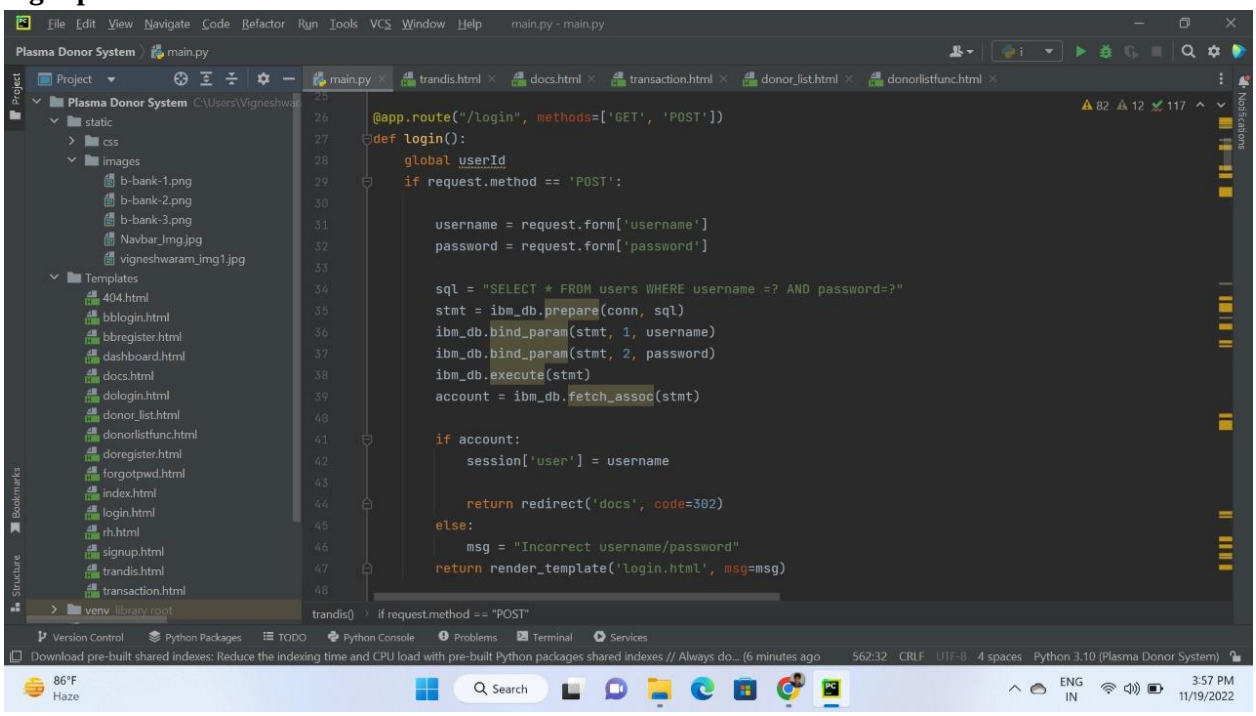

Blood Bank Register
Blood Bank Name :
Name
Password :
Password
City :
Eg:chennai
State :
Eg:Tamilnadu
Pincode :
Eg:636002
Contact :
Eg:9999999999
Blood Bank Email :
Email
Register
Already have an account?
Donor List


Donor Register
Name :
Name
City :
State :
Pincode :
Contact :
Email :
Blood Group :
Choose...
Disease :
If no type NIL
Register
Donors List

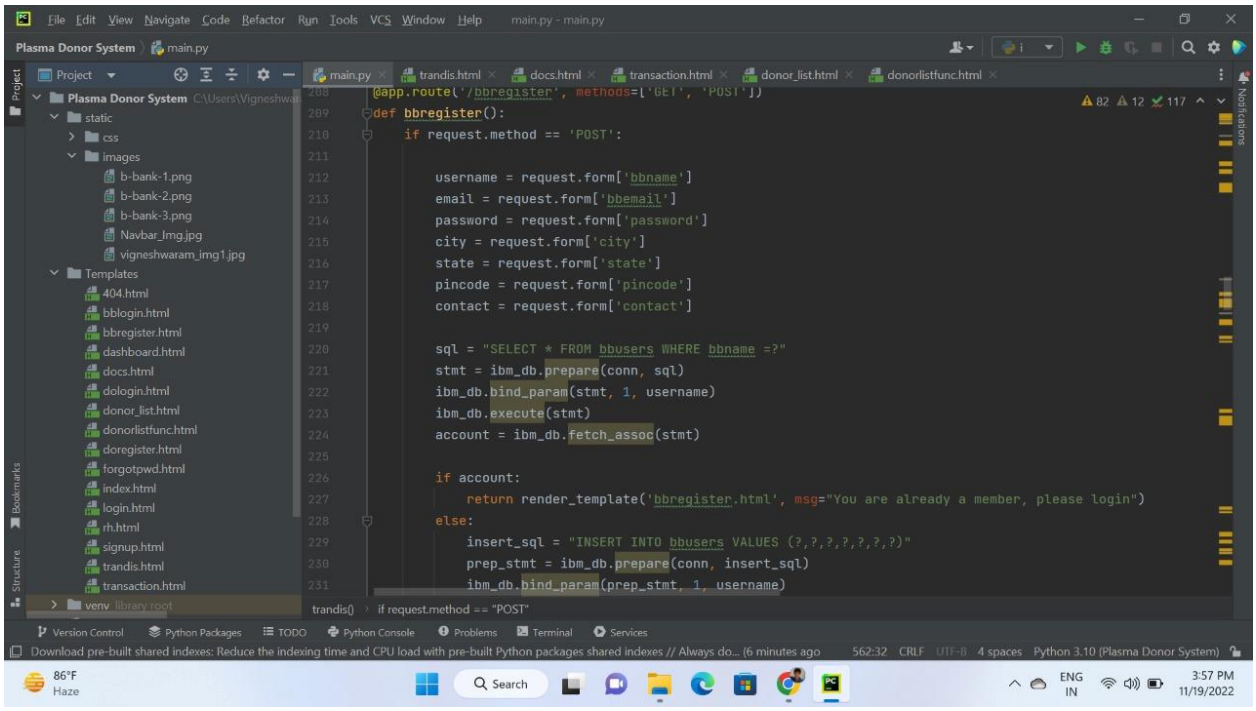
Login Code:



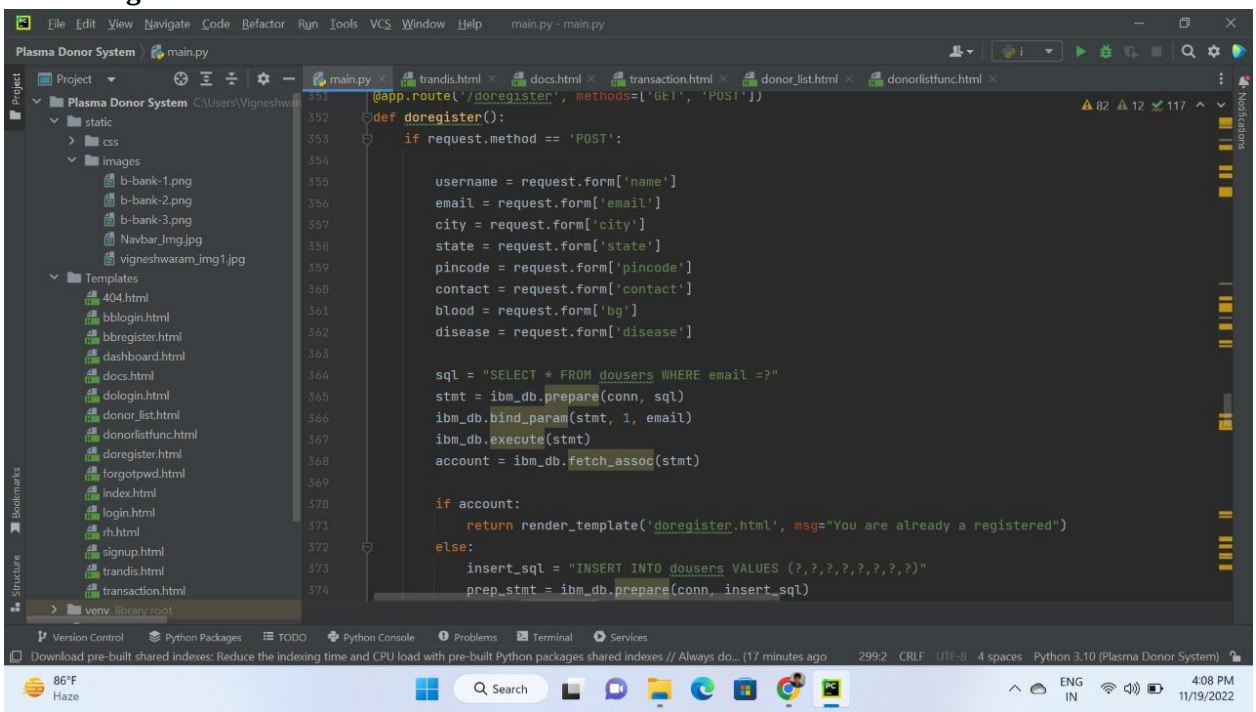
Signup code:



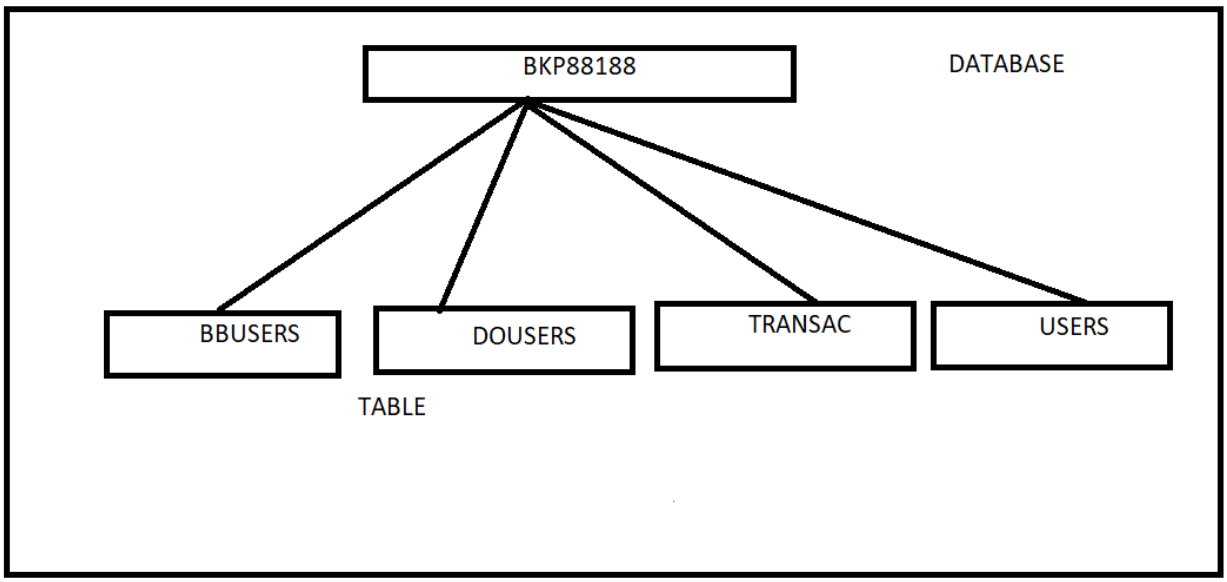
Blood Bank Register code:



Donor Register code:



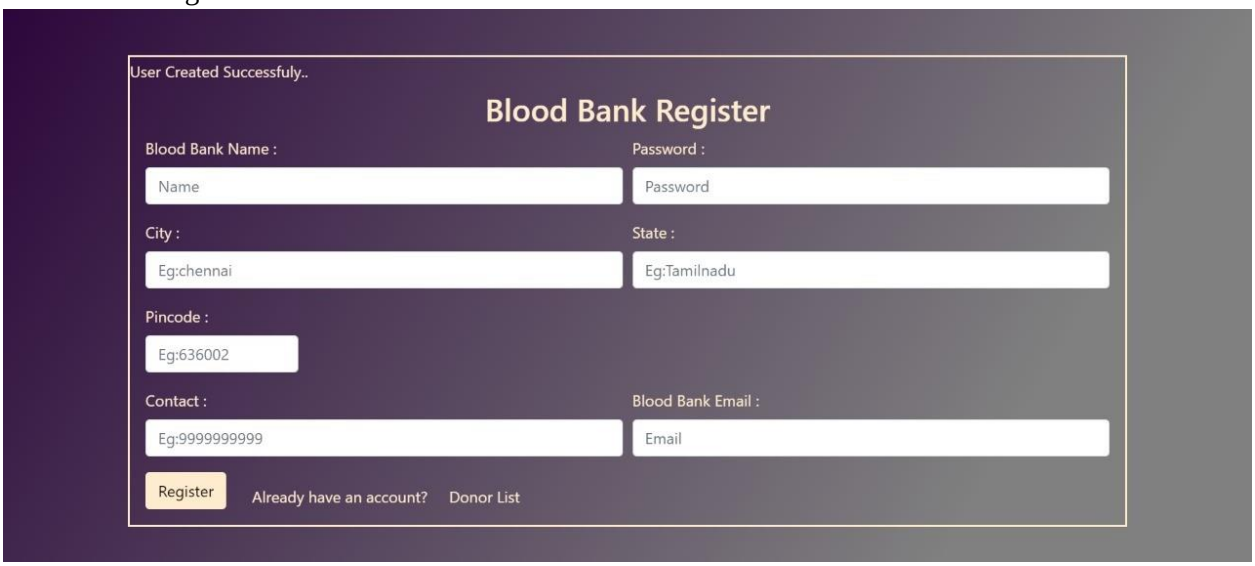
7.2 Database Schema (if Applicable)



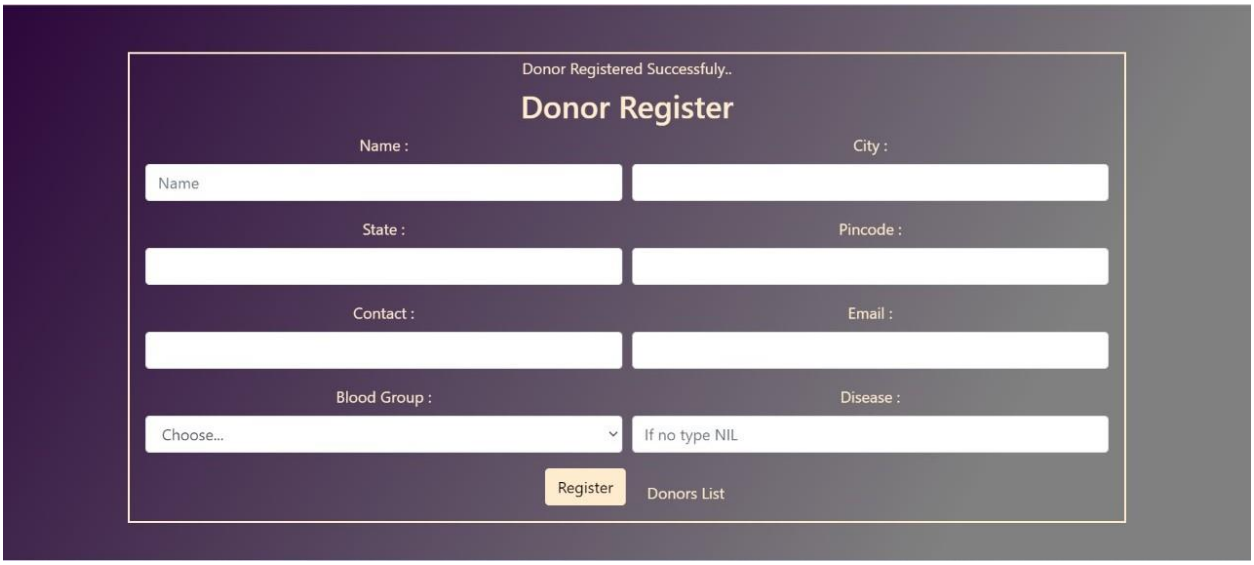
8. TESTING

8.1 Test Cases

Blood Bank Register:



Donor Register:



8.2 User Acceptance Testing

Donor List

Name	Email	city	State	Pincode	Contact	Blood
Vigneshwaran	vigneshwaransam877@gmail.com	salem	Tamil Nadu	636006	2345678909	A-
Vigneshwaran Sadasivam	vigneshwaransam877@gmail.com	salem	Tamil Nadu	636006	sdfgh	O+
Vigneshwaran Sadasivam	vigneshwaransam877@gmail.com	salem	Tamil Nadu	636006	8765432654	B-
vir	vhvhv@gmail.com	ertyui	ertyu	ertyui	rtyuio	B-
v	v@gmail.com	v	v	v	v	B-
w	w@gmail.com	w	w	w	w	A-
VigneshwaranSadasivam	vigneshwaransam8778@gmail.com	salem	Tamil Nadu	636006	q	B-
p p	p@gmail.com	p	p	p	p	O+
koothasri	koothaya@gmail.co	periyapudhur	tamilnadu	123456	8765678998	B-
vvvv	vvvv@gmail.com	vvvv	vvvv	vvvv	vvvv	A+
vijaysri	Q@gmail.com	q	q	q	q	B+
mayank	iop@gmail.com	q	q	q	q	A+
sankar	qwer@gmail.com	qwert	q	q	q	B-

9. RESULTS

9.1 Performance Metrics

10. CONCLUSION:

Blood is the most essential thing to save a life. By donating blood, we can save many lives. It is also important to remember that any one of us may need blood at some point in our lives, making blood donation is an essential duty of our citizenry. In today's world where people are busy with their lifestyle and those who are eager to donate blood but are not able to, can plan to donate blood by sitting at home just by one click with our application. This application will make revolutionary changes to the medical system as people will be able to donate blood and serve mankind.

11. FUTURE SCOPE:

Plasma is essential to live. There would be new diseases emerging in the future, it is important to know about the donors.

12. APPENDIX

Source Code

GitHub & Project Demo Link

https://github.com/IBM-EPBL/IBM-Project-26267-1660022926

Demo link:

https://drive.google.com/file/d/1a9BVwt6exN7Eqp2KoAJMFacMqMzIBCQE/view?usp=share_link