PROJECT REPORT

FOR

PLASMA DONOR APPLICATION

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 patients in 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 therapy the 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 save time 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 wants to 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 very difficult 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.

2.2 References

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

S.Hinrichs[1]: The duty entails gathering fundamental data regarding the electrical and electronic equipment. Data was gathered through discussions with local workers, observations, and interviews. Despite the lack of monetary or statistical data, the study contributed to the confirmation of management-relatedconcerns that are fundamental to equipment use and offered insights into social and cultural issues that go beyond management.

Rehab S. Al[2]: The lack of awareness and confidence, disappearance of the uncommon blood types, difficulty in locating a specific blood group, and unregulated blood banks andparallel markets are all examples of the problem of the blood bagsshortage that we demonstrate in this paper. In order to collect andarrange the data from all blood banks and blood donation campaigns, they suggested the Blood Bag web-based application that is connected to a centralised database. The suggested application coordinates and manages all crucial steps involved in blood donation, including bag testing, storage, and delivery to thepatient.

Fernando González[3]: This article focuses on decentralised systems that use blockchain technology. This review focuses on kidney allocation algorithms rather than other organ donation systems because kidney transplants are among the most popular organ replacements. We also go over the drawbacks of the current allocation and organ donation processes, and we explain on how blockchain technology may be the key to resolving some of the current problems with organ donation.

RobinGauld[4]: The challenges and suggestions for both evaluators and healthcare organisations are detailed in this article's thorough overview of the literature on evaluating and adopting HIS. With the intention of assisting teams evaluate complex HIS, it is necessary to identify the elements that hinder or support successful HIS deployment.

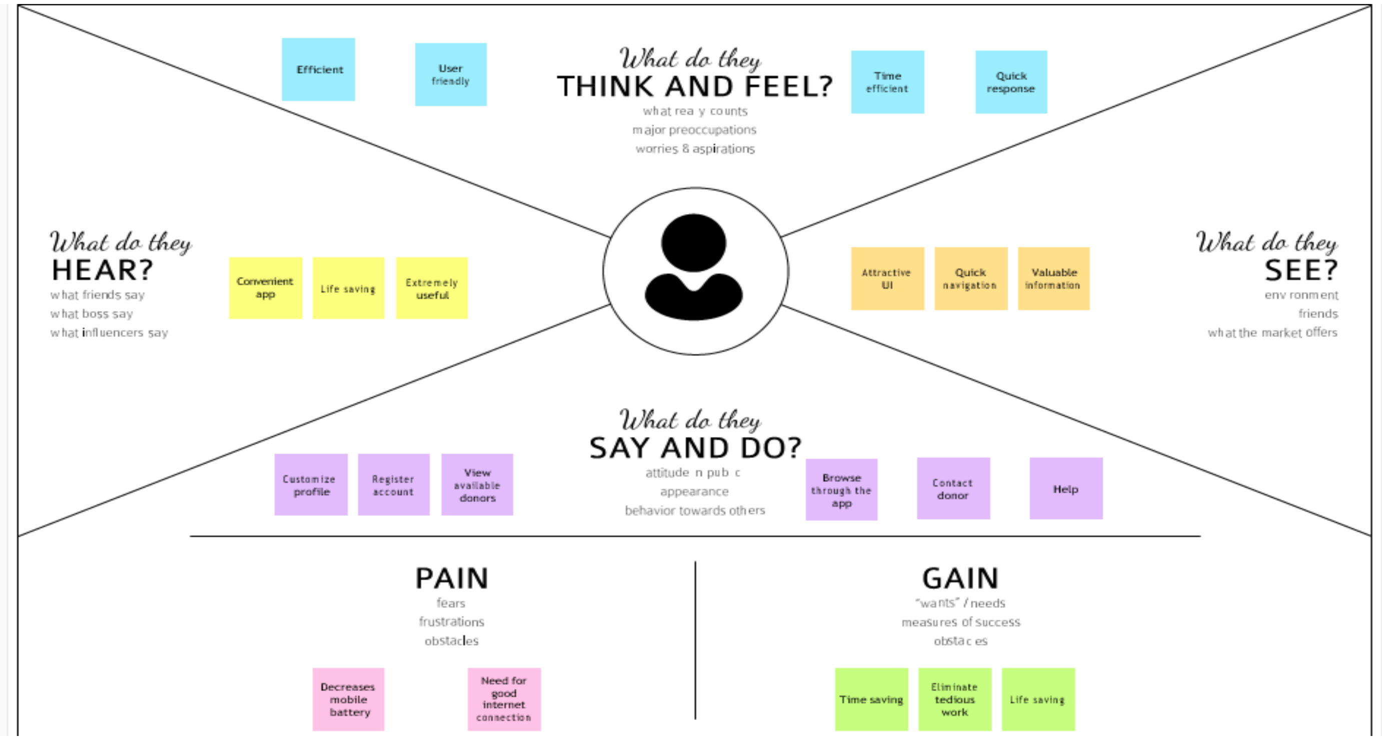
Shreyas Anil Chaudhari[5]: The primary goal of developing a cloud-based blood bank system is to provide individuals with timely access to blood, even in dire circumstances. The user will be able to examine information about all blood bank-related entities, including hospitals, donors, blood bank locations, etc. with the aid of this project. The securitycomponent is effectively maintained.

2.3 Problem Statement Definition

We are all aware of the COVID-19 crisis's negative effects on the world. The members of our administration and the medical community are doing everything they can to assist the COVID-19 patients. Researchers are working to develop a coronavirus vaccination that will treat those who have been infected. There is a scientific basis from which we can assist the COVID 19 affected person or lessen the death ratio. Corona-positive patients may benefit from plasma therapy, an investigational treatment, to aid in their recovery. This plasma therapy is regarded as promising and safe. A person who has recovered from Covid can donate his/her plasma to a person who is infected with the coronavirus. In response to the issue, an application will be created that will collect donor information, store it, and provide information upon request.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming

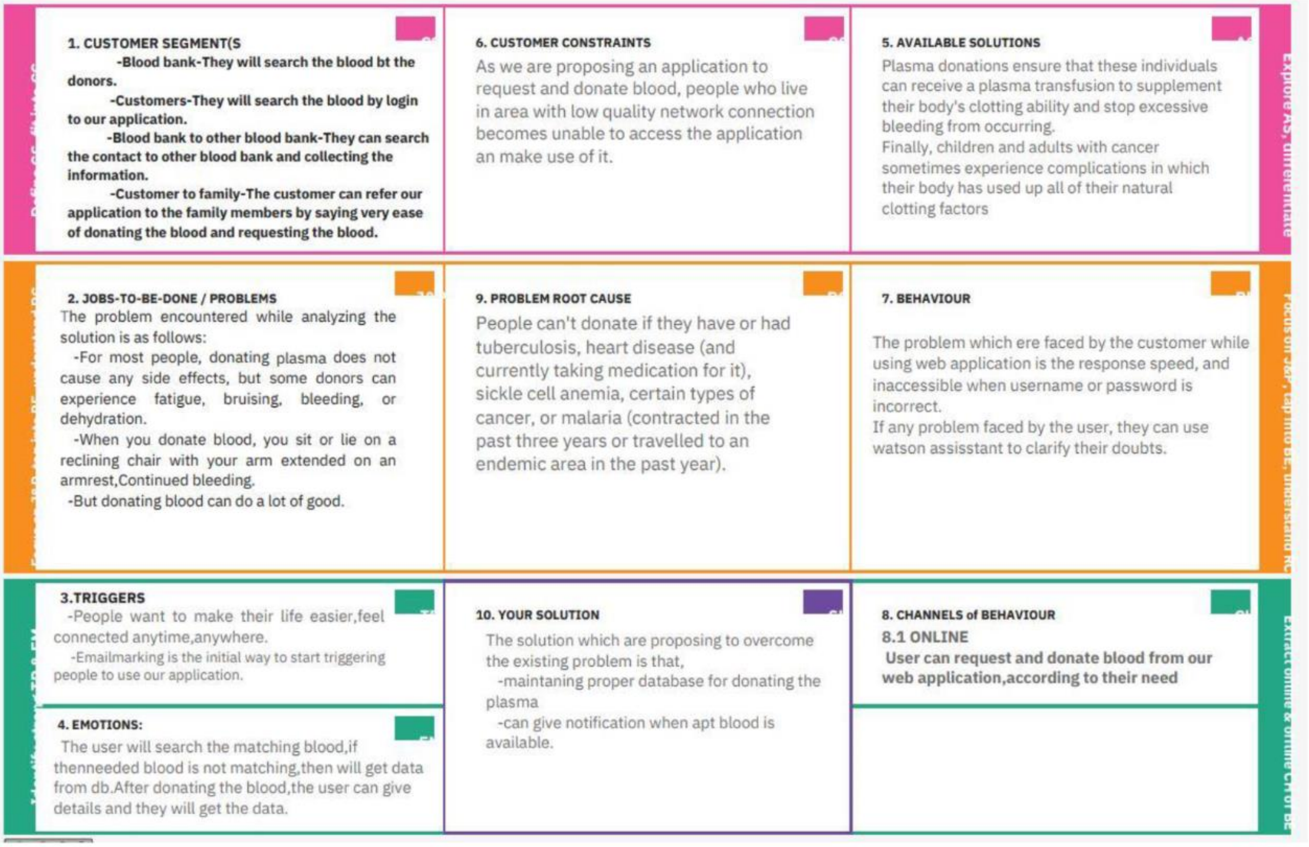
https://github.com/IBM-EPBL/IBM-Project-29229-1660122394/blob/main/Project%20Design%20%26%20Planning/Ideation%20Phase/Ideation.pdf

3.3 Proposed Solution

S.NO	**Parameter**	**Description**
1.	Problem Statement (Problem to be solved)	To find the nearest available potential plasma donor and to maintain optimal level of blood bank reserves and a connecting platform for blood donors and blood banks.
2.	Idea / Solution description	The proposed system implements a cloud based web application as a solution to this problem. Utilizing a registration form filling framework, the donors' information is retrieved. When an administrator wants a blood donor, he retrieves the data from the cloud and sends an inquiry based on the donor's location. If the donor grants his request, he will send the administrator an acknowledgment.
3.	Novelty / Uniqueness	Display the information about blood plasma and eligibility of a donor to donate blood plasma. The donor and recipient can communicate by sending emails.
4.	Social Impact / Customer Satisfaction	The software is very user friendly. Different types of users including requester, donor and administrator.

5.	Business Model (Revenue Model)	Anywhere in the world, this application can be connected to blood donation centers and blood banks. Social media marketing can be used to spread information about the application.
6.	Scalability of the Solution	As this is a web application and uses cloud storage, any future technological developments may be included into this application.

3.4 Problem Solution fit



1. CUSTOMER SEGMENT(S

-Blood bank-They will search the blood bt the donors.

-Customers-They will search the blood by login to our application.

-Blood bank to other blood bank-They can search the contact to other blood bank and collecting the information.

-Customer to family-The customer can refer our application to the family members by saying very ease of donating the blood and requesting the blood.

6. CUSTOMER CONSTRAINTS

As we are proposing an application to request and donate blood, people who live in area with low quality network connection becomes unable to access the application an make use of it.

5. AVAILABLE SOLUTIONS

Plasma donations ensure that these individuals can receive a plasma transfusion to supplement their body's clotting ability and stop excessive bleeding from occurring.
Finally, children and adults with cancer sometimes experience complications in which their body has used up all of their natural clotting factors

2. JOBS-TO-BE-DONE / PROBLEMS

The problem encountered while analyzing the solution is as follows:

-For most people, donating plasma does not cause any side effects, but some donors can experience fatigue, bruising, bleeding, or dehydration.

-When you donate blood, you sit or lie on a reclining chair with your arm extended on an armrest,Continued bleeding.

-But donating blood can do a lot of good.

9. PROBLEM ROOT CAUSE

People can't donate if they have or had tuberculosis, heart disease (and currently taking medication for it), sickle cell anemia, certain types of cancer, or malaria (contracted in the past three years or travelled to an endemic area in the past year).

7. BEHAVIOUR

The problem which ere faced by the customer while using web application is the response speed, and inaccessible when username or password is incorrect.
If any problem faced by the user, they can use watson assisstant to clarify their doubts.

3.TRIGGERS

-People want to make their life easier,feel connected anytime,anywhere.

-Emailmarking is the initial way to start triggering people to use our application.

4. EMOTIONS:

The user will search the matching blood,if thenneeded blood is not matching,then will get data from db.After donating the blood,the user can give details and they will get the data.

10. YOUR SOLUTION

The solution which are proposing to overcome the existing problem is that,

-maintaning proper database for donating the plasma

-can give notification when apt blood is available.

8. CHANNELS of BEHAVIOUR

8.1 ONLINE

User can request and donate blood from our web application,according to their need

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 Registration through Gmail

FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Html, javascript, flask	Through web application
FR-4	Login portal	Through the application
FR-5	Donor history	Through the database
FR-6	Donors list based on their locality	Through the database

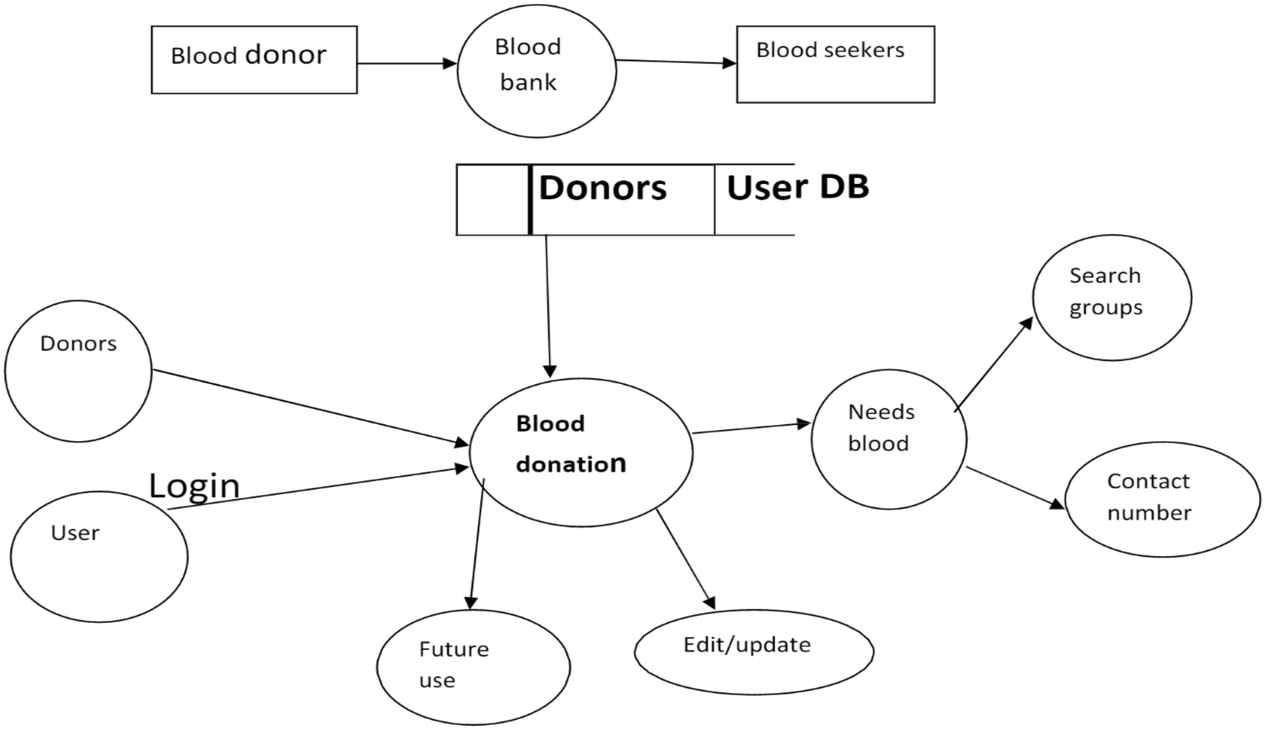
4.2 Non-Functional requirements

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

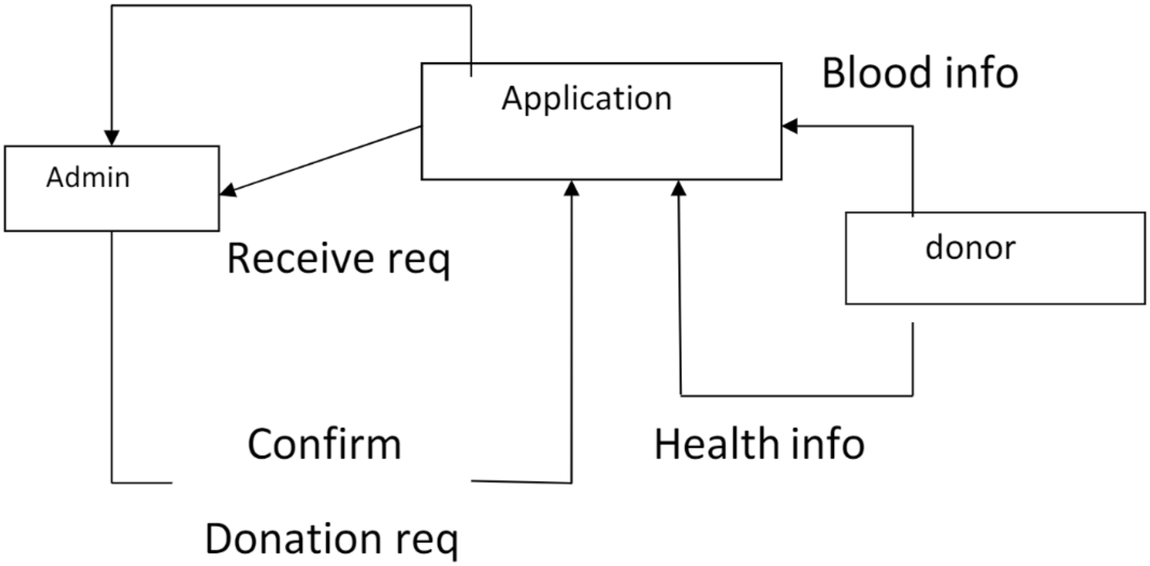
FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	User can donate and request blood.
NFR-2	**Security**	User details can be safe
NFR-3	**Reliability**	Can access from anywhere at any time.
NFR-4	**Performance**	Can request and donate blood at anytime through this application
NFR-5	**Availability**	In blood bank all blood groups are available
NFR-6	**Scalability**	More facilities can be added like more than ten database

5. PROJECT DESIGN

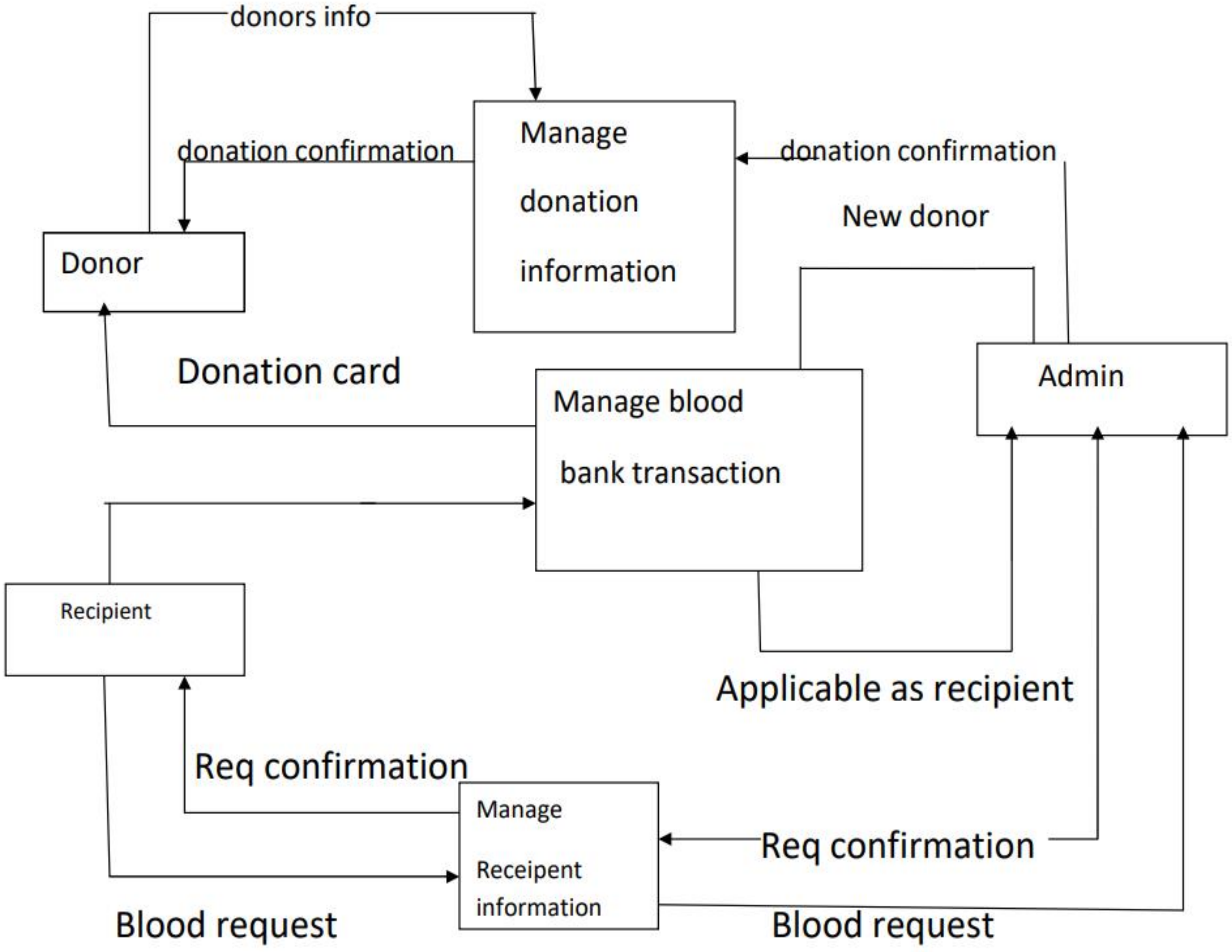
5.1 Data Flow Diagrams

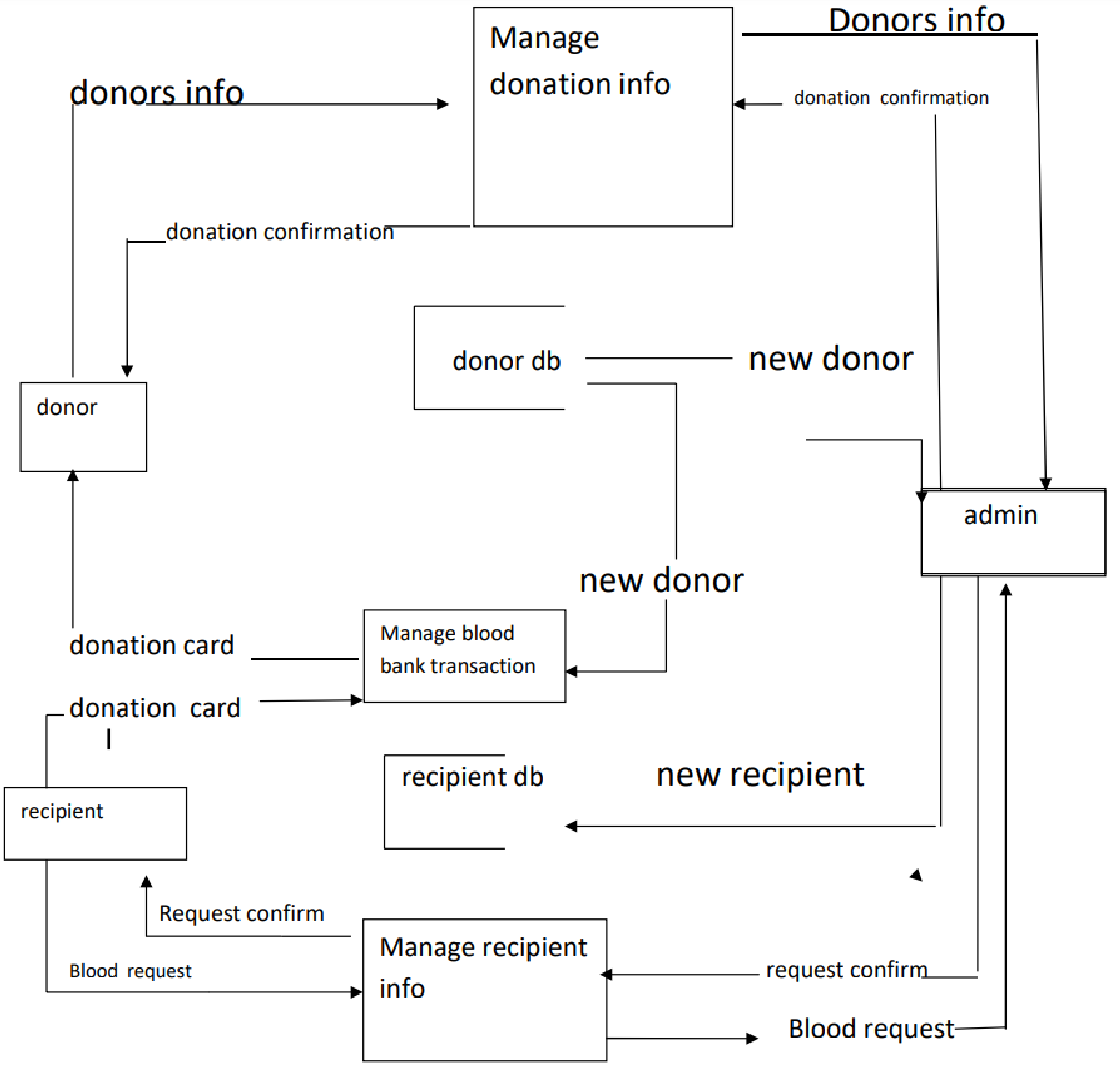


DFD Level 0:


Application
Blood info
Admin
donor
Receive req
Confirm
Health info
Donation req

DFD Level 1:


donors info
Manage
donation
information
donation confirmation
donation confirmation
New donor
Donor
Admin
Donation card
Manage blood
bank transaction
Recipient
Applicable as recipient
Req confirmation
Manage
Receipent
information
Req confirmation
Blood request
Blood request


Manage donation info
Donors info
donors info
donation confirmation
donation confirmation
donor db
new donor
donor
admin
new donor
donation card
Manage blood bank transaction
donation card
I
recipient db
new recipient
recipient
Request confirm
Manage recipient info
Blood request
request confirm
Blood request

5.2 Solution & Technical Architecture

TECHNOLOGY ARCHITECTURE:

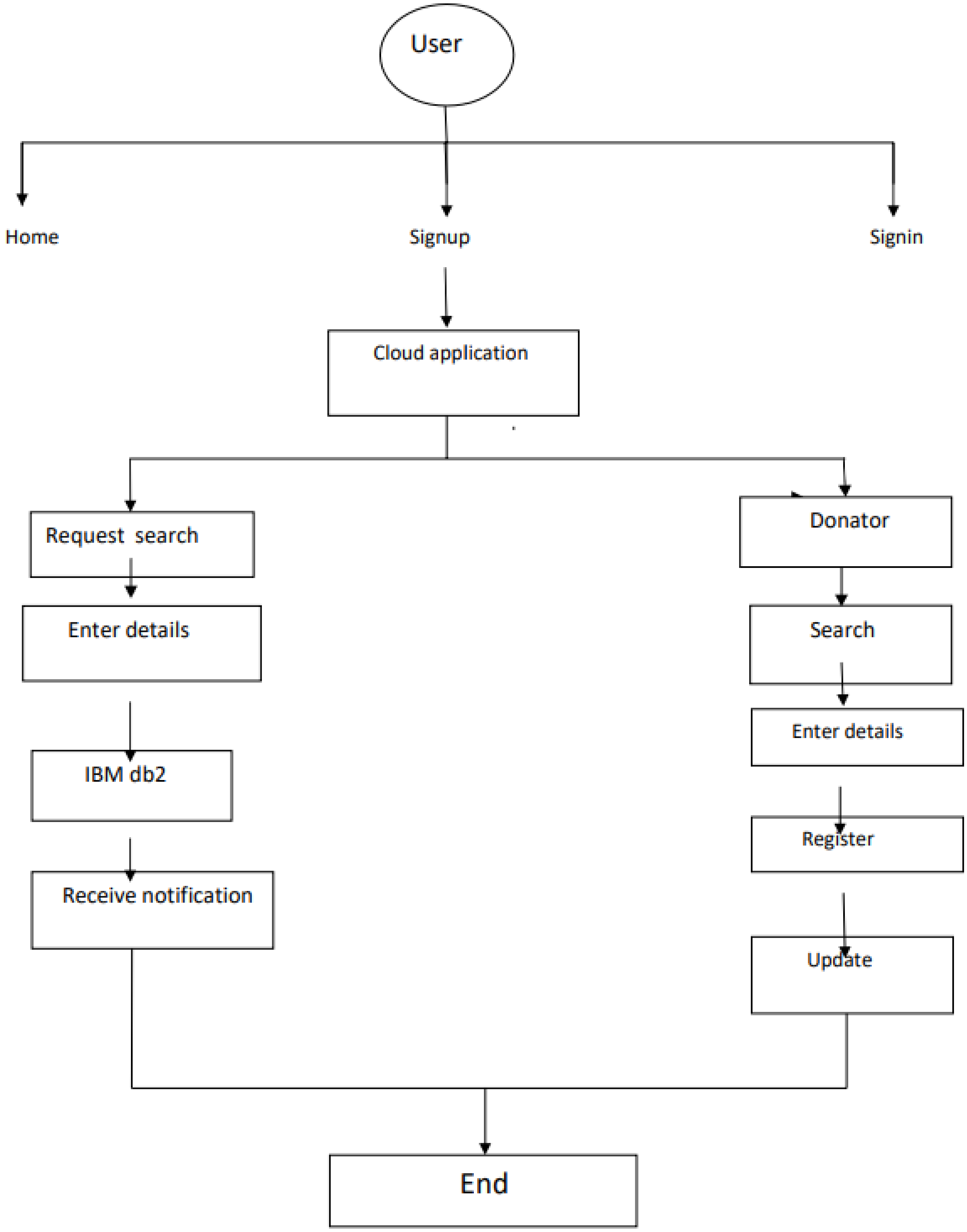


Table-1: Components & Technologies:

SNO	Component Description	Description	Technology
1	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc	HTML, CSS, JavaScript / Angular Js / React Js etc.
2	Application Logic-1	Logic for a process in the application	Java / Python
3	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
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 NO Storage Service or Local File System
8	External API-1	Purpose of External API used in the application	IBM Weather API, etc
9	External API-2	Purpose of External API used in the application	Aadhar API, etc
10	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc
11	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

sno	Characteristics	Description	Technology
1	Open-Source Framework	List the open-source frameworks used	Technology of Opensource framework
2	Security Implementation	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc
3	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	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.	High	3

Sprint-1	Login	USN-2	As a user, I can log into the application by entering email & password	High	3
Sprint-2	Dashboard	USN-3	As a user ,Display all details about plasma application	High	3
Sprint-3	Application	USN-4	As a user ,I can register, login and see details about plasma	High	3
Sprint-3	Verify donor details	USN-5	To add the donor plasma details in application	Medium	3
Sprint-2	Control all Plasma details	USN-6	Make sure to check the availability of plasma in application	High	3
Sprint-4	Verify feedback	USN-7	To design the application that meets user's desires	Medium	3

6.2 Sprint Delivery Schedule

Sprint	**Total Story Points**	**Duration**	**Sprint Start Date**	**Sprint End Date (Planned)**	**Sprint Release Date (Actual)**
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	5 Nov 2022	5 Nov 2022

Sprint-3	20	6 Days	7 Nov 2022	12 Nov 2022	12 Nov 2022
Sprint-4	20	5 Days	14 Nov 2022	19 Nov 2022	19 Nov 2022

7. CODING & SOLUTIONING

7.1 FEATURE 1

https://github.com/IBM-EPBL/IBM-Project-29229-1660122394/blob/main/Project%20Development/Sprint%201.pdf

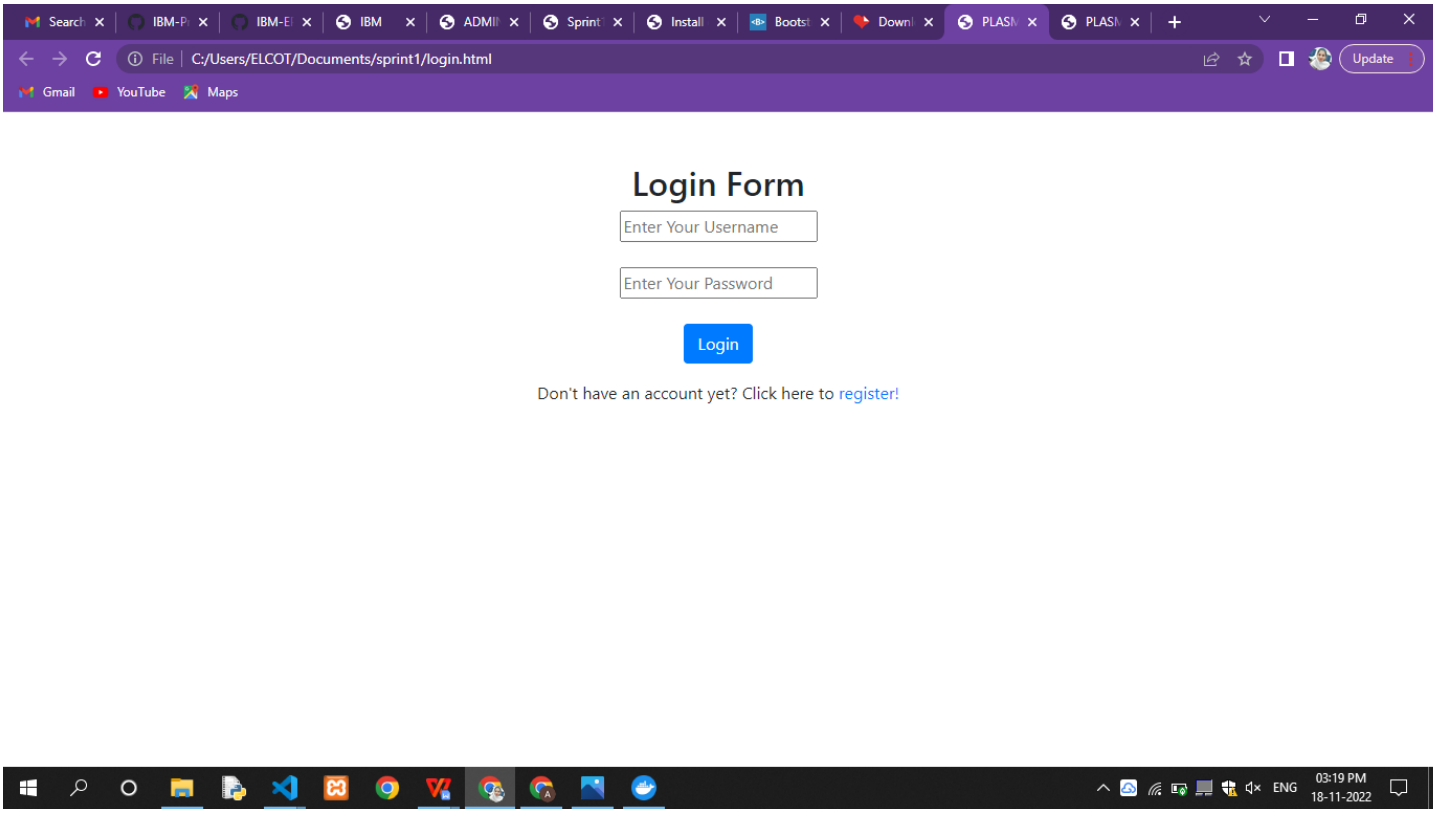
7.2 FEATURE 2

https://github.com/IBM-EPBL/IBM-Project-29229-1660122394/blob/main/Project%20Development/Sprint%202.pdf

7.3 FEATURE 3

https://github.com/IBM-EPBL/IBM-Project-29229-1660122394/blob/main/Project%20Development/Sprint%203%20.pdf

8.TEST CASES



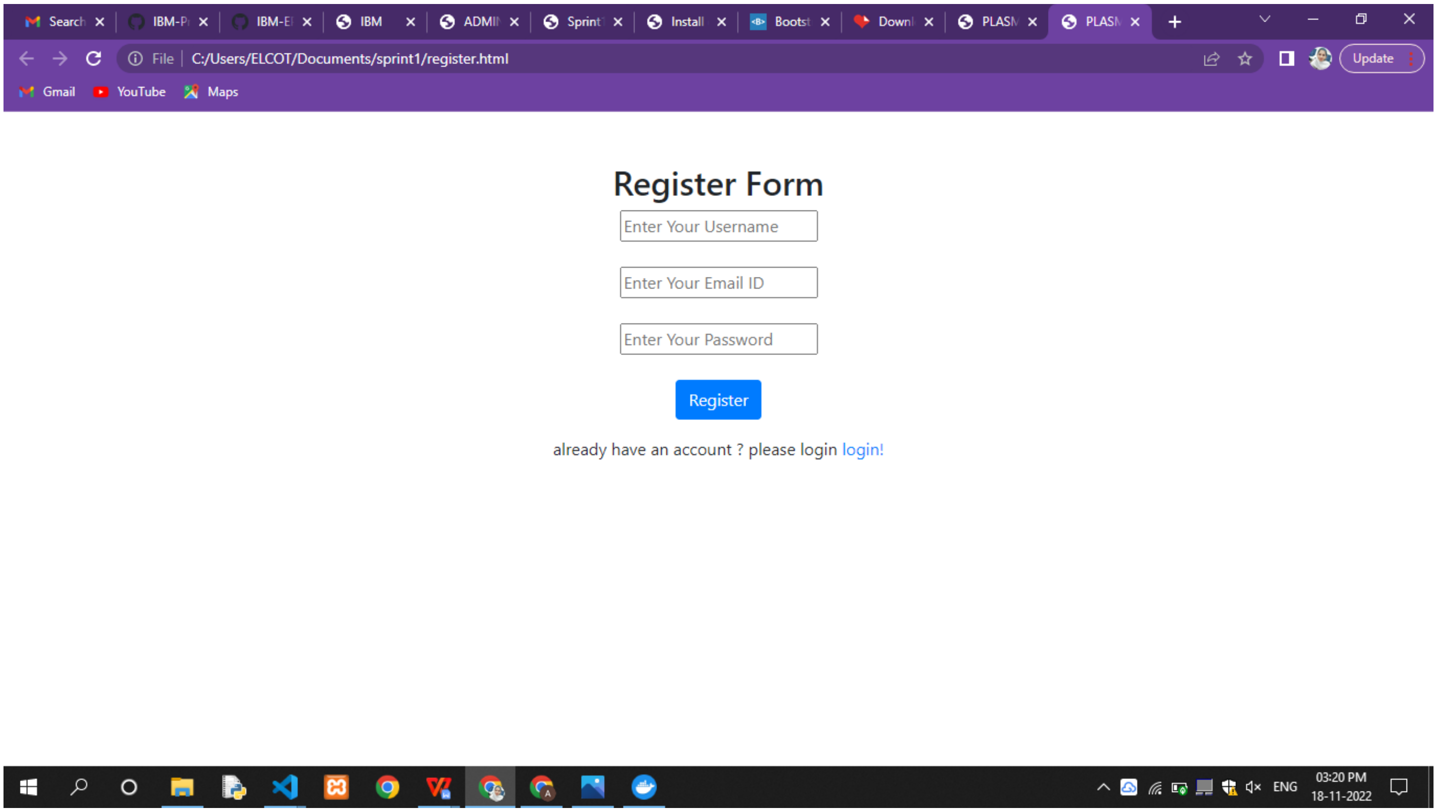
Login Form

Enter Your Username

Enter Your Password

Login

Don't have an account yet? Click here to register!



Register Form

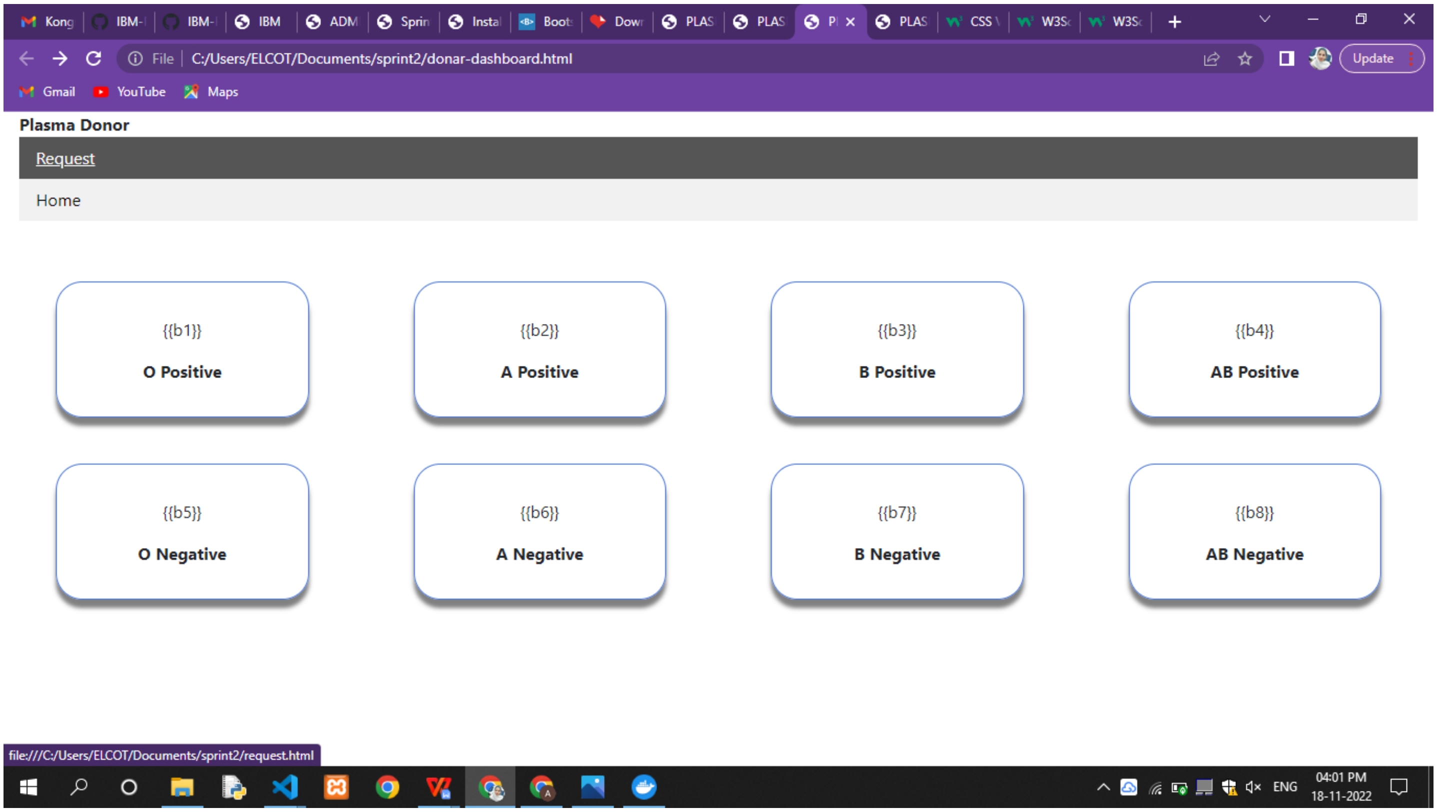
Enter Your Username

Enter Your Email ID

Enter Your Password

Register

already have an account ? please login login!



File | C:/Users/ELCOT/Documents/sprint2/donar-dashboard.html

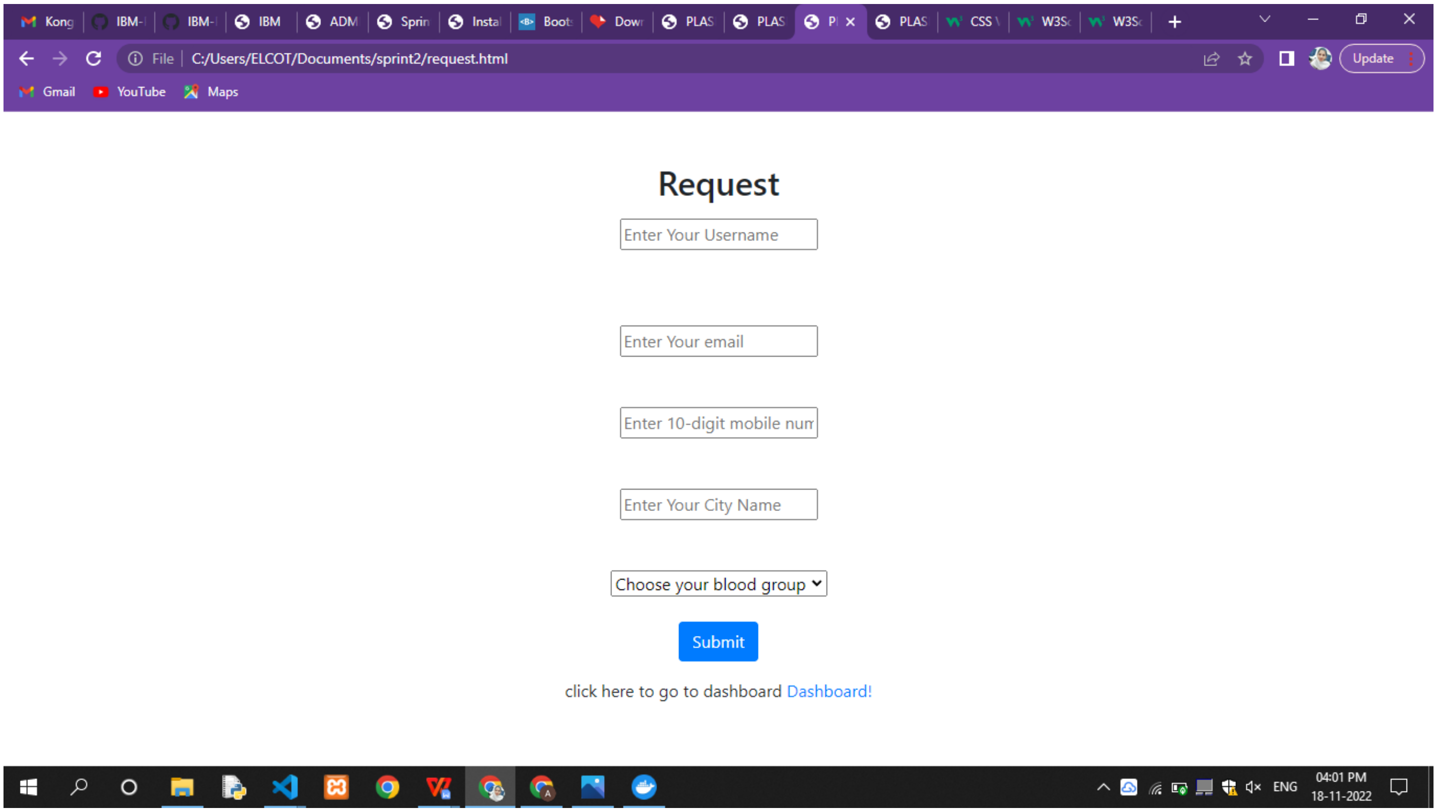
Plasma Donor

Request

Home

{{b1}} **O Positive**	{{b2}} **A Positive**	{{b3}} **B Positive**	{{b4}} **AB Positive**
{{b5}} **O Negative**	{{b6}} **A Negative**	{{b7}} **B Negative**	{{b8}} **AB Negative**

file:///C:/Users/ELCOT/Documents/sprint2/request.html



File | C:/Users/ELCOT/Documents/sprint2/request.html

Request

Enter Your Username

Enter Your email

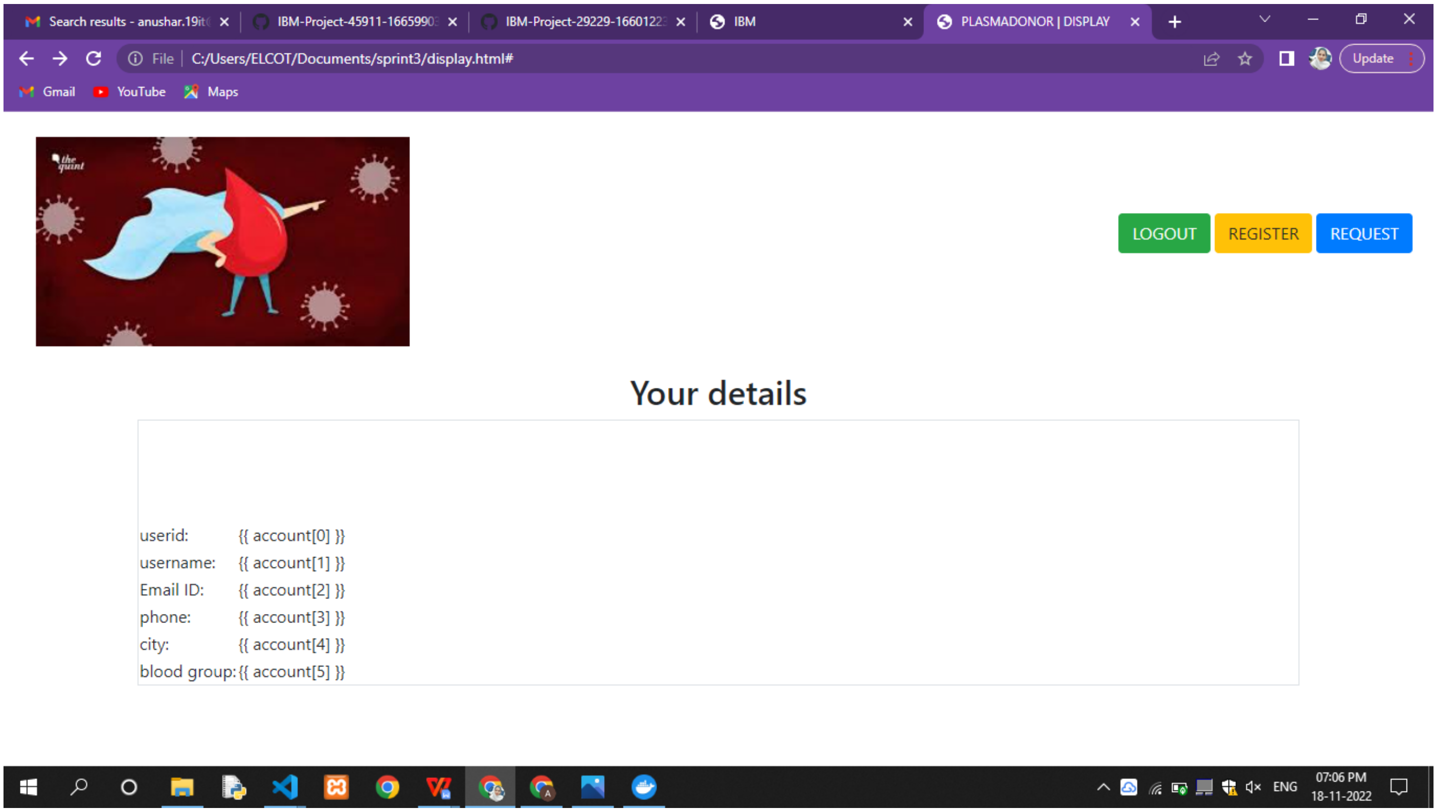
Enter 10-digit mobile nun

Enter Your City Name

Choose your blood group

Submit

click here to go to dashboard Dashboard!



Your details

```
userid:       {{ account[0] }}
username:     {{ account[1] }}
Email ID:     {{ account[2] }}
phone:        {{ account[3] }}
city:         {{ account[4] }}
blood group:{{ account[5] }}
```

9. ADVANTAGES

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

10.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 operations service.

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.

11.APPENDIX

GITHUB LINK:

https://github.com/IBM-EPBL/IBM-Project-29229-1660122394

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13. APPENDIX

GITHUB LINK:

https://github.com/IBM-EPBL/IBM-Project-8019-1658906300