

# **PLASMA DONOR APPLICATION**

**HX8001& Professional Readiness for Innovation, Employability &  
Entrepreneurship**

## **REPORT**

*Submitted by*

<b>TEAM ID</b>	<b>PNT2022TMID25368</b>
<b>NITHISH KUMAR V</b>	<b>210819104069</b>
<b>NITHISH KUMAR R</b>	<b>210819104068</b>
<b>VENKATESAN S</b>	<b>210819104119</b>
<b>VISHAL N</b>	<b>210819104122</b>
<b>GOWTHAM M</b>	<b>210819104026</b>

*of*

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in COMPUTER SCIENCE AND ENGINEERING**

**KINGS ENGINEERING COLLEGE – CHENNAI 602 117**

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# **CHAPTER-1**

## **INTRODUCTION**

With rapid increase in the usage of social networks sites across the world, there is also a steady increase in plasma donation requests as being noticed in the number of posts on these sites such as Facebook and twitter seeking plasma donors.

Finding plasma donors is a challenging issue in almost every country. There are some plasma donor finder applications in the market such as Blood app by Red Cross and Blood Donor Finder application by Neologix.

### **1.1 PROJECT OVERVIEW**

Several software technologies including languages and framework are used to develop our plasma-donor web application known as “**PLASMA DONOR APPLICATION**”.

These technologies include HTML, CSS along with PYTHON and IBM CLOUD for databases. Python is a computer programming language often used to create websites and software, automate tasks and conduct data analysis.

Python is a general-purpose language, meaning it can be used to create a variety of different programs and isn't specialized for any specific problem.

### **1.2 PURPOSE**

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.

Your application helps patients who need plasma-derived biotherapies to improve or save their lives. Those in need are suffering from life-threatening conditions such as hemophilia, immune deficiencies, and other blood disorders.

Plasma is the essential ingredient in many medications and treatments.

## **CHAPTER -2**

### **LITERATURE SURVEY**

#### **2.1 EXISTING PROBLEM**

There are a quite good number of software packages that exist for the PLASMA DONOR APPLICATION system. But when I visited most plasma donor center system portals. I found that the existing system is limited only to those particular plasma centers.

##### **Problem Found In Existing System**

- At the present there is no software to keep any records in the plasma center.
- It becomes difficult to provide any record immediately at times of emergency.
- Required more human efforts in maintaining the branch related information .
- Manually keeping the accounts is also a tedious & risky job & to maintain those accounts in ledgers for a long period is also very difficult.
- Difficult to manage and maintain the files.
- Chance of damage of files, if the data is stored in the files for the duration of time.
- Time consuming is retrieving, storing and updating the data.
- It is difficult to keep track of the record about the donor & receiver he has donated or received the plasma at the last time.

## 2.2 REFERENCES

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

[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.

In "Short message service (SMS) based plasma" by G. Muddu Krishna & S. Nagaraju(2016)[1]. They proposed a system in which services of blood banks will be accessed via SMS. If someone needs blood then they have to request for blood via SMS and then packet count module of their system will check for availability of blood and response will be given by data processing module.

[4]A patient who has fully recovered from COVID-19 can help patients currently fighting infection by donating plasma. Because it is an infection killer, the plasma now contains antibodies against COVID-19. These antibodies provided the immune system with one way to fight the virus when it was sick, so plasma can be used to fight diseases. Therefore this paper monitors recovering patients based on the clustering of data and classifying them using fuzzy hierarchical clustering to reach the plasma as soon as possible.

## **2.3 PROBLEM STATEMENT**

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. 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.

## CHAPTER 3

### IDEATION AND PROPOSED SOLUTION

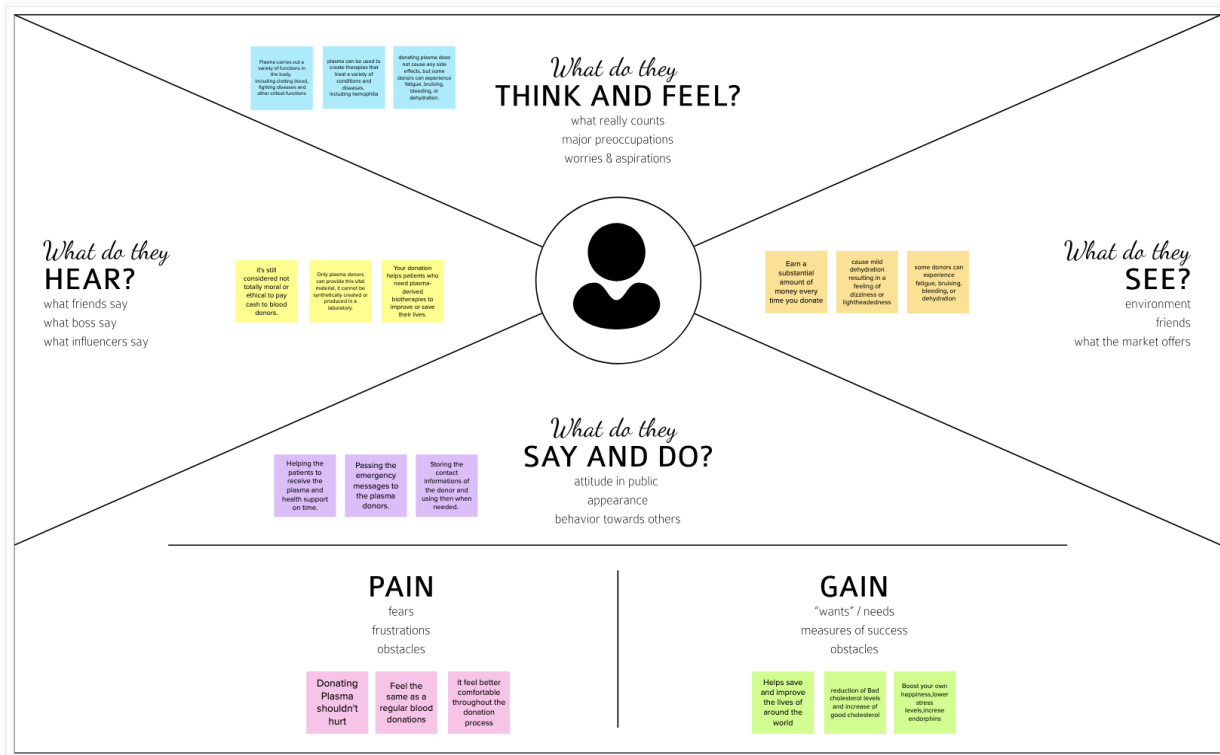
#### 3.1 EMPATHY MAP CANVAS

# Empathy Map Canvas

Gain insight and understanding on solving customer problems.

1

Build empathy and keep your focus on the user by putting yourself in their shoes.



Share your feedback



## 3.2 IDEATION AND BRAINSTORMING

### Step-1: Brainstorm, Idea Listing and Grouping

#### Brainstorm

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

🕒 10 minutes

#### Nithish Kumar.V

Donation camps	Plasma available places nearby	Check donor eligibility
steps to donate	Benefits of donating	Certificate of appreciation
Schedule appointment	Webinars to create awareness	Option of sending requests

#### Nithish Kumar.R

Contact for emergency	Registration	Sending mails
Clinical services	Book appointments	Step by step procedure
Request pending	Use of donation app	periodic checkups

#### Venkatesan.S

Do's and Don'ts after plasma donation	To inform to others about camps	checking the body condition
Need immediate response	More articles	Patient medical records
Report for donation	To get more details	Best time to donate

#### Vishal.N

Registration details	Create guide	checking the requirements
Web app	Information about receiver	How much ml required
What is the age limit	How to reach the place	Correct time to donate

#### 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 can break it up into smaller sub-groups.

🕒 20 minutes

#### we need to know

Donor eligibility	How many times we can donate	Benefits of donating
How we donate plasma	What we can eat before donation	

#### Process

Donor registration	Donor can view requirements	Receiver view the donors
Receiver send the request	Donor receive the request	Donor contact receiver

#### Different Ways

Visit donation camps	In Home plasma collection
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#### Awareness

Social media	Webinars
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#### Agencies and Organisations

To know about organisations	To join with agencies
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#### Admin Works

View Registration details	View donor list	Edit the donor interest
View the request send	Delete the request	Record all the data

#### Database

Donor details recorded	Receiver request recorded	Set of request that are accepted
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#### Benefits

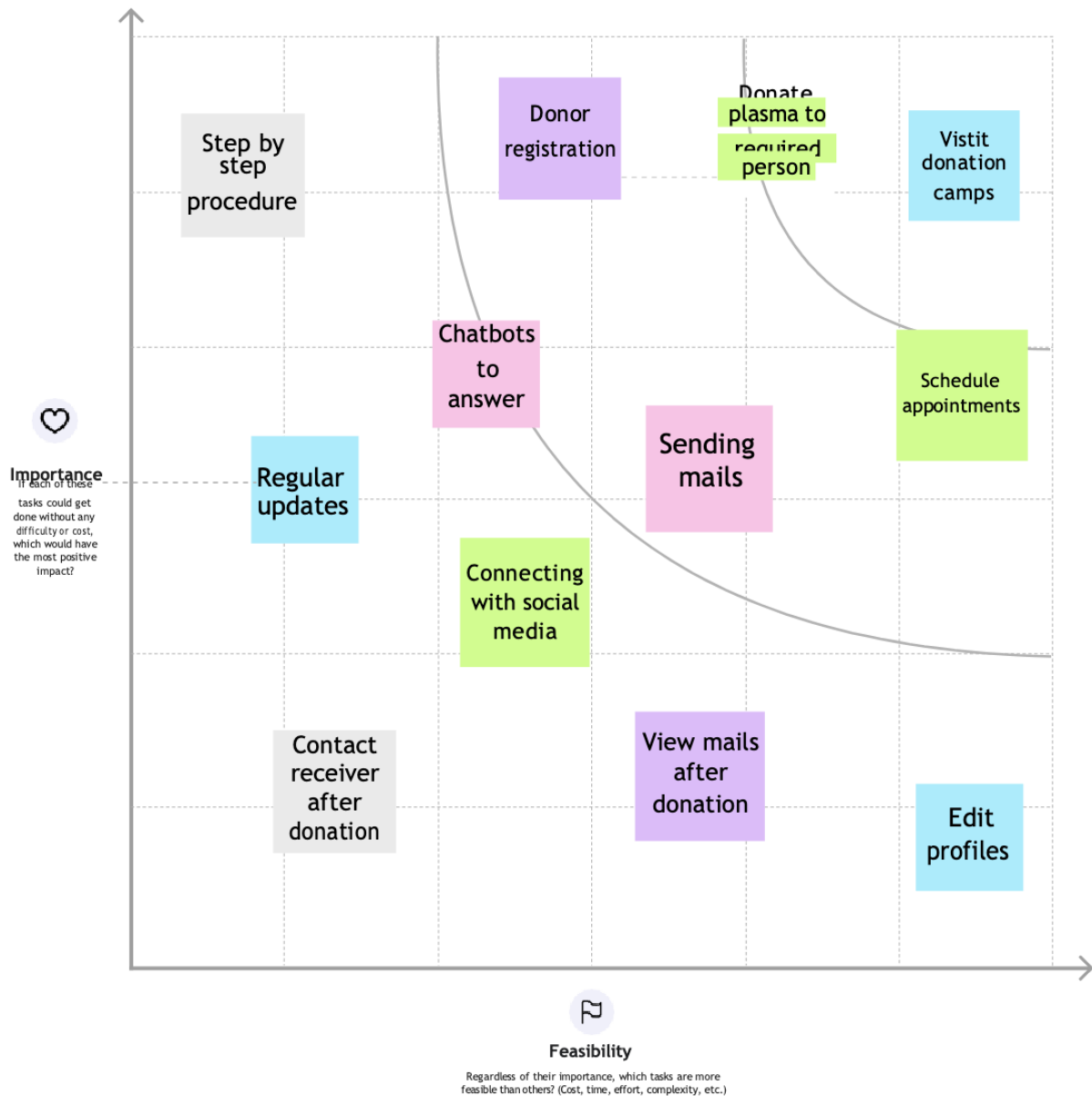
Certificate of appreciation	Generation of new plasma	Makes your more healthy	To save life of others
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## Step-2: Idea Prioritization

### Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes



### 3.3 PROPOSED SOLUTION

S.No.	Parameter	Description
1	Problem Statement (Problem to be solved)	<p>Plasma is used for the treatment of many serious health problems. This is why there are blood drives asking people to donate blood, plasma . Plasma is utilized to treat different irresistible sicknesses and it is one of the most established strategies known as plasma treatment. 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.</p>
2	Idea / Solution description	<p>This proposed system aims at connecting the donors &amp; the patients by an online application. By using this application, the users can either raise a request for plasma donation or requirements.</p> <p>The basic solution is to create a centralized system to keep a track on the upcoming as well as past Plasma Donation Events. The recommendation solution is as follows:</p> <p>Application contains two roles:</p> <ul style="list-style-type: none"> <li>▪ Admin</li> <li>▪ User</li> </ul> <p>User:</p> <ul style="list-style-type: none"> <li>• If the user wants to donate or receive they have to register with their personal details.</li> <li>• After successful registration of user.</li> <li>• A successful registration email is send to the user.</li> <li>• After successful registration user will be directed to home page.</li> <li>• They will be asked to press whether they will be donor or receiver.</li> <li>• If the user is donor then he/she will</li> </ul>

		<p>fill the donation interest form which includes their Name, blood group details, location, last time donated date , phone number, email id.</p> <ul style="list-style-type: none"> <li>• After filling the donation form he/she will redirected to page in which he/she can download the e-certificate.</li> <li>• If the user is receiver then he/she can see the list of donors available and they can raise their request and contact the donor directly.</li> </ul> <p>Admin:</p> <ul style="list-style-type: none"> <li>• Admin can login using their credentials.</li> <li>• Admin can edit the request.</li> <li>• Admin can delete the request.</li> <li>• Admin can add volunteers.</li> </ul>
3	Novelty / Uniqueness	<p>A User Interface is simple for users to understand. We can use the application anywhere anytime. 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 request donors for donation. Somebody wants to donate blood and plasma but they don't know the way to donate then they use this application which will simple to use and it will save lives of many people. Today many of them have mobile phones they can install this application and use it to save the lives of people</p>
4	Social Impact / Customer Satisfaction	<p>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. Donation of plasma are happening in many places many of them come forward to donate but it is not available at right time for use. Sometimes there is a shortage of plasma of particular</p>

		<p>type. Additional facilities that we need is to access the patients information quickly before plasma transfusion. To solve this issue software applications are employed with Cloud computing and Internet of Things tool which enable features such as information retrieval and continuous data tracking with analytics. This application avoids circulating of wrong information. A single platform for maintaining genuine information and increase the trust of participants involved int his activity. It increases the number of donors.</p>
5	Business Model (Revenue Model)	<p>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. Nowadays the need for plasma increases. Anyone with basic knowledge can access this app. This can be used anywhere anytime. working with the government we can utilize an application to help those needing plasma.</p>

## 4. PROBLEM FIT

Problem-Solution fit canvas 2.0		Purpose / Vision	
Define CS, fit into	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> Who is your customer?  Customers are those who require a particular blood group from the blood bank.  Provides complete details of the plasma donors which enables the patients to easily identify the matching donors.	<b>6. CUSTOMER</b> <span>CC</span> What constraints prevent your customers from taking action or limit their choices of solutions? (i.e. spending power, budget, no cash, network connection, available devices).  Most of the donor list available in the local blood banks may not be up-to-date. Manual maintenance and updating of the current list of blood donors and patients in need is not much effective.	<b>5. AVAILABLE SOLUTIONS</b> <span>AS</span> Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? (i.e. pen and paper is an alternative to digital notetaking).  Plasma donor application which serves to connect the patients and available donors.
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span> Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.  The objective of this application is to serve as an efficient means of communication between the plasma donors and the patients with requirement.  The patients are provided with the list of donors with complete details.  They can identify the matching donors and not connected via the contact details	<b>9. PROBLEM ROOT CAUSE</b> <span>RC</span> What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.  Searching for the appropriate plasma donors during emergency may take time and increase the risk of the patients.  Checking for available donors manually in case of emergency is difficult.	<b>7. BEHAVIOUR</b> <span>BE</span> What does your customer do to address the problem and get the job done? i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)  Start using the plasma donor application.  Post the patient's requirements in detail.  Easily identify the matching donors available.  Contact the donors via the contact details provided.
Focus on J&P, tap into BE, understand	<b>3. TRIGGERS</b> <span>TR</span> What triggers customers to act? (i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news). Understanding the fact that the patients can save a lot of time, and get rid of risk due to the unavailability of donors.	<b>10. YOUR SOLUTION</b> <span>SL</span> If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.  The application takes the donor details, store them and inform them upon a request. The app also take the patients details, stores them and inform about the available donors. The programme is offered on a subscription basis.	<b>8. CHANNELS of BEHAVIOUR</b> <span>CH</span> <b>8.1 ONLINE</b> What kind of actions do customers take online? Extract online channels from #7 Plasma donor application online come with a lot of ads which on clicking steals data like the patient's health information, photos, account number if provided.  <b>8.2 OFFLINE</b> What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. Make sure that they are aware of the application's usage by going through the demo and the application tour available.
	<b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span> How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design. They feel confident in finding the appropriate donors at the right time.		Extract online & offline CH of BE
Identify strong TR & EM			

## **CHAPTER-4**

### **REQUIREMENT ANALYSIS**

#### **4.1 FUNCTIONAL REQUIREMENT**

In software engineering and systems engineering, a functional requirement defines a function of a system or its components.

##### **Access Website:**

Software operator should be capable of accessing web-application through either an application browser or similar service on the PC. There should not be any limitation to access web-application.

##### **Software operator Registration:**

Given that the software operator has accessed the web-application, then the software operator should be able to register through the web-application. The donor software operator must provide first name, gender, plasma group, location, contact, software operator name and password.

##### **User registration:**

Registration through Website

##### **User Confirmation:**

Confirmation via Email

##### **User Login:**

Login using Registered email Id.

##### **Sent Request:**

If plasma is required, the receiver will contact the donor.

##### **Contact Donor:**

Contact the donor directly if a phone number is given.

### **View donation camps:**

View the list of donation camps happening nearby

## **4.2. NON-FUNCTIONAL REQUIREMENTS**

In systems engineering and requirements engineering, a non- functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specifies behaviors.

### **Maintainability:**

The plasma donor application System must have a high level of Maintainability.

### **Serviceability**

If an issue arises in the plasma donor application System, then then project must be programmed in such a way that the developer can service it again.

### **Data Integrity**

All the data in the plasma donar application System must be accurate and reliable.

### **Usability**

The user interface of the plasma donor system must be well-designed and welcoming.

### **Reliability**

The system has the ability to work all the time without failures apart from network failure. A donor can have faith in the system. The authorities will keeps the privacy of all donors in a proper manner

### **Interoperability**

The plasma donor application System must work with or use the parts or equipment of another system



## **Performance**

The Plasma donor System must perform well in different scenarios. The system is interactive and delays involved are less.

## **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 viewed by applications. It must be secured with email Id and password.

## **Availability**

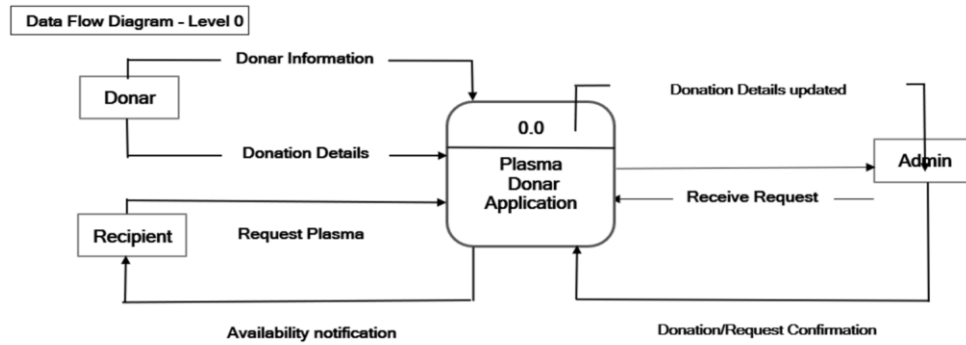
The system, including the online components, should be available 24/7.

## **Scalability**

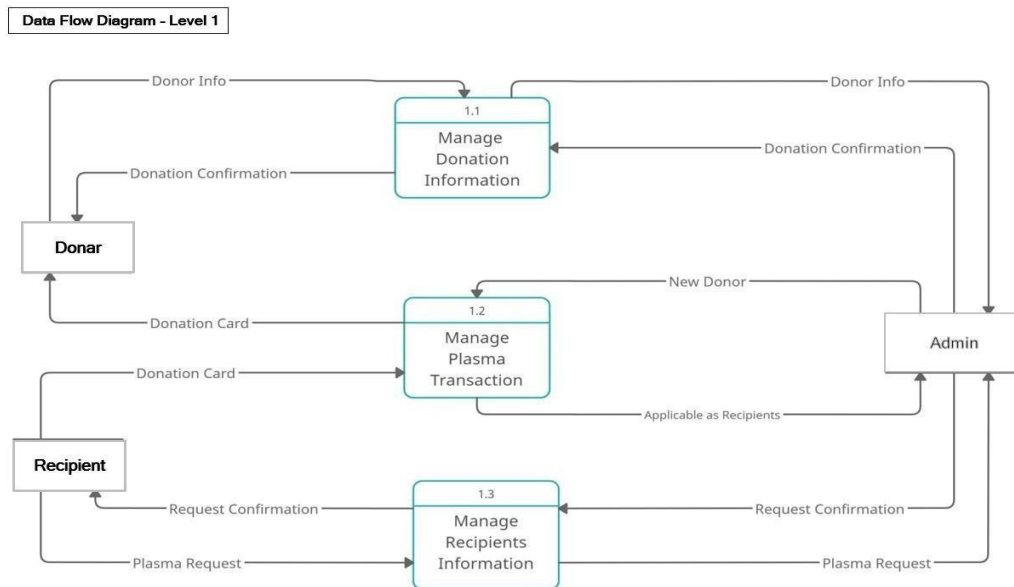
The system offers the proper resources for issue solutions and is designed to protect sensitive information during all phases of operation

## CHAPTER-5 PROJECT DESIGN

### 5.1 DATA FLOW DIAGRAM

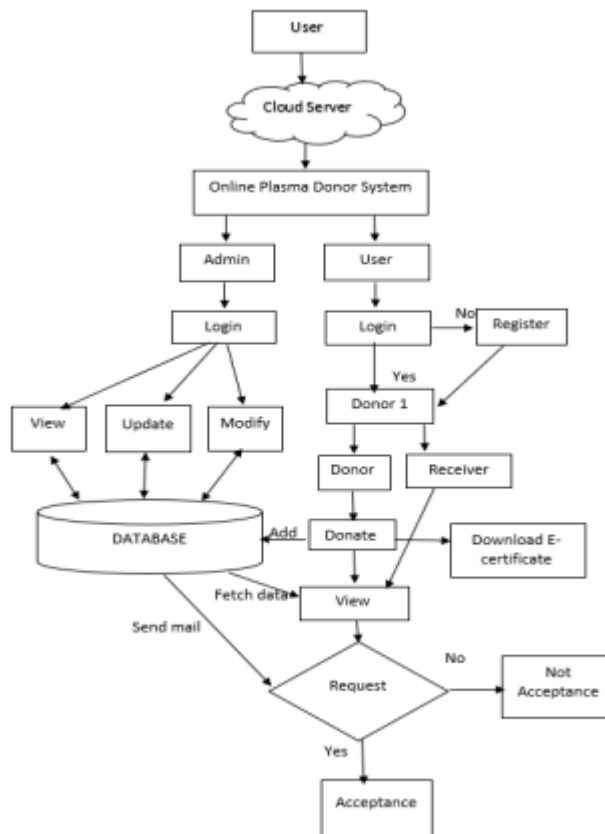


Data Flow Diagram – Level 0



Data Flow Diagram – Level 1

## 5.2 SOLUTION AND TECHNOLOGY ARCHITECTURE



## 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.	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 successful message	High	Sprint-1
	Login	USN-3	As a user, I can log into the application by entering email & password	I can access into my Profile and view my dashboard	High	Sprint-1
	Dashboard	USN-4	As a user, I can login using my credentials and it will direct it to my dashboard	I can view and access what are the features are provided in dashboard	High	Sprint-1
Customer (Webuser)		USN-5	As a user, I can login using my credentials and it will direct it to my dashboard	I can view and access what are the features are provided in dashboard	High	Sprint -1
Customer Care Executive	Query	USN-6	As a user had an any query about the given requirements	I can view a query and rectify the given query	medium	Sprint-2
Administrator	Login	USN-7	As a admin ,have credentials using that they can login	They can view and modify the data in database	medium	Sprint-2
	View	USN-8	As a admin I can view plasma information	View and modify	High	Sprint-1
	Modify	USN-9	As a admin I can modify the plasma information.	Modify only if there is a false information/	Medium	Sprint-1

## CHAPTER-6

### 6.1 SPRINT PLANNING AND ESTIMATION Project Tracker:

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	29 Oct 2022	03 Nov 2022	20	03 Nov 2022
Sprint-2	20	6 Days	05 Oct 2022	10 Nov 2022	20	10 Nov 2022
Sprint-3	20	6 Days	12 Nov 2022	17 Nov 2022	20	17 Nov 2022
Sprint-4	20	6 Days	19 Nov 2022	24 Nov 2022	20	24 Nov 2022

#### Velocity: Sprint – I to 4

Sprint duration = 6 days Velocity of the team = 20 points

$$\text{average velocity (AV)} = \frac{\text{Velocity}}{\text{Sprint duration}}$$

$$AV = 20/6 = 3.34$$

$$\text{Average Velocity} = 3.34$$

## 6.2 SPRINT DELIVERY SCHEDULE

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Donor Registration	USN-1	As a user, I can register in the donor application by entering my name, phone_no, Email id, blood group ,aadhar no	9	High	Team Lead (V.Nithish Kumar)
Sprint-1	Login	USN-2	As a admin, I can log into the application by entering email & password	9	High	Team Lead
Sprint-1	Chatbot	USN-3	As a user I can ask query in chatbot.	2	Medium	Team Lead Team Member 4
Sprint -2	Confirmation	USN-4	As a user, I can receive confirmation mail.	4	Medium	Team Lead
Sprint - 2	Dashboard	USN-5	As a user, I can view dashboard and select	5	Medium	Team Member 1 Team Member 4
Sprint-2	View Donor List	USN-6	As a user, I can view all the donor list and contact them directly	9	High	Team Lead
Sprint-2	Search Donor	USN-7	As a user, I can search for the donor	9	Medium	Team Lead
Sprint-3	About us	USN-8	As a User, I can view the about us page which contains all contact information	5	Medium	Team Member 2

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-3	Modify data	USN-9	As a admin, I can modify the User data.	9	High	Team Lead
Sprint-3	Send mail	USN-10	As a user, I can send mail to donors using sendgrid.	9	High	Team Lead Team Member 3 Team Member 1
Sprint-3	Home page	USN-11	As a user I can view the home page and select the desired option.	9	Medium	Team Lead Team Member 1 Team Member 2 Team Member 3 Team Member 4
Sprint -4	Send Query	USN-12	As a user I can ask my query through email.	9	Medium	Team Lead Team Member 3 Team Member
Sprint-4	Download data	USN-13	As a admin I can download the user data	9	High	Team Lead

## CHAPTER – 7 ADVANTAGES AND DISADVANTAGES

### Advantages

- **Speed:** This website is fast and offers great accuracy as compared to manual registered keeping.
- **Maintenance:** Less maintenance is required
- **User Friendly:** It is very easy to use and understand. It is easily workable and accessible for everyone.
- **Fast Results:** It would help you to provide plasma donors easily depending upon the availability of it.

### Disadvantages

- **Internet:** It would require an internet connection for the working of the website.
- **Auto-Verification:** It cannot automatically verify the genuine users.

## **CHAPTER-8 CONCLUSION**

The efficient way of finding plasma donor for the infected people is implemented using the plasma donor website that is hosted on Aws platform. To ensure the smooth functioning of the website operations.

I have hosted the website in AWS platform to make sure the operations are running successfully AWS lambda function is used and to deploy the application AWS EC2 service is used.



## **CHAPTER-9 FUTURE SCOPE**

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

## **10. APPENDIX**

### **Github link:**

<https://github.com/IBM-EPBL/IBM-Project-1221-1658379220>

### **Project demo link:**

[https://drive.google.com/file/d/1Lnv-23FLLCNMcFH6DqRyCzNR\\_Cxz-XOI/view?usp=share\\_link](https://drive.google.com/file/d/1Lnv-23FLLCNMcFH6DqRyCzNR_Cxz-XOI/view?usp=share_link)