

DBMS Mini Project Report

“COVID-19 Plasma Bank Donation System”

Submitted by

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Abstract : It is clear that the Coronavirus pandemic will remain on the world agenda for a few more months. Even after it's one of the most disastrous pandemics the world has ever seen, there are some therapies which the experts have suggested, Plasma Therapies being one of them.

The system proposed in this chapter would be an attempt to counter the Plasma need and requirement chain. The system would smoothly fulfill the flow of plasma from donations to the required patients through a sequentially designed Plasma Donation System. The proposed system will be constantly monitored, there by taking care from the accessibility and user-first prospect.

This system follows a top-down approach and uses Relational Database Concepts for managing various databases required. The aim of the system is to simplify the Plasma process as much as possible and counter the pandemic situation with integrity and voluntariness.

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1) Introduction:

The coronavirus pandemic has brought the world to a standstill. Each and every group of people have been affected because of it. In this scenario, Plasma Therapy is seen as an effective way of treating the Covid patients. It involves transferring of the antibodies produced by the recovered patients to the infected patients. This may increase the chances of the infected patients developing immunity against the virus. This process of voluntarily donating the plasma, if streamlined through a proper system, and carried out as per plans, could help us to eradicate it. This system is one such attempt to streamline the Plasma donation process.

2) Problem Statement:

In the proposed system the recovered Covid patients can donate blood to the plasma bank in their city. The plasma bank will store the details of donors. It will separately store the blood details of each donor.

The hospitals can request for plasma samples from the plasma bank present in their city.

The hospitals will have a unique Hospital ID and will have it's personal details stored.

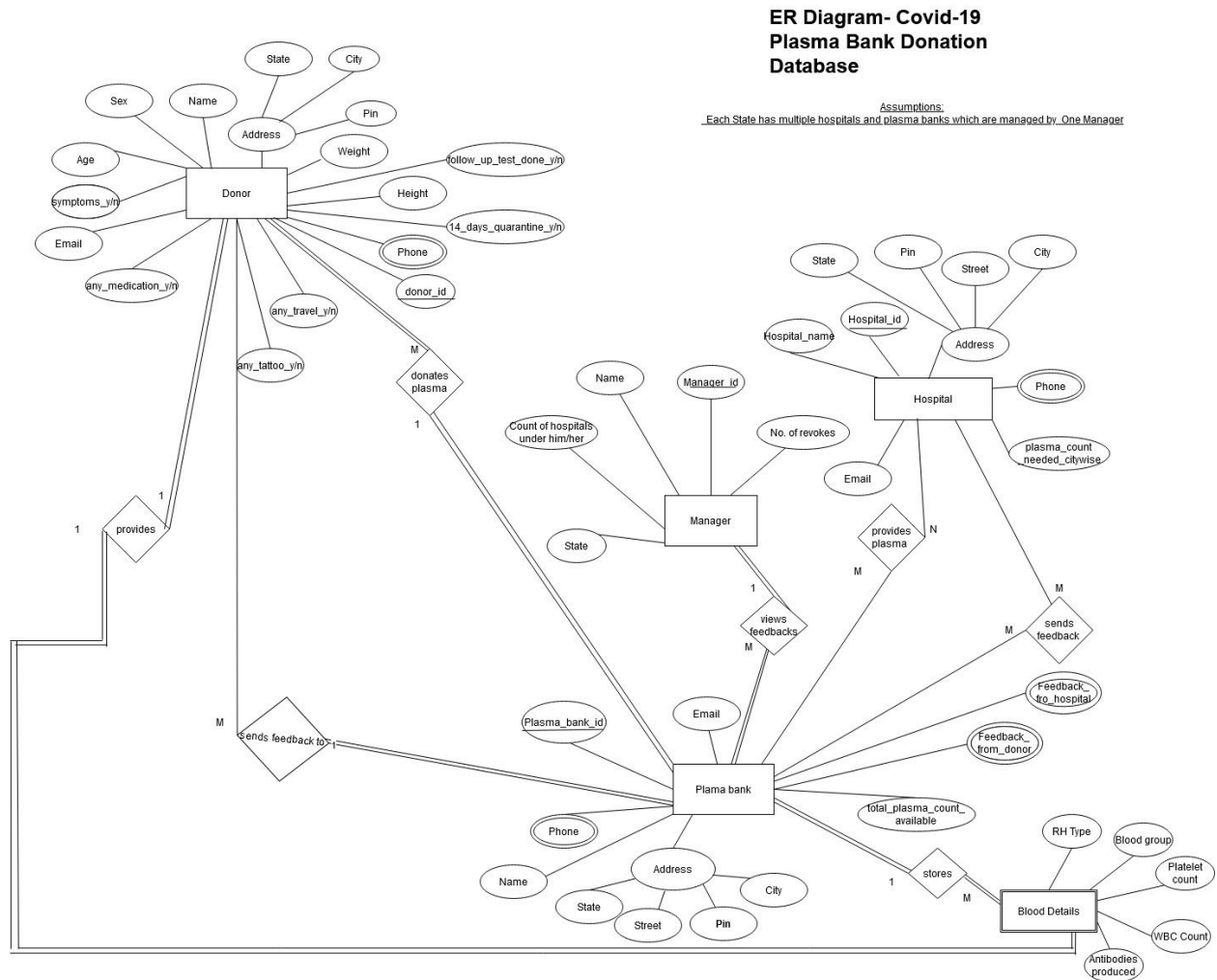
The Plasma banks will have a unique Plasma Bank ID too.

The donors can provide feedback to the plasma banks on the basis of services he/she has received. Provision is also given to hospital to provide feedback for services provided by the Plasma Bank. We have assumed that there will be multiple plasma banks in every state.

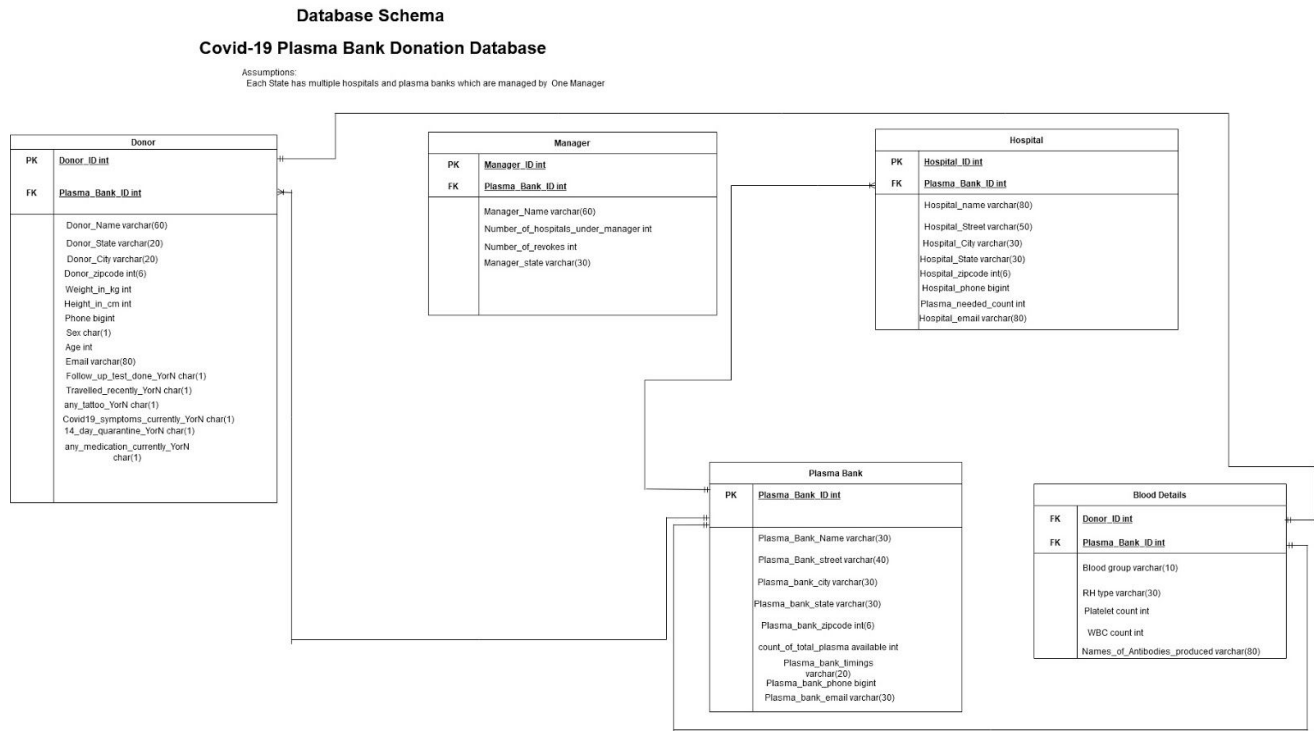
The manager will monitor the entire system by viewing the feedback received by the donors and hospitals. He/she has the authority to revoke underperforming Plasma banks from the system based on unsatisfactory feedback by donors and hospitals. We have considered that there will be one manager per state.

3) Tools and Technologies used:

- 1) Python (Django Framework)
- 2) MySQL Database
- 3) HTML
- 4) CSS and Bootstrap
- 5) JS

Database Design (ERD Diagram) :

Relational Database Design using Schema diagram:



Functional Requirements

R1. Search

1. Input: Search for any city.
2. Output: List of hospitals in that city along with numbers of Covid-19 patients that need plasma are displayed with 'donate' button alongside.

R2. Registration form

1. Input: Click on donate button.
2. Output: Registration form which accepts the necessary data (eg: personal details, eligibility criteria, etc).
3. Forms are forwarded to the respective hospitals.

R3.Offline slot booking

1. Input: Users fill the registration form which is accessed by the respective hospitals.
2. Hospitals verify the eligibility criteria and provide slot timings for donation through offline means.
3. Output: Users are notified with the slot timings for donation by hospital.

R4. Feedback

1. Input: After donation, users can fill the feedback form to share their experience regarding how they were treated at the hospital.
2. Output: Their feedback gets stored that can be reviewed by the respective hospital and the association of hospitals.

Non-Functional Requirements

R1. User requirements:

1. The system shall allow the user to access the system from phone, desktop, laptop using the web application as an interface.
2. The system is user friendly which makes it easy to use.

R2. Availability Requirement:

1. System is available hundred percent for the user and is used 24 hours a day and 365 days a year.
2. The system shall be operational during the entire pandemic to serve the affected.

R3. Efficiency Requirement:

1. If the system fails it will be recovered by the backup in no time.
2. The details would be backed up on the cloud.

R4. Accuracy :

1. The system would accurately provide real-time information taking into consideration various concurrency issues.
2. It would always show real time data.

R5. Performance Requirements:

1. The information is refreshed depending upon whether some updates have occurred or not in the application.
2. The system shall respond to the number and no less than 2 seconds from the time of submitted.
3. Responses to the information shall take no longer than 5 seconds to appear on the screen.

R6. Reliability Requirement :

1. The system would be 100% reliable due to the importance of data and the damages that can be caused.

NORMALIZATION (UPTO 3NF)**1. PLASMA BANK TABLE**

Plasma_bank_ID(PK)	Plasma_Bank_Name	Plasma_Bank_Street	Zipcode	count_of_total_plasma_available	Plasma_Bank_phone	Plasma_Bank_email
1	Om_Bank	M.G Road	400067	50	22222222	ombank@xyz.com
1	Om_Bank	M.G Road	400067	50	66666666	ombank@xyz.com
2	Shyam_bank	S.V Road	411038	30	77777777	shyambank@xyz.com

1NF:

Since Plasma Bank phone and email are multivalued, Plasma_Bank_id (PK), Zipcode (FK) should not be unique

2NF:

All non-key attributes are fully functionally dependent on primary key.

3NF:

There are no transitive functionalities.

2. DONOR TABLE

Plasma_bank_ID(FK)	Donor_ID(PK)	Donor_Name	ZipCode(FK)	Weight_in_kg	Height_in_cm	Phone	Sex	Age	Email	Follow_up_test_done_YorN	Travelled_recently_YorN	any_tattoo_YorN	14_day_quarantine_YorN	Covid_19_symptoms_currently_YorN
1	1	Neha Sharma	400067	70	162	23232323	F	26	nehashar@xyz.com	Y	N	N	Y	N
1	1	Neha Sharma	400067	70	162	34343434	F	26	nehashar@xyz.com	Y	N	N	Y	N
2	2	Nidhi Shah	411038	68	158	12121212	F	24	nidhi@xyz.com	Y	N	N	Y	N

1NF:

Since Donor phone is multivalued, Plasma_Bank_id (PK), Zipcode (FK) should not be unique

2NF:

All non-key attributes are fully functionally dependent on primary key.

3NF:

There are no transitive functionalities.

3.SERVICE QUALITY MANAGER TABLE

Plasma_bank_ID(FK)	Manager_ID (PK)	Manager_Name	ZipCode	Number_of_hospitals_under_manager	Number_of_revokes
1	1	Sachin Nayak	Maharashtra	5	2
1	1	Sachin Nayak	Maharashtra	5	2
1	1	Sachin Nayak	Maharashtra	5	2

1NF:

Each manager is assigned one state and thus it has multiple plasma banks under it.

Hence Plasma_bank_id and Manager_id cannot be unique

2NF:

All non-key attributes are fully functionally dependent on primary key.

3NF:

There are no transitive functionalities.

4. BLOOD DETAILS TABLE

Plasma_bank_ID(FK)	Donor_ID(FK)	Blood_group	RH_type	Platelet_count	WBC_count	Names_of_antibodies_produced
1	1	B+ve	positive	200000	6000	IgG
1	3	B+ve	positive	300000	7000	IgG

1NF: Blood details table

As multiple donors can provide blood details to same plasma bank, plasma_bank_id (fk) will not be unique

As one donor will have unique blood details, donor_id(fk) will be unique

2NF:

All non-key attributes are fully functionally dependent on primary key.

3NF:

There are no transitive functionalities.

5. HOSPITAL TABLE

Plasma_bank_ID (FK)	Hospital_ID (PK)	Hospital_name	Hospital_street	zipcode(FK)	Hospital_phone	Plasma_needed_count	Hospital_email
1	1	Cama Hospital	M.G. Road	400067	7373737373	10	camah@xyz.com
1	1	Cama Hospital	M.G. Road	400067	6767676767	10	camah@xyz.com
2	2	Tata Hospital	S.V.Road	411038	2332233222	15	tatahos@xyz.com

1NF: Hospital Table

Hospital phone are multivalued and so hospital_id(pk), plasma_bank_id(fk) are not unique

2NF:

All non-key attributes are fully functionally dependent on primary key.

3NF:

There are no transitive functionalities.

6. ADDRESS TABLE

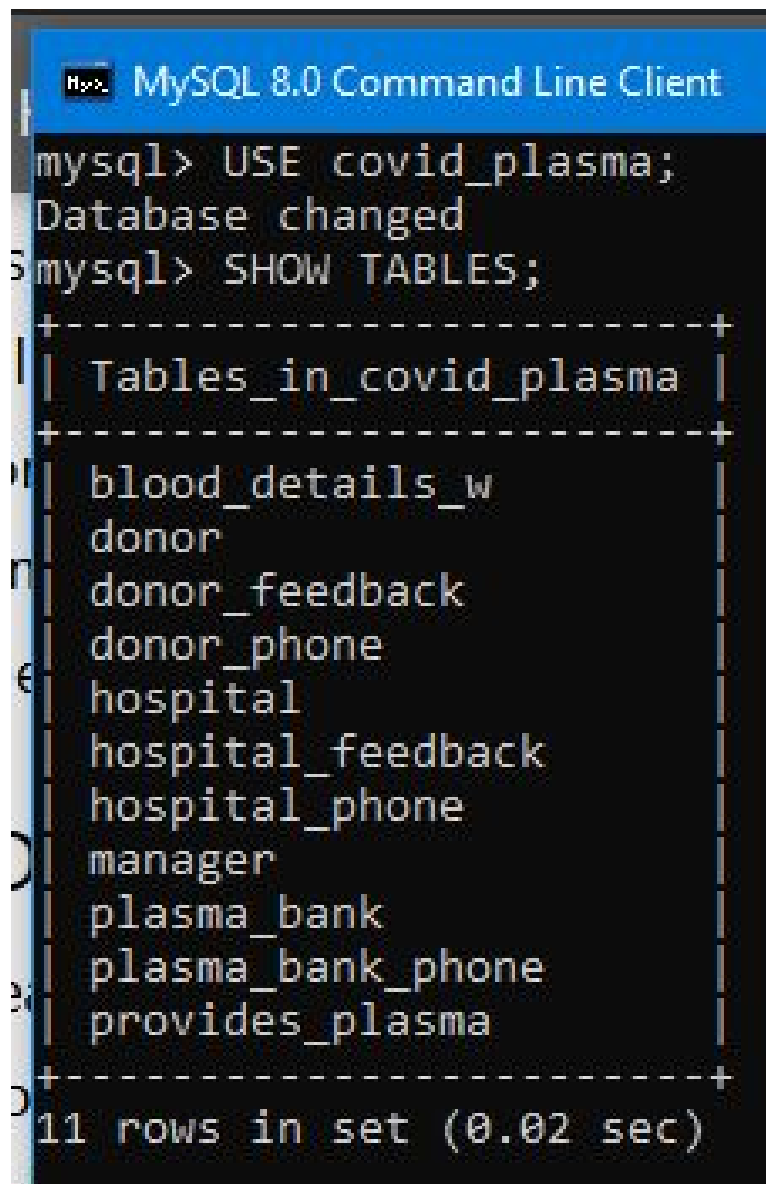
Zipcode (PK)	City
400067	Mumbai
411038	Pune

Address Table is created to transform table to 2NF.

7. STATE TABLE

Zipcode (PK)	State
400067	Maharashtra
411038	Maharashtra

State Table is created to transform table to 3NF.

Plasma Donation System Database Tables

```
MySQL 8.0 Command Line Client
mysql> USE covid_plasma;
Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_covid_plasma |
+-----+
| blood_details_w         |
| donor                   |
| donor_feedback          |
| donor_phone             |
| hospital                |
| hospital_feedback       |
| hospital_phone          |
| manager                 |
| plasma_bank             |
| plasma_bank_phone       |
| provides_plasma         |
+-----+
11 rows in set (0.02 sec)
```

Donor's Tables: Donor Info and the feedback table consisting of the feedback given by donors to the Plasma_banks.

MySQL 8.0 Command Line Client

```
mysql> DESC donor;
```

Field	Type	Null	Key	Default	Extra
Donor_ID	int	NO	PRI	NULL	auto_increment
Name	varchar(50)	NO		NULL	
Sex	varchar(10)	YES		NULL	
Age	int	YES		NULL	
Email	varchar(100)	YES		NULL	
any_symptoms	varchar(5)	NO		NULL	
any_medication	varchar(5)	NO		NULL	
any_tattoo	varchar(5)	NO		NULL	
any_travel	varchar(5)	NO		NULL	
follow_up_test_done	varchar(5)	NO		NULL	
14_days_quarantine	varchar(5)	NO		NULL	
Weight	decimal(3,2)	YES		NULL	
Height	decimal(3,2)	YES		NULL	
Pin	int	YES		NULL	
City	varchar(30)	YES		NULL	
Plasma_bank_id	int	NO	MUL	NULL	

16 rows in set (0.45 sec)

```
mysql> DESC donor_feedback;
```

Field	Type	Null	Key	Default	Extra
Plasma_bank_id	int	NO	MUL	NULL	
Feedback	varchar(200)	YES		NULL	

Hospitals Tables: Hospital Details and Feedback Table

MySQL 8.0 Command Line Client

```
mysql> DESC donor_phone;
```

Field	Type	Null	Key	Default	Extra
Donor_ID	int	NO	MUL	NULL	
Phone_no	int	YES		NULL	

2 rows in set (0.00 sec)

```
mysql> DESC hospital;
```

Field	Type	Null	Key	Default	Extra
Hospital_ID	int	NO	PRI	NULL	
Name	varchar(50)	NO		NULL	
Email	varchar(100)	YES		NULL	
Pin	int	YES		NULL	
Street	varchar(10)	YES		NULL	
City	varchar(30)	YES		NULL	
Plasma_count_needed	int	YES		0	

7 rows in set (0.00 sec)

```
mysql> DESC hospital_feedback;
```

Field	Type	Null	Key	Default	Extra
Plasma_bank_id	int	NO	MUL	NULL	
Feedback	varchar(200)	YES		NULL	

Manager Table and Plasma Bank Table

```

mysql> DESC hospital_phone;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Hospital_ID | int | NO | MUL | NULL |  |
| Phone_no | int | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> DESC manager;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Manager_ID | int | NO | PRI | NULL |  |
| Name | varchar(30) | YES |  | NULL |  |
| State | varchar(50) | YES |  | NULL |  |
| Count_of_plasma_banks_under | int | YES |  | 0 |  |
| No_of_revokes | int | YES |  | 0 |  |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> DESC plasma_bank;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Plasma_bank_id | int | NO | PRI | NULL |  |
| Name | varchar(50) | NO |  | NULL |  |
| Email | varchar(100) | YES |  | NULL |  |
| Total_plasma_count_available | int | YES |  | 0 |  |
| Pin | int | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

```

Plasma bank Table and Provide Plasma table

```

mysql> DESC plasma_bank;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Plasma_bank_id | int | NO | PRI | NULL |  |
| Name | varchar(50) | NO |  | NULL |  |
| Email | varchar(100) | YES |  | NULL |  |
| Total_plasma_count_available | int | YES |  | 0 |  |
| Pin | int | YES |  | NULL |  |
| Street | varchar(10) | YES |  | NULL |  |
| City | varchar(30) | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> DESC plasma_bank_phone;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Plasma_bank_ID | int | NO | MUL | NULL |  |
| Phone_no | int | YES |  | NULL |  |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> DESC provides_plasma;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Plasma_bank_id | int | NO | MUL | NULL |  |
| Hospital_ID | int | NO | MUL | NULL |  |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

```

Tables with Values

Donor Table:

MySQL 8.0 Command Line Client

```
mysql> SELECT Donor_ID,Name,Sex,Age,Email,Pin,City,Height,Weight,Plasma_bank_ID from Donor;
```

Donor_ID	Name	Sex	Age	Email	Pin	City	Height	Weight	Plasma_bank_ID
101	Ankit	M	21	ankit@yahoo.in	44002	Nagpur	157	58	20204
102	Anadhya	F	21	aru@yahoo.in	41108	Pune	146	48	20203
103	Ananya	F	23	ananya@yahoo.in	40198	Mumbai	140	49	20201
104	Dency	F	37	dency@yahoo.in	40037	Mumbai	141	51	20202
105	Shivang	M	29	shiv@yahoo.in	20138	Nagpur	155	61	20204
106	Vyom	M	25	vyom@yahoo.in	21154	Banglore	171	69	20205
107	Prem	M	32	prem@yahoo.in	50012	Manglore	136	78	20206
108	Jagdish	M	35	jag@yahoo.in	21055	Delhi	155	65	20208
109	Ashwin	M	32	ash@yahoo.in	55001	Noida	146	78	20207
110	Shivani	F	33	shivani@yahoo.in	22065	Noida	169	58	20207
111	Anushka	F	21	anush@yahoo.in	33084	Delhi	171	48	20209
112	Haridas	M	35	hari@yahoo.in	44024	Pune	196	64	20203
113	Om	M	35	hari@yahoo.in	44024	Noida	151	64	20207

13 rows in set (0.00 sec)

ERROR 1054 (42S22): Unknown column '14_days' in 'field list'

```
mysql> SELECT Donor_ID,Name,any_symptoms,any_medication,any_tattoo,any_travel,follow_up_test_done,14_days_quarantine, Plasma_bank_id from Donor;
```

Donor_ID	Name	any_symptoms	any_medication	any_tattoo	any_travel	follow_up_test_done	14_days_quarantine	Plasma_bank_id
101	Ankit	No	No	No	No	Yes	Yes	20204
102	Anadhya	No	No	No	Yes	Yes	Yes	20203
103	Ananya	No	Yes	Yes	No	Yes	No	20201
104	Dency	No	Yes	No	No	Yes	Yes	20202
105	Shivang	No	No	Yes	No	Yes	Yes	20204
106	Vyom	No	No	No	No	Yes	Yes	20205
107	Prem	No	No	No	No	No	No	20206
108	Jagdish	No	No	No	No	Yes	Yes	20208
109	Ashwin	No	No	No	No	Yes	Yes	20207
110	Shivani	No	No	No	No	Yes	Yes	20207
111	Anushka	No	No	No	No	Yes	Yes	20209
112	Haridas	No	No	No	No	Yes	Yes	20203
113	Om	No	No	No	No	Yes	Yes	20207

13 rows in set (0.00 sec)

Donor Phone Table:

MySQL 8.0 Command Line Client

```
mysql> SELECT * FROM donor_phone;
```

Donor_ID	Phone_No
101	789654562
103	975621556
104	745521520
105	874532145
106	451515558
107	741265258
108	741852965
109	741585665
110	412563255
111	741596525
112	741258966
113	654785224

12 rows in set (0.11 sec)

Manager Table:

```
mysql> SELECT * FROM Manager;
```

Manager_ID	Name	State	Count_of_plasma_banks_under	No_of_revokes
1	A Mohite	Maharashtra	13	0
2	VC Shukla	Karnataka	7	0
3	AK Sinha	Delhi	6	0
4	LG Singh	Uttar Pradesh	9	0

4 rows in set (0.12 sec)

Donor Feedback Table:

```
mysql> SELECT * FROM Donor_feedback;
```

Plasma_bank_id	Feedback
20202	Great Service, Social Distancing was taken care of.
20204	Too many formalities
20205	Great system
20206	Easy and better way for donation.

4 rows in set (0.06 sec)

Hospital Feedback Table:

```
mysql> SELECT * FROM Hospital_feedback;
```

Plasma_bank_id	Feedback
20202	OK
20204	OK
20205	Impure/Bad Quality
20206	OK

4 rows in set (0.00 sec)

```
mysql> _
```


Plasma Bank Table (Main Table, Phone Table and Provided to Hospital table) :

MySQL 8.0 Command Line Client

Plasma_bank_id	Name	Email	Total_plasma_count_available	Pin	Street	City
20201	Mumbai Plamsa Donation	mumbaiplasma@gmail.com	27	400001	Kalyan Rd	Mumbai
20202	Mumbai-N Plamsa Donation	mumbainplasma@gmail.com	81	40003	ChurchRd	Mumbai
20203	Pune City Donation Camp	puneplasma@gmail.com	67	41108	Kothrud	Pune
20204	Nagpur Plasma Service	ngpplasma@gmail.com	54	44004	CivilLn	Nagpur
20205	Banglore-N Plasma Camp	bngplasma@gmail.com	66	30015	SouthRd	Banglore
20206	Madras Plasma Donation	mdrsplasma@gmail.com	78	31307	KattibSq	Mysore
20207	Noida Health Camp	noidaplasma@gmail.com	88	11035	Sector130	Noida
20208	Delhi Central Plasma Dn	delhiplasma@gmail.com	91	11001	Karolbagh	Delhi
20209	Abad Plasma Service	abadplasma@gmail.com	27	51032	GandhiSq	Ahemdabad

9 rows in set (0.02 sec)

```
mysql> SELECT * FROM plasma_bank_phone;
```

Plasma_bank_ID	Phone_No
20201	741852963
20202	753952456
20202	741852954
20203	321898752
20204	974561744
20204	456546556
20205	741085296
20206	654654554
20207	700000781
20208	741963963
20209	521789632

11 rows in set (0.11 sec)

```
mysql> SELECT * FROM procides_plasma;
```

ERROR 1146 (42502): Table 'covid_plasma.procides_plasma' doesn't exist

```
mysql> SELECT * FROM provides_plasma;
```

Plasma_bank_id	Hospital_ID
20202	10101
20204	10103
20205	10105
20206	10106

Hospitals Table:

MySQL 8.0 Command Line Client

```
mysql> SELECT * FROM Hospital;
```

Hospital_ID	Name	Email	Pin	Street	City	Plasma_count_needed
10101	MMS Arogya	mmshosp@gmail.com	40002	Dombivali	Mumbai	11
10102	Kasturba Hospital	kstrbhosp@gmail.com	41038	Katraj	Pune	17
10103	7Star Hospital	ssngphosp@gmail.com	44112	Sakkardara	Nagpur	7
10105	City Hospital	bglchosp@gmail.com	31038	SouthRd	Banglore	3
10106	GMC	gcmchosp@gmail.com	31048	KarnSq	Manglore	9
10107	Naidu Hospital	naiduhosp@gmail.com	10038	Sector21	Noida	15
10108	RGD Hospital	rjdchosp@gmail.com	11038	SouthRd	Delhi	21

7 rows in set (0.11 sec)

```
mysql> SELECT * FROM Hospital_phone;
```

Hospital_ID	Phone_no
10101	755852963
10102	759933356
10102	741852954
10103	321898752
10105	741085296
10106	654654554
10107	701111181
10108	741969993

8 rows in set (0.10 sec)

Blood Details Table:

```
mysql> SELECT * FROM Blood_details_W;
```

Donor_ID	Blood_group	RH_Type	Platelet_count	WBC_Count	Antibodies_produced	Plasma_bank_id
101	AP	Positive	37000	8000	Immunoglobulin_M	20204
104	AN	Positive	31000	10000	None	20202
105	ABP	Positive	27000	8000	Immunoglobulin_M	20204
106	AN	Negative	26000	5000	None	20205
107	ABP	Positive	26000	8000	None	20206

```
5 rows in set (0.13 sec)
```

```
mysql> _
```

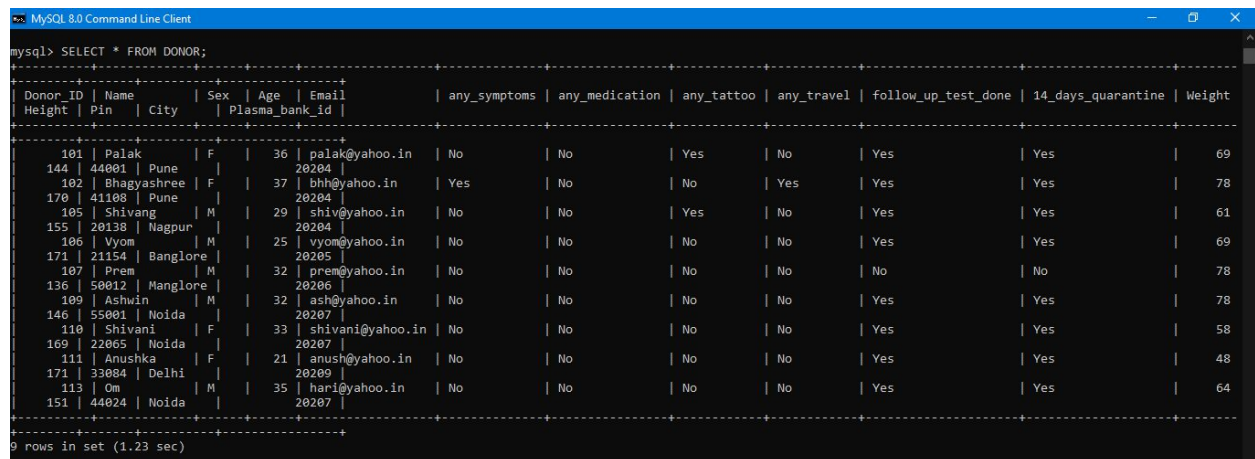
Triggers

- 1) To Create a backup of Donor's details in the other "Donor_backup" table when Donor's details are deleted from Donor table i.e. when the respective donor's plasma is utilized by a hospital.

Code:

```
//Trigger to backup the Taken Donor
DELIMITER $$
CREATE TRIGGER donor_backup
BEFORE DELETE
On Donor
FOR EACH ROW
BEGIN
INSERT INTO Donor_backup(Donor_ID, Name, Sex, Age, Email, any_symptoms,
any_medication, any_tattoo, any_travel, follow_up_test_done,
14_days_quarantine, Weight, Height, Pin, City)
VALUES
(OLD.Donor_ID, OLD.Name, OLD.Sex, OLD.Age, OLD.Email, OLD.any_symptoms,
OLD.any_medication, OLD.any_tattoo, OLD.any_travel, OLD.follow_up_test_done,
OLD.14_days_quarantine, OLD.Weight, OLD.Height, OLD.Pin, OLD.City);
END $$
DELIMITER ;
```

Execution Screenshots:



```
mysql> SELECT * FROM DONOR;
```

Donor_ID	Name	Sex	Age	Email	any_symptoms	any_medication	any_tattoo	any_travel	follow_up_test_done	14_days_quarantine	Weight	Height
101	Palak	F	36	palak@yahoo.in	No	No	Yes	No	Yes	Yes	69	
144	44001 Pune		20204									
102	Bhagyashree	F	37	bhh@yahoo.in	Yes	No	No	Yes	Yes	Yes	78	
170	41108 Pune		20204									
105	Shivang	M	29	shiv@yahoo.in	No	No	Yes	No	Yes	Yes	61	
155	20138 Nagpur		20204									
106	Vyom	M	25	vyom@yahoo.in	No	No	No	No	Yes	Yes	69	
171	21154 Bangalore		20205									
107	Prem	M	32	prem@yahoo.in	No	No	No	No	No	No	78	
136	50012 Manglore		20206									
109	Ashwin	M	32	ash@yahoo.in	No	No	No	No	Yes	Yes	78	
146	55001 Noida		20207									
110	Shivani	F	33	shivani@yahoo.in	No	No	No	No	Yes	Yes	58	
169	22065 Noida		20207									
111	Anushka	F	21	anush@yahoo.in	No	No	No	No	Yes	Yes	48	
171	33084 Delhi		20209									
113	Om	M	35	har@yahoo.in	No	No	No	No	Yes	Yes	64	
151	44024 Noida		20207									

19 rows in set (1.23 sec)

The Donor with Donor_ID = 111 would now be deleted from Donor's table and be added in Donor_Backup Table.

```

mysql> Select * FROM Donor_backup;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Donor_ID | Name | Sex | Age | Email | any_symptoms | any_medication | any_tattoo | any_travel | follow_up_test_done | 14_days_quarantine | Weight | Height |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 101 | Ankit | M | 21 | ankit@yahoo.in | No | No | No | No | Yes | Yes | 58 | 1 |
| 44002 | Nagpur |  |  |  |  |  |  |  |  |  |  |  |
| 102 | Aradhya | F | 21 | aru@yahoo.in | No | No | No | No | Yes | Yes | 48 | 1 |
| 41108 | Pune |  |  |  |  |  |  |  |  |  |  |  |
| 104 | Dency | F | 37 | dency@yahoo.in | No | Yes | No | No | Yes | Yes | 51 | 1 |
| 40037 | Mumbai |  |  |  |  |  |  |  |  |  |  |  |
| 108 | Jagdish | M | 35 | jag@yahoo.in | No | No | No | No | Yes | Yes | 65 | 1 |
| 21055 | Delhi |  |  |  |  |  |  |  |  |  |  |  |
| 112 | Haridas | M | 35 | hari@yahoo.in | No | No | No | No | Yes | Yes | 64 | 1 |
| 44024 | Pune |  |  |  |  |  |  |  |  |  |  |  |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.86 sec)

mysql> DELETE FROM Donor WHERE Donor_ID = 111;
Query OK, 1 row affected (1.51 sec)

mysql> Select * FROM Donor_backup;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Donor_ID | Name | Sex | Age | Email | any_symptoms | any_medication | any_tattoo | any_travel | follow_up_test_done | 14_days_quarantine | Weight | Height |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 101 | Ankit | M | 21 | ankit@yahoo.in | No | No | No | No | Yes | Yes | 58 | 1 |
| 44002 | Nagpur |  |  |  |  |  |  |  |  |  |  |  |
| 102 | Aradhya | F | 21 | aru@yahoo.in | No | No | No | No | Yes | Yes | 48 | 1 |
| 41108 | Pune |  |  |  |  |  |  |  |  |  |  |  |
| 104 | Dency | F | 37 | dency@yahoo.in | No | Yes | No | No | Yes | Yes | 51 | 1 |
| 40037 | Mumbai |  |  |  |  |  |  |  |  |  |  |  |
| 108 | Jagdish | M | 35 | jag@yahoo.in | No | No | No | No | Yes | Yes | 65 | 1 |
| 21055 | Delhi |  |  |  |  |  |  |  |  |  |  |  |
| 111 | Anushka | F | 21 | anush@yahoo.in | No | No | No | No | Yes | Yes | 48 | 1 |
| 33084 | Delhi |  |  |  |  |  |  |  |  |  |  |  |
| 112 | Haridas | M | 35 | hari@yahoo.in | No | No | No | No | Yes | Yes | 64 | 1 |
| 44024 | Pune |  |  |  |  |  |  |  |  |  |  |  |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+

```

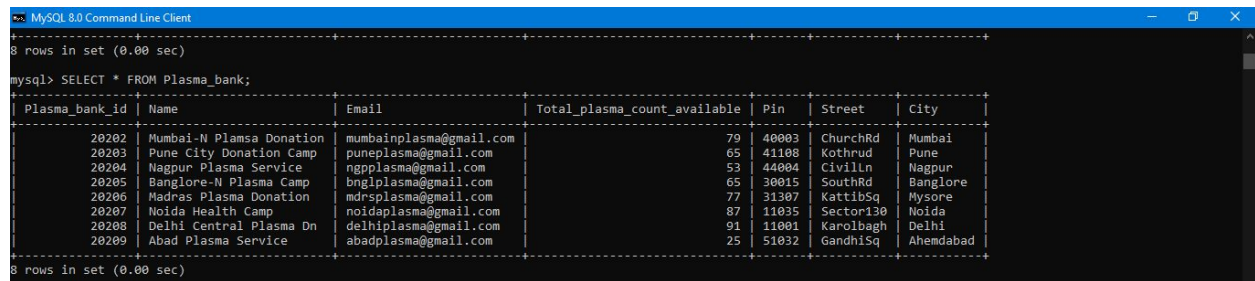
- 2) To update the total available plasma count in the Plasma bank table when a donor's plasma is utilized.

Code:

```
//Trigger to update the plasma count in the plasma bank
DELIMITER $$
CREATE TRIGGER update_p_count
BEFORE DELETE
ON donor
FOR EACH ROW
BEGIN
UPDATE Plasma_bank
SET Total_plasma_count_available = Total_plasma_count_available - 1
WHERE old.Plasma_bank_ID = Plasma_bank.Plasma_bank_ID;
END $$
DELIMITER ;
```

Execution Screenshots:

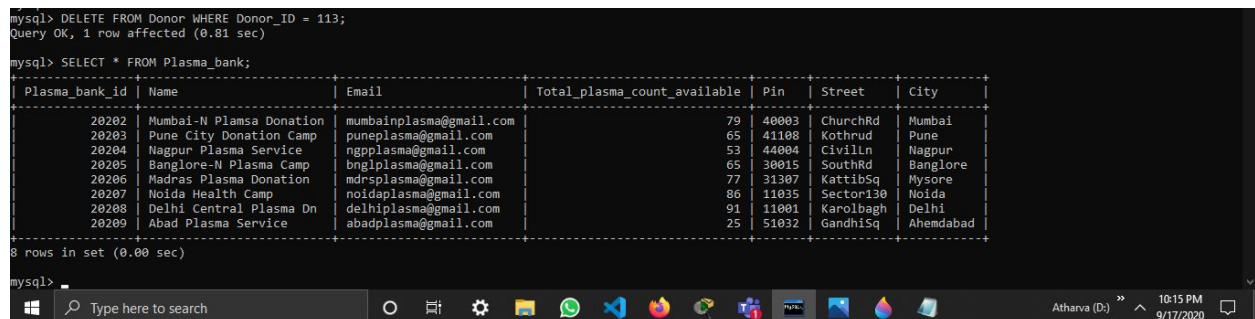
The Plasma bank with ID = 20207 Contains 87 Plasma presently.



```
mysql> SELECT * FROM Plasma_bank;
```

Plasma_bank_id	Name	Email	Total_plasma_count_available	Pin	Street	City
20202	Mumbai-N Plasma Donation	mumbainplasma@gmail.com	79	40003	ChurchRd	Mumbai
20203	Pune City Donation Camp	puneplasma@gmail.com	65	41108	Kothrud	Pune
20204	Nagpur Plasma Service	ngpplasma@gmail.com	53	44004	CivilLn	Nagpur
20205	Bangalore-N Plasma Camp	bnplasma@gmail.com	65	30015	SouthRd	Bangalore
20206	Madras Plasma Donation	mdrplasma@gmail.com	77	31307	KattibSq	Mysore
20207	Noida Health Camp	noidaplasm@gmail.com	87	11035	Sector130	Noida
20208	Delhi Central Plasma Dn	delhiplasma@gmail.com	91	11001	Karolbagh	Delhi
20209	Abad Plasma Service	abadplasma@gmail.com	25	51032	GandhiSq	Ahemdabad

Now, when we delete a Donor with Plasma_bank ID 20207, the plasma count in the table gets reduced to 86.



```
mysql> DELETE FROM Donor WHERE Donor_ID = 113;
Query OK, 1 row affected (0.81 sec)

mysql> SELECT * FROM Plasma_bank;
```

Plasma_bank_id	Name	Email	Total_plasma_count_available	Pin	Street	City
20202	Mumbai-N Plasma Donation	mumbainplasma@gmail.com	79	40003	ChurchRd	Mumbai
20203	Pune City Donation Camp	puneplasma@gmail.com	65	41108	Kothrud	Pune
20204	Nagpur Plasma Service	ngpplasma@gmail.com	53	44004	CivilLn	Nagpur
20205	Bangalore-N Plasma Camp	bnplasma@gmail.com	65	30015	SouthRd	Bangalore
20206	Madras Plasma Donation	mdrplasma@gmail.com	77	31307	KattibSq	Mysore
20207	Noida Health Camp	noidaplasm@gmail.com	86	11035	Sector130	Noida
20208	Delhi Central Plasma Dn	delhiplasma@gmail.com	91	11001	Karolbagh	Delhi
20209	Abad Plasma Service	abadplasma@gmail.com	25	51032	GandhiSq	Ahemdabad

PL SQL Procedures

- 1) To display city wise count of the plasma needed.

Code:

```
DELIMITER //
CREATE PROCEDURE TOT_PLASMA_NEED_CITYWISE(IN CITYN VARCHAR(30))
BEGIN
DECLARE EXIT HANDLER FOR NOT FOUND
SELECT 'CITY DOES NOT EXIST.' AS "ERROR";
SELECT CITY, SUM(PLASMA_COUNT_NEEDED) AS TOTAL_PLASMA_COUNT_NEEDED FROM
HOSPITAL WHERE CITY=CITYN;
END;//
DELIMITER ;

CALL TOT_PLASMA_NEED_CITYWISE('PUNE');
```

Execution Screenshot:

The total plasma count needed in Pune city is 40 (in HospitalID = 5) + 17 (in HospitalID = 10102) = 57.

```
mysql> SELECT * FROM hospital;
```

Hospital_ID	Name	Email	Pin	Street	City	Plasma_count_needed
5	Mangal Murti Hospital	mangalmh@xyz.com	411039	FC Road	Pune	40
10102	Kasturba Hospital	kstrbhosp@gmail.com	41038	Katraj	Pune	17
10103	7Star Hospital	ssngphosp@gmail.com	44112	Sakkardara	Nagpur	7
10105	City Hospital	bgichosp@gmail.com	31038	SouthRd	Banglore	3
10106	GMC	gmichosp@gmail.com	31048	KarnSq	Manglore	9
10107	Naidu Hospital	naiduhosp@gmail.com	10038	Sector21	Noida	15
10108	RGD Hospital	rjdhosp@gmail.com	11038	SouthRd	Delhi	21

```
7 rows in set (0.00 sec)

mysql> call tot_plasma_need_citywise('Pune');
```

city	total_plasma_count_needed
Pune	57

```
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.02 sec)

mysql>
```


- 2) To display city wise available plasma data.

Code:

```
DELIMITER //
CREATE PROCEDURE TOT_PLASMA_AVAIL_CITYWISE(IN CITYN VARCHAR(30))
BEGIN
DECLARE EXIT HANDLER FOR NOT FOUND
SELECT 'CITY DOES NOT EXIST.' AS "ERROR";
SELECT CITY, SUM(TOTAL_PLASMA_COUNT_AVAILABLE) AS TOTAL_PLASMA_COUNT_AVAILABLE
FROM PLASMA_BANK WHERE CITY=CITYN;
END;//
DELIMITER ;
CALL TOT_PLASMA_AVAIL_CITYWISE('PUNE');
```

Execution Screenshot:

The total plasma count available in Pune city is 64 (in Plasma Bank ID = 20203) + 47 (in Plasma Bank ID = 202010) = 117.

```
mysql> SELECT * FROM Plasma_bank;
+-----+-----+-----+-----+-----+-----+-----+
| Plasma_bank_id | Name                               | Email                               | Total_plasma_count_available | Pin  | Street    | City    |
+-----+-----+-----+-----+-----+-----+-----+
| 20202 | Mumbai-N Plasma Donation          | mumbaiinplasma@gmail.com          | 79                            | 40003 | ChurchRd | Mumbai  |
| 20203 | Pune City Donation Camp           | puneplasma@gmail.com              | 65                            | 41108 | Kothrud   | Pune    |
| 20204 | Nagpur Plasma Service             | ngoplasma@gmail.com               | 53                            | 44004 | Civilln   | Nagpur  |
| 20205 | Bangalore-N Plasma Camp           | bnglplasma@gmail.com              | 65                            | 30015 | SouthRd   | Bangalore |
| 20206 | Madras Plasma Donation            | mdrsplasma@gmail.com              | 77                            | 31307 | KattibSq  | Mysore  |
| 20207 | Noida Health Camp                 | noidaplasma@gmail.com             | 86                            | 11035 | Sector130 | Noida   |
| 20208 | Delhi Central Plasma Dn            | delhiplasma@gmail.com             | 91                            | 11001 | Karolbagh | Delhi   |
| 20209 | Abad Plasma Service               | abadplasma@gmail.com              | 25                            | 51032 | GandhiSq  | Ahemdabad |
| 202010 | Kothrud Pvt Donation              | kothrp@gmail.com                  | 47                            | 41113 | Bavdhan   | Pune    |
+-----+-----+-----+-----+-----+-----+-----+
9 rows in set (0.06 sec)

mysql> call tot_plasma_avail_citywise('Pune');
+-----+-----+
| city | total_plasma_count_available |
+-----+-----+
| Pune | 117                          |
+-----+-----+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.02 sec)

mysql>
```

Test Cases (Automation Testing)

Code:

```

assig.py > ...
1 from selenium import webdriver
2 from selenium.webdriver.common.by import By
3
4
5 driver = webdriver.Chrome(executable_path='C:\\Users\\Shradha\\Desktop\\Selenium\\chromedriver_win32\\chromedriver.exe')
6
7 driver.implicitly_wait(3)
8
9 driver.get("http://127.0.0.1:8000/")
10
11 driver.find_element_by_xpath("//*[id='navbarSupportedContent']/button[2]").click()
12 driver.find_element(By.NAME,"loginreg").send_keys("7585")
13 driver.find_element(By.NAME, "loginpassword").send_keys("password")
14 driver.find_element_by_xpath("//*[id='login']/div/div/div[2]/form/div[3]/button").click()
15
16 driver.implicitly_wait(10)
17 driver.quit()

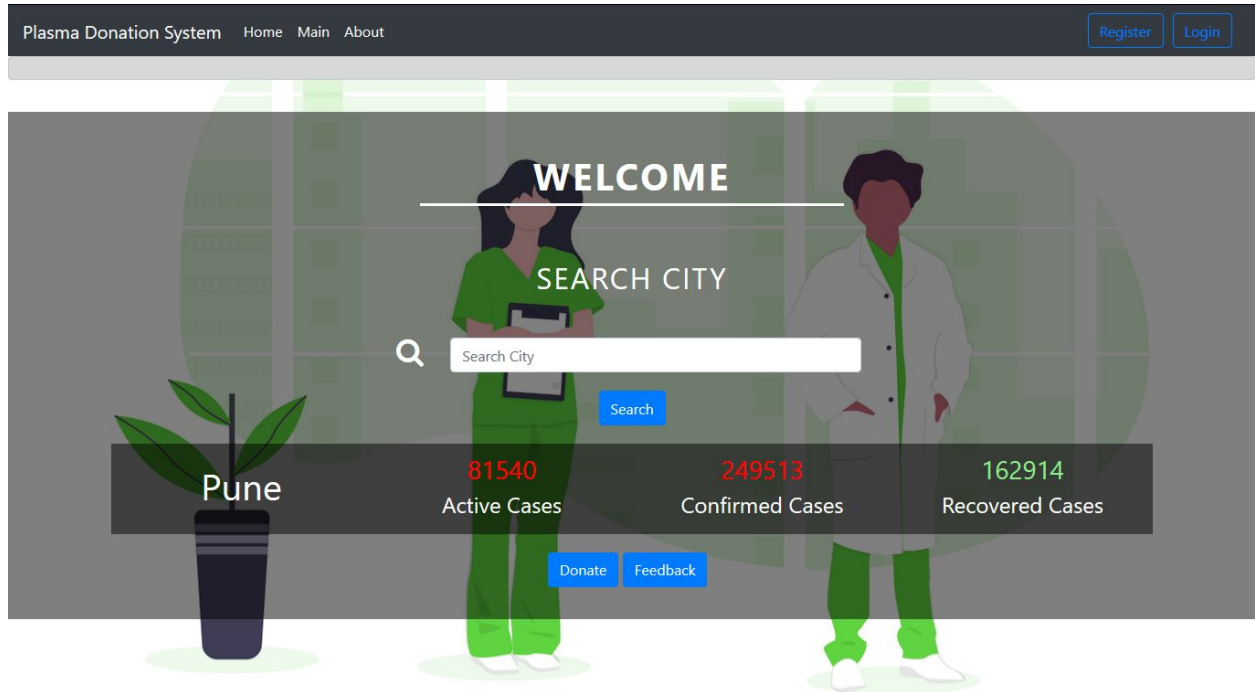
```

Test Cases:

	A	B	C	D	E	F	G
1	Test Case	Test Case Scenario	Test Step	Test Data	Expected Result	Actual Result	Pass/Fail
2	T01	Plasma Bank Login	go to site->click login ->enter reg id and password->click submit	reg id - 7585 pass - password	plasma bank should login	as expected	Pass
3	T02	Hospital Login	go to site->click login ->enter reg id and password->click submit	reg id- 1234 pass- 1234	hospital should login	as expected	Pass
4	T03	Hospital Login	go to site->click login ->enter reg id and password->click submit	reg id- 1234 pass- pass	hospital shouldn't log in	as expected	Pass
5	T04	Plasma Bank Login	go to site->click login ->enter reg id and password->click submit	reg id- 7585 pass- 7585	plasma bank shouldn't log in	as expected	Pass
6	T05	Plasma Bank Login	go to site->click login ->enter reg id and password->click submit	reg id- 4567 pass-4567	plasma bank should log in	as expected	Pass
7	T06	Plasma Bank Login	go to site->click login ->enter reg id and password->click submit	reg id- 4567 pass-pass	plasma bank shouldn't log in	as expected	Pass
8	T07	Hospital Login	go to site->click login ->enter reg id and password->click submit	reg id-2323 pass-2323	hospital should log in	as expected	Pass
9	T08	Hospital Login	go to site->click login ->enter reg id and password->click submit	reg id- 2323 pass-pass	hospital shouldn't log in	as expected	Pass
10							





Frontend User Interface Screenshots

- 1) Landing Page : Users may search any city in the search box to see the details of COVID situation in it.

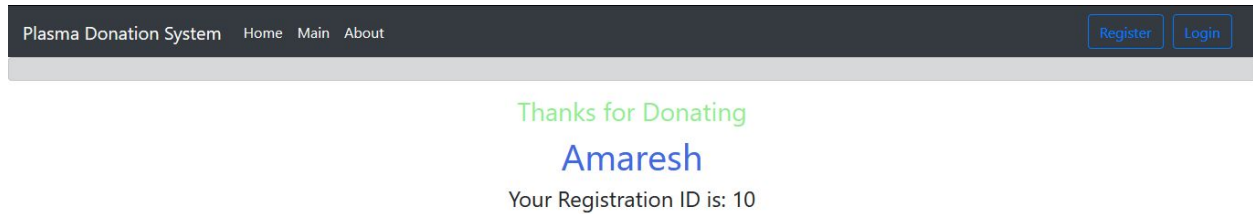


- 2) Donor Form: This is the form the donor needs to fill.

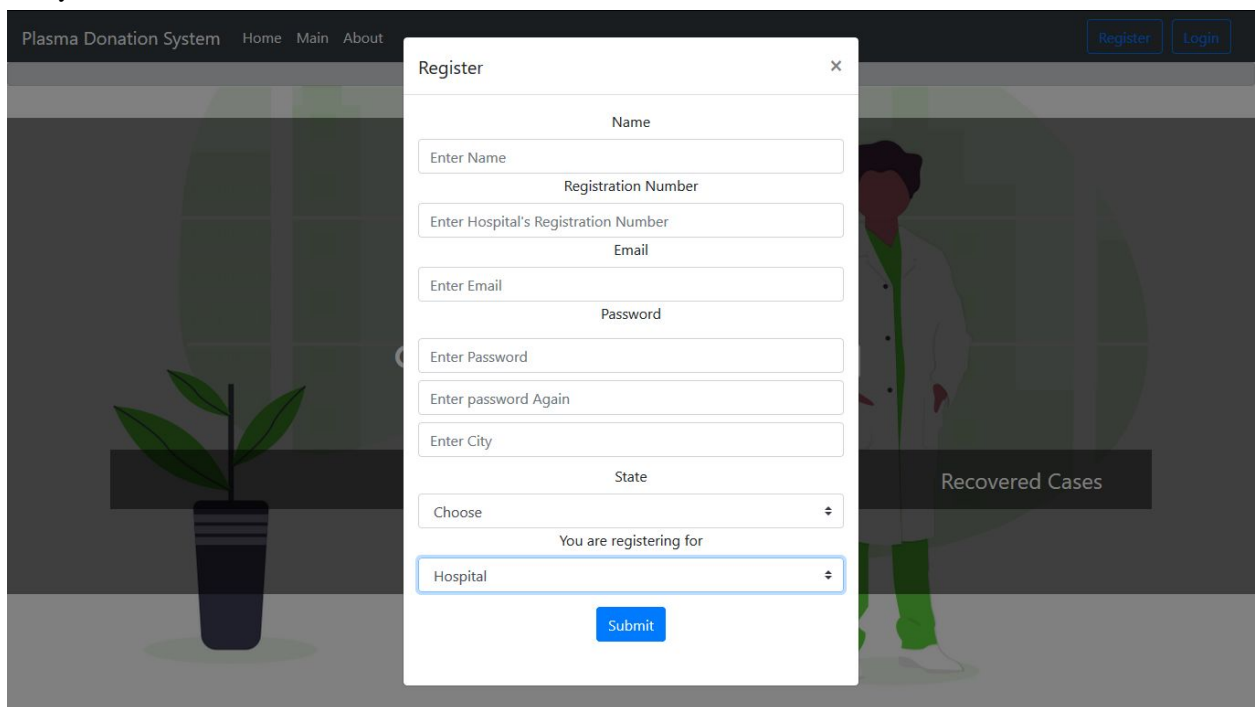
Convalescent Plasma COVID-19 Donor Request Form

	<input type="text" value="First Name"/>		<input type="text" value="Last Name"/>
	<input type="text" value="10-digit Mobile Number"/>	Blood Group	<input type="text" value="A+"/>
	<input type="text" value="Enter your e-mail"/>		
Age	<input type="text" value="Age"/>	Gender	<input type="text" value="Male"/>
Weight	<input type="text" value="Weight in kg"/>	Height	<input type="text" value="Height in cm"/>
City	<input type="text" value="Enter your City"/>	State	<input type="text" value="Choose"/>
Address <input type="text" value=""/>			
* Currently, Do you have any symptomp?			
<input type="text" value="Yes"/>			
* Have you had a follow up test that was negative for COVID-19 or shows you no longer have COVID-19?			
<input type="text" value="Yes"/>			
* Has it been at least 14 days since the last day of your symptoms (COVID-19 symptoms include fever, cough and shortness of breath)?			
<input type="text" value="Yes"/>			
* Do you taking any certain medication?			
<input type="text" value="Yes"/>			
* Did you travel any specific destination outside India in last one month?			
<input type="text" value="Yes"/>			
* Recently, Did you had any piercing or tatoo?			
<input type="text" value="Yes"/>			
* Are you taking any medical or hospital treatments?			
<input type="text" value="Yes"/>			
Please, attach your COVID recovery cerificate with this form			
<input type="text" value="Choose file"/>			<input type="button" value="Browse"/>
<input type="text" value=""/>			
<input type="button" value="Submit"/>			

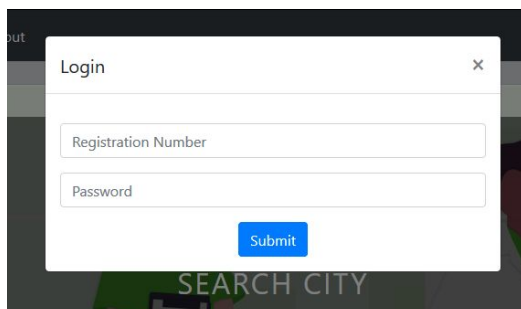
- 3) The Donor will be allotted a unique ID once he/she completes the registration process.



- 4) The Hospitals/Plasma Banks have been provided with a portal from where they can register themselves in this system.



- 5) The Hospitals/Plasma Banks once approved, can login into the system to see the admin panel.



- 6) The Plasma Bank Admin can view the data of donors who have donated to them.

Plasma Donation System Home Main About

Plasma Bank1

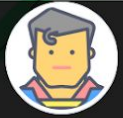



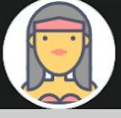
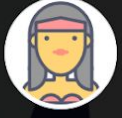

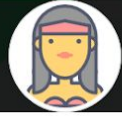
Plasma Bank

Number of Donors Available


Edit

Welcome Plasma Bank1

LIST OF DONORS

 Shivansh Singh Male Blood Group : A+ Not Available Profile Update Blood Deatils	 Rahul Kumar Male Blood Group : B+ Available Profile Update Blood Deatils	 Amaresh Pal Male Blood Group : B+ Available Profile Update Blood Deatils
 Sudhanshu Kadam Male Blood Group : B- Not Available Profile Update Blood Deatils	 Sakshi Pawar Female Blood Group : O+ Available Profile Update Blood Deatils	 Ashita Sortee Female Blood Group : A+ Not Available Profile Update Blood Deatils
 Ashutosh Singh Male Blood Group : A+ Available Profile Update Blood Deatils	 Anjali Kumari Female Blood Group : O+ Available Profile Update Blood Deatils	

- 7) The Hospital Admin can view the list of Donor and can see if the Donor with matching blood is available.

Plasma Donation System Home Main About  Kasturba -

Hospital
Welcome Kasturba

Number of Donors you Need
Kasturba : 35
[Edit](#)

LIST OF DONORS

ID	Name	Gender	Blood Group	Status	Profile	Request	Feedback
ID : 1	Shivansh Singh	Male	A+	Not Available	Profile	Request	Feedback
ID : 7	Rahul Kumar	Male	B+	Available	Profile	Request	Feedback
ID : 10	Amaresh Pal	Male	B+	Available	Profile	Request	Feedback
ID : 11	Sudhanshu Kadam	Male	B-	Available	Profile	Request	Feedback
ID : 12	Sakshi Pawar	Female	O+	Available	Profile	Request	Feedback
ID : 13	Ashita Sortee	Female	A+	Available	Profile	Request	Feedback
ID : 14	Ashutosh Singh	Male	A+	Available	Profile	Request	Feedback
ID : 15	Anjali Kumari	Female	O+	Available	Profile	Request	Feedback

- 8) If clicked on the Donor Card, all the details of the Donor can be seen, including the blood details.

Plasma Donation System	Home	Main	About	Plasma Bank1 ▾
------------------------	------	------	-------	----------------

3

Rahul Kumar

Available

Donor Details

ID	7
Name	Rahul Kumar
Blood Group	B+
Contact	8931898635
Age	25
Gender	Male
City	Pune
State	Maharashtra

Blood Details

ID	3
RH Type	positive
Blood Group	B+
Platelet Count	120000
WBC Count	125
Antibodies	12

Queries

Query	Donor
Currently, Do you have any symptoms?	yes
Have you had a follow up test that was negative for COVID-19 or shows you no longer have COVID-19?	yes
Has it been at least 14 days since the last day of your symptoms (COVID-19 symptoms include fever, cough and shortness of breath)?	yes
Do you taking any certain medication?	yes
Did you travel any specific destination outside India in last one month?	yes
Recently, Did you had any piercing or tatoo?	yes
Are you taking any medical or hospital treatments?	yes

- 9) The details of any Hospital/Plasma Bank can be seen by any donor.

Plasma Donation System Home Main About

Plasma Bank1 ▾

Plasma Bank1

Registration ID: 1211
E-Mail : plasma@gmail.com
City: Pune
State : Maharashtra

Plasma Donation System Home Main About

Kasturba ▾

Kasturba Hospital

Registration ID: 121
E-Mail : kasturba@gmail.com
City: Pune
State : Maharashtra

- 10) The Manager admin of each state can see the feedbacks provided by Hospitals and Donors about the Plasma banks.

Plasma Donation System Home Main About

Hospital's Feedback

Good
Rating : good
Feedback : good
Hospital ID :121
Submission Date : Sept. 12, 2020

Good
Rating : good
Feedback : good
Hospital ID :121
Submission Date : Sept. 12, 2020

Good
Rating : good
Feedback : good
Hospital ID :121
Submission Date : Sept. 12, 2020

Good
Rating : good
Feedback : good
Hospital ID :4567
Submission Date : Sept. 12, 2020

Donor's Feedback

Good
Rating : Good
Feedback : good
Submission Date : Sept. 12, 2020

Bad
Rating : Bad
Feedback : bad
Submission Date : Sept. 12, 2020

Conclusion

In conclusion, a database is a far more efficient mechanism to store and organize data than spreadsheets; it allows for a centralized facility that can easily be modified and quickly shared among multiple users. Having a web based front end removes the requirement of users having to understand and use a database directly, and allows users to connect from anywhere with an internet connection and a basic web browser. It also allows the possibility of queries to obtain information for various surveys. Use of various functionalities like Triggers, Procedures, etc helps a lot in creating dynamic systems and automating tasks.

The proposed database system uses these functionalities in a way to streamline the Plasma Donation process to the maximum extent possible. All the entities involved in the system have access to a user friendly interface to ease the data insertion and retrieval process. The future objective is to add more functionalities and create a state of art application for the Plasma Donation System with accessibility to each and every person in this COVID affected world.

References

- [1] Plasma Essentials : https://en.wikipedia.org/wiki/Blood_plasma
- [2] E-Rakt Kosh Blood Cell NHM :
<https://www.eraktkosh.in/BLDAHIMS/bloodbank/transactions/bbpublicindex.html>
- [3] Plasma : <https://www.webmd.com/a-to-z-guides/what-is-plasma>
- [4] Medical News Today : <https://www.medicalnewstoday.com/articles/319162>