DBMS - Mini Project

BLOOD DONATION MANAGEMENT SYSTEM

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SRN – PES1UG20CS097

V Semester

Section _B

Short Description and Scope of the Project

DESCRIPTION:-

Blood donation management system aims at storing data of a blood bank and performing CRUD operations on the same.

The main goal of the system is to project blood bank as well as donor data. The project is entirely administrative.

SCOPE:-

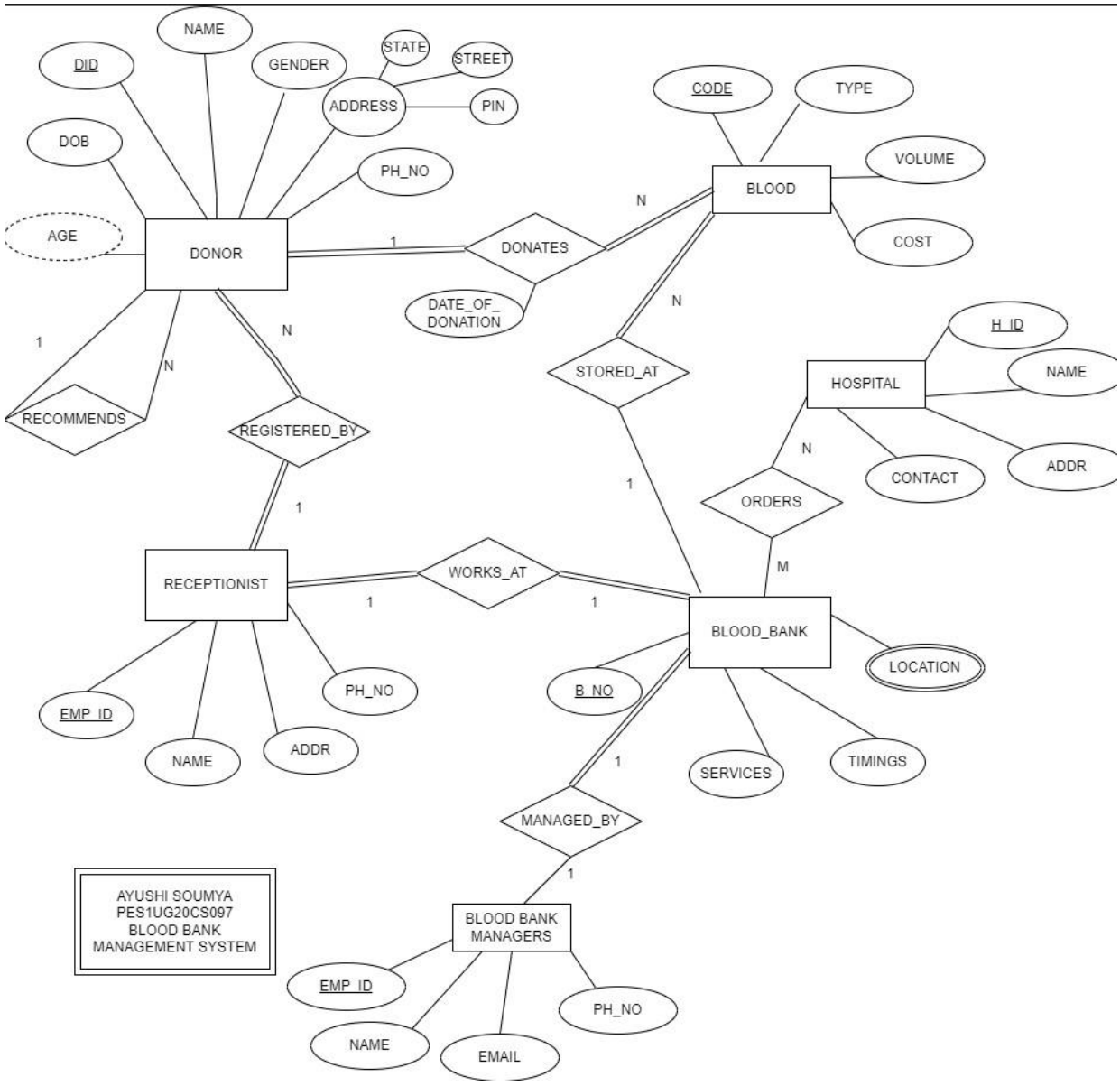
One important scope of this project is ease of availability of blood of all types to patients in need. This ensures providing information about the availability of blood from donors at the blood banks and hospitals easily to the people. This may save time as well as life.

The database contains many entities:

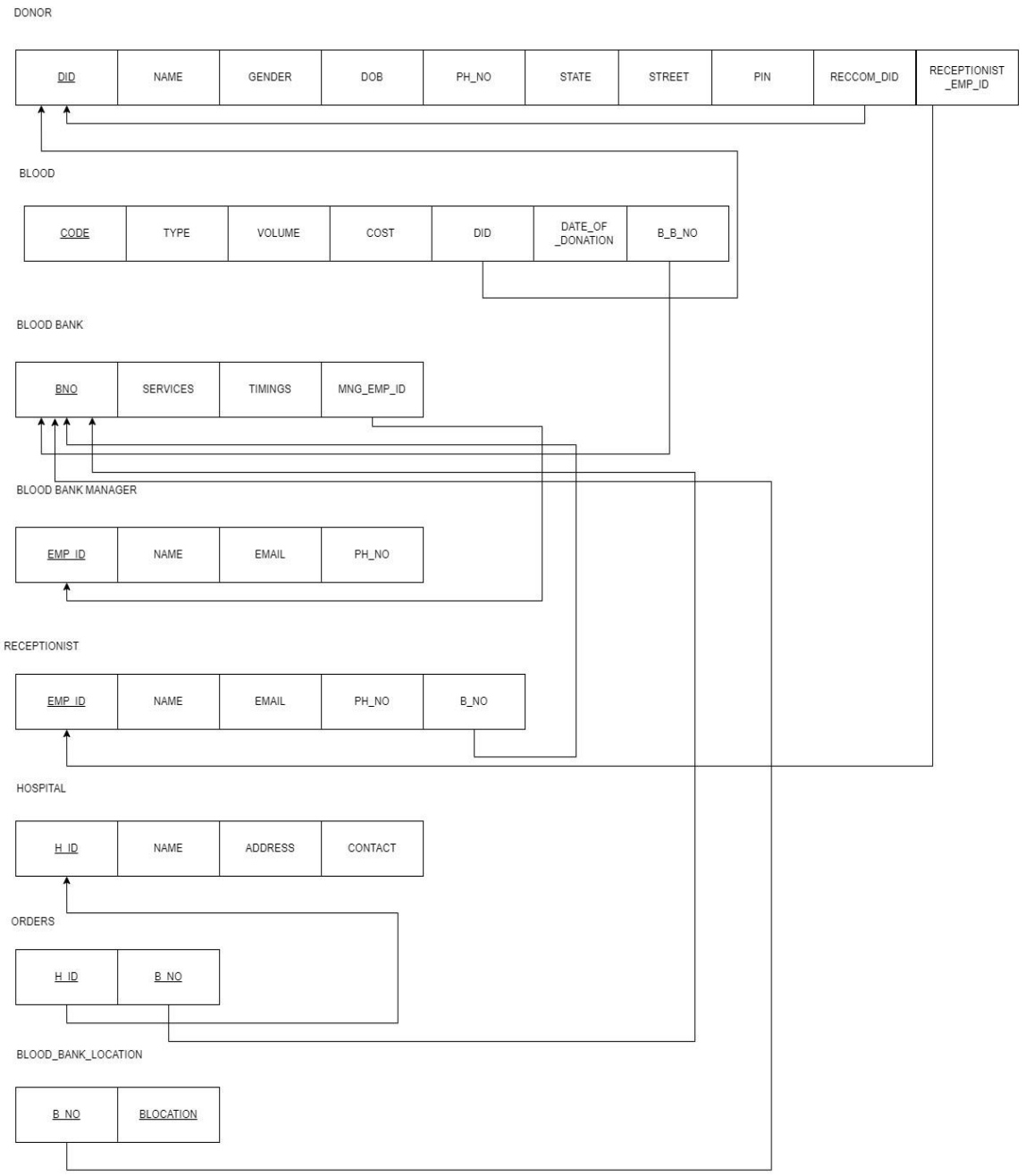
- Donor
- Blood
- Blood bank
- Hospital
- Blood bank manager
- Receptionist

The ERD and relational schema are given below:-

ER Diagram



Relational Schema



DDL statements - Building the database

create table blood_bank_manager(emp_id int NOT NULL, name varchar(255),email varchar(255),ph_no varchar(10),PRIMARY KEY(emp_id));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc blood_bank_manager;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| emp_id | int(11)     | NO   | PRI | NULL    |       |
| name   | varchar(255)| YES  |     | NULL    |       |
| email  | varchar(255)| YES  |     | NULL    |       |
| ph_no  | varchar(10) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.021 sec)
```

create table blood_bank(B_No int NOT NULL, services varchar(255),timings varchar(255),MGR_emp_id int,PRIMARY KEY(B_No), FOREIGN KEY (MGR_emp_id) references blood_bank_manager(emp_id));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc blood_bank;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| B_No       | int(11)     | NO   | PRI | NULL    |       |
| services   | varchar(255)| YES  |     | NULL    |       |
| timings    | varchar(255)| YES  |     | NULL    |       |
| MGR_emp_id | int(11)     | YES  | MUL | NULL    |       |
+------------+-------------+------+-----+---------+-------+
4 rows in set (0.021 sec)
```

create table receptionist(emp_id int NOT NULL, name varchar(255) , email varchar(255), ph_no varchar(255),B_no int,PRIMARY KEY(emp_id), FOREIGN KEY(B_no) references blood_bank(B_No));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc receptionist;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| emp_id | int(11)     | NO   | PRI | NULL    |       |
| name   | varchar(255)| YES  |     | NULL    |       |
| email  | varchar(255)| YES  |     | NULL    |       |
| ph_no  | varchar(255)| YES  |     | NULL    |       |
| B_no   | int(11)     | YES  | MUL | NULL    |       |
+--------+-------------+------+-----+---------+-------+
5 rows in set (0.020 sec)
```

create table Donor(DID int NOT NULL,name varchar(255),gender varchar(25),DOB DATE,Ph_no varchar(10),state varchar(255),city varchar(255),pin varchar(6),recomm_did int,receptionist_emp_id int, PRIMARY KEY(DID), FOREIGN KEY (recomm_did) references Donor(DID), FOREIGN KEY (receptionist_emp_id) references receptionist(emp_id));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc Donor;
+--------------------+-------------+------+-----+---------+-------+
| Field              | Type        | Null | Key | Default | Extra |
+--------------------+-------------+------+-----+---------+-------+
| DID                | int(11)     | NO   | PRI | NULL    |       |
| name               | varchar(255)| YES  |     | NULL    |       |
| gender             | varchar(25) | YES  |     | NULL    |       |
| DOB                | date        | YES  |     | NULL    |       |
| Ph_no              | varchar(10) | YES  |     | NULL    |       |
| state              | varchar(255)| YES  |     | NULL    |       |
| city               | varchar(255)| YES  |     | NULL    |       |
| pin                | varchar(6)  | YES  |     | NULL    |       |
| recomm_did         | int(11)     | YES  | MUL | NULL    |       |
| receptionist_emp_id| int(11)     | YES  | MUL | NULL    |       |
+--------------------+-------------+------+-----+---------+-------+
10 rows in set (0.021 sec)
```

create table hospital(h_id int NOT NULL,name varchar(255),address varchar(255), contact int(10), PRIMARY KEY(h_id));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc hospital;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| h_id    | int(11)     | NO   | PRI | NULL    |       |
| name    | varchar(255)| YES  |     | NULL    |       |
| address | varchar(255)| YES  |     | NULL    |       |
| contact | int(10)     | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
4 rows in set (0.023 sec)
```

create table blood(code int NOT NULL, type varchar(10),volume int,cost int,DID int,date_of_donation DATE,b_b_no int, PRIMARY KEY(code), FOREIGN KEY(DID) references Donor(DID),FOREIGN KEY(b_b_no) references blood_bank(B_No));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc blood;
+----------------+------------+------+-----+---------+-------+
| Field          | Type       | Null | Key | Default | Extra |
+----------------+------------+------+-----+---------+-------+
| code           | int(11)    | NO   | PRI | NULL    |       |
| type           | varchar(10)| YES  |     | NULL    |       |
| volume         | int(11)    | YES  |     | NULL    |       |
| cost           | int(11)    | YES  |     | NULL    |       |
| DID            | int(11)    | YES  | MUL | NULL    |       |
| date_of_donation | date     | YES  |     | NULL    |       |
| b_b_no         | int(11)    | YES  | MUL | NULL    |       |
+----------------+------------+------+-----+---------+-------+
7 rows in set (0.022 sec)
```

create table orders(h_id int NOT NULL, b_no int NOT NULL, PRIMARY KEY(b_no , h_id), FOREIGN KEY(h_id) references hospital(h_id),FOREIGN KEY(b_no) references blood_bank(B_No));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc orders;
+-------+---------+------+-----+---------+-------+
| Field | Type    | Null | Key | Default | Extra |
+-------+---------+------+-----+---------+-------+
| h_id  | int(11) | NO   | PRI | NULL    |       |
| b_no  | int(11) | NO   | PRI | NULL    |       |
+-------+---------+------+-----+---------+-------+
2 rows in set (0.023 sec)
```

create table blood_bank_location(b_no int NOT NULL,b_location varchar(255), PRIMARY KEY(b_no, b_location),FOREIGN KEY (b_no) references blood_bank(B_No));

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> desc blood_bank_location;
+------------+--------------+------+-----+---------+-------+
| Field      | Type         | Null | Key | Default | Extra |
+------------+--------------+------+-----+---------+-------+
| b_no       | int(11)      | NO   | PRI | NULL    |       |
| b_location | varchar(255) | NO   | PRI | NULL    |       |
+------------+--------------+------+-----+---------+-------+
2 rows in set (0.024 sec)
```

Tables in our database:

```
+-------------------------------------+
| Tables_in_dbms_project_pes1ug20cs097 |
+-------------------------------------+
| blood                               |
| blood_bank                          |
| blood_bank_location                 |
| blood_bank_manager                  |
| donor                               |
| hospital                            |
| orders                              |
| receptionist                        |
+-------------------------------------+
```

Populating the Database

Loading data from the csv files.

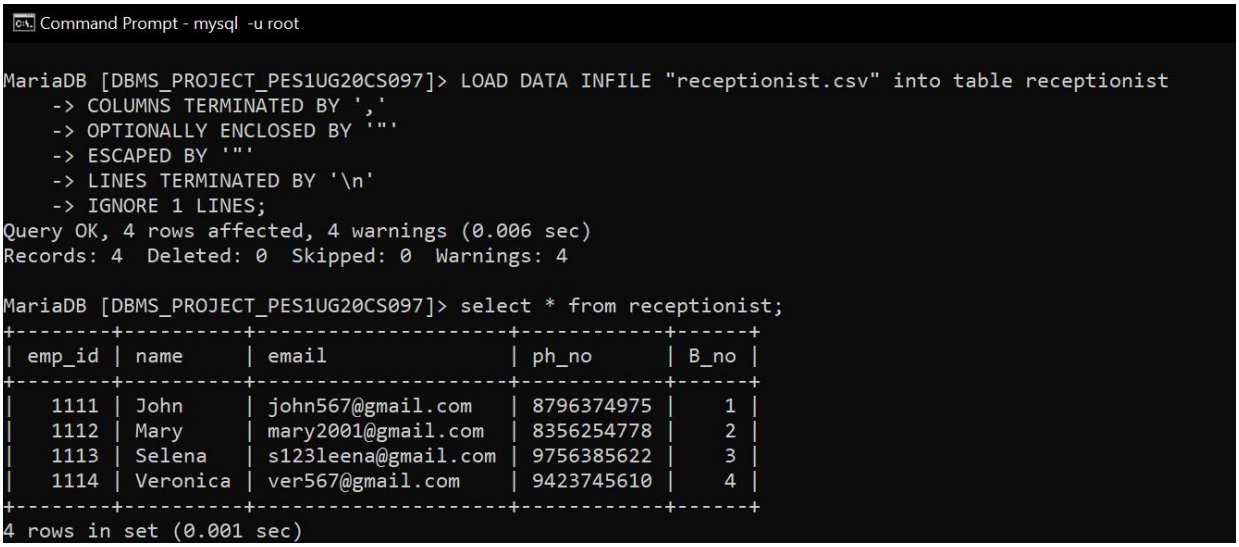
blood_bank_manager

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> LOAD DATA INFILE "blood_bank_manager.csv" into table blood_bank_manager
    -> COLUMNS TERMINATED BY ','
    -> OPTIONALLY ENCLOSED BY '"'
    -> ESCAPED BY '"'
    -> LINES TERMINATED BY '\n'
    -> IGNORE 1 LINES;
Query OK, 3 rows affected, 3 warnings (0.010 sec)
Records: 3  Deleted: 0  Skipped: 0  Warnings: 3

MariaDB [DBMS_PROJECT_PES1UG20CS097]> SELECT * FROM blood_bank_manager;
+--------+---------+--------------------+------------+
| emp_id | name    | email              | ph_no      |
+--------+---------+--------------------+------------+
|   1106 | Abhishek | abhi@gmail.com     | 9178253790 |
|   1107 | Shourya  | shourya1@gmail.com | 9876543210 |
|   1108 | Shreya   | shreya123@gmail.com | 6758942456 |
+--------+---------+--------------------+------------+
3 rows in set (0.007 sec)
```

blood_bank

```
MariaDB [DBMS_PROJECT_PES1UG20CS097]> LOAD DATA INFILE "blood_bank.csv" into table blood_bank
    -> COLUMNS TERMINATED BY ','
    -> OPTIONALLY ENCLOSED BY '"'
    -> ESCAPED BY '"'
    -> LINES TERMINATED BY '\n'
    -> IGNORE 1 LINES;
Query OK, 4 rows affected, 4 warnings (0.007 sec)
Records: 4  Deleted: 0  Skipped: 0  Warnings: 4

MariaDB [DBMS_PROJECT_PES1UG20CS097]> select * from blood_bank;
+------+------------------------+-----------+------------+
| B_No | services               | timings   | MGR_emp_id |
+------+------------------------+-----------+------------+
|    1 | donation,purchase,tests | all times |       1106 |
|    2 | donation,test          | 11:00-5:00 |       1106 |
|    3 | donation,test,purchase | all times |       1107 |
|    4 | donation,test          | 11:00-5:00 |       1108 |
+------+------------------------+-----------+------------+
4 rows in set (0.001 sec)
```

receptionist.csv



Similarly we insert values in all the tables .

Our database is then ready to run queries and extract information.

Join Queries

Showcase at least 2 join queries

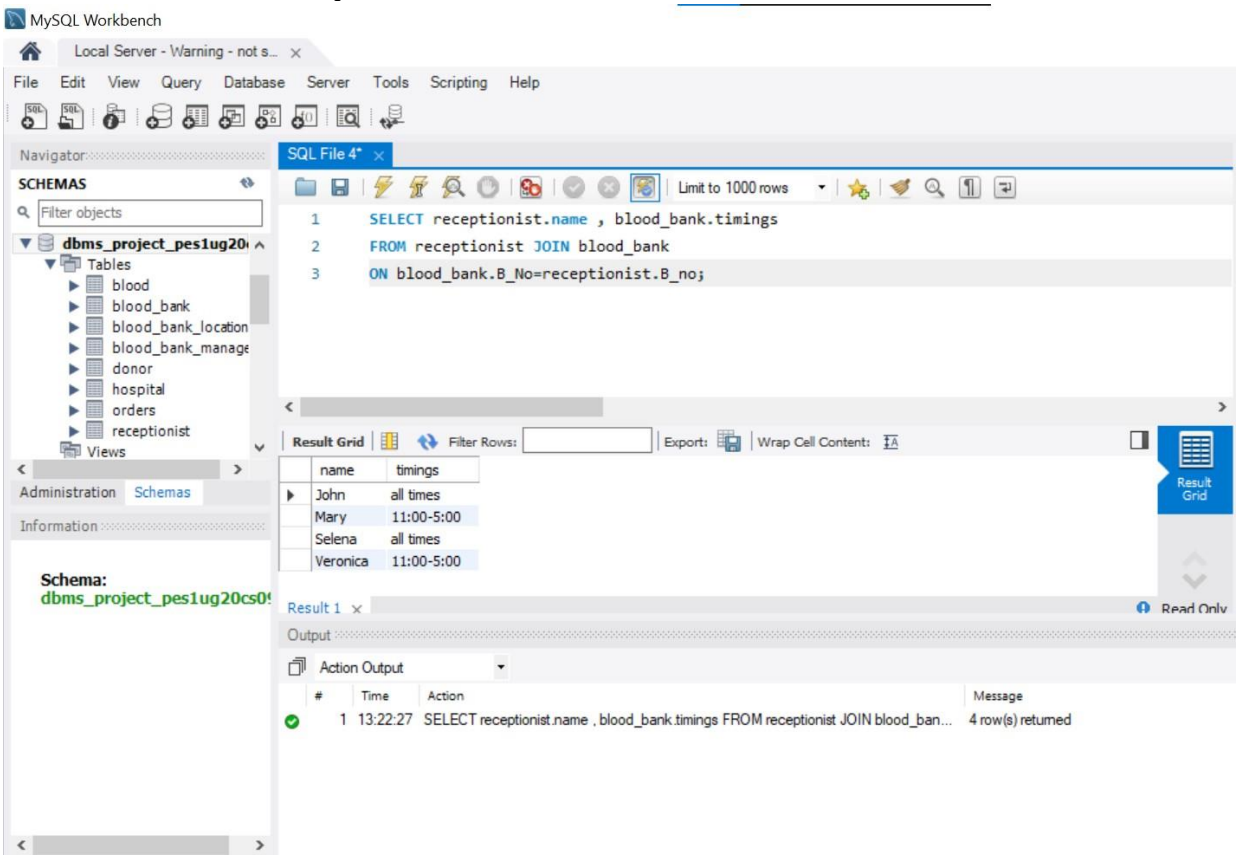
Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

Display the name of the receptionist and the timings when she /he will be available in the blood banks.

SELECT receptionist.name , blood_bank.timings

FROM receptionist JOIN blood_bank

ON blood_bank.B_No=receptionist.B_no;



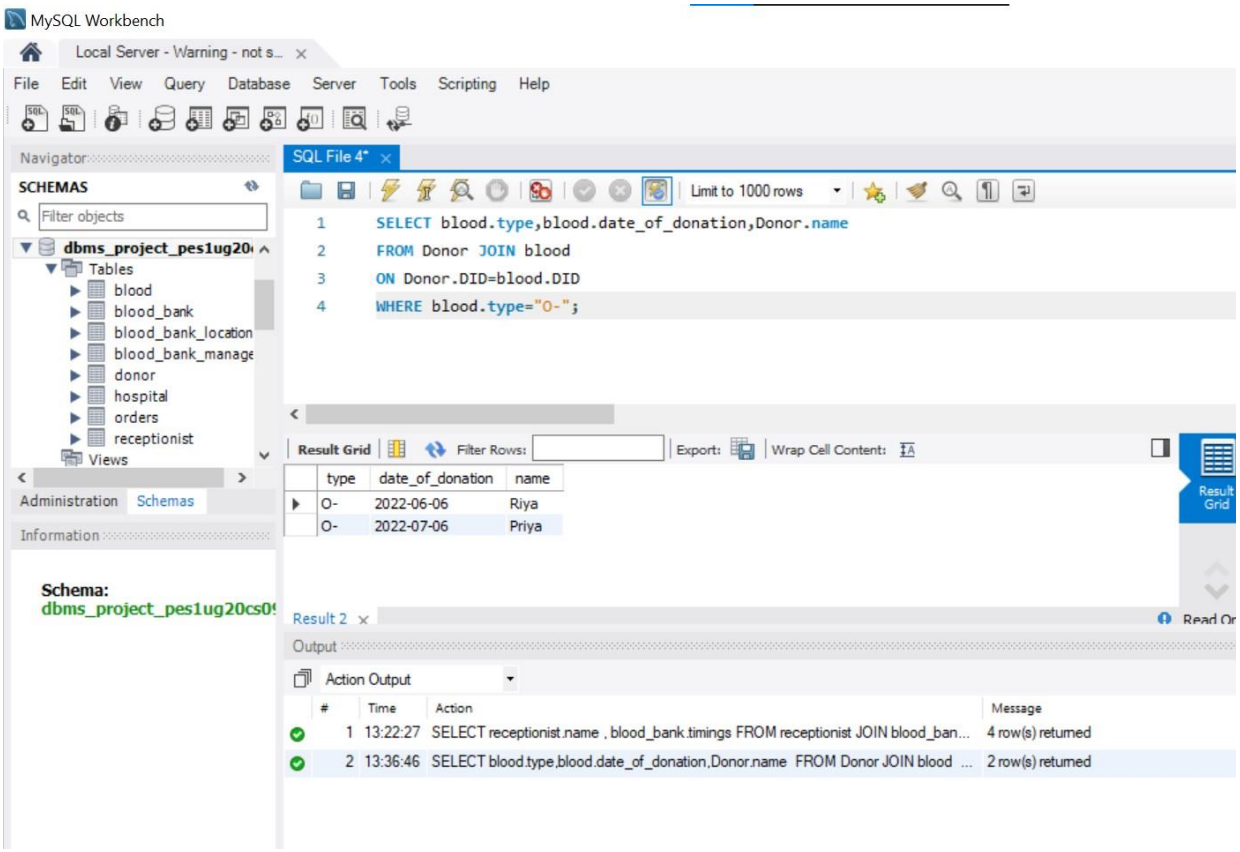
Display the date of donation, blood type and the donor name of all the O- blood groups.

SELECT blood.type,blood.date_of_donation,Donor.name

FROM Donor JOIN blood

ON Donor.DID=blood.DID

WHERE blood.type="O-";



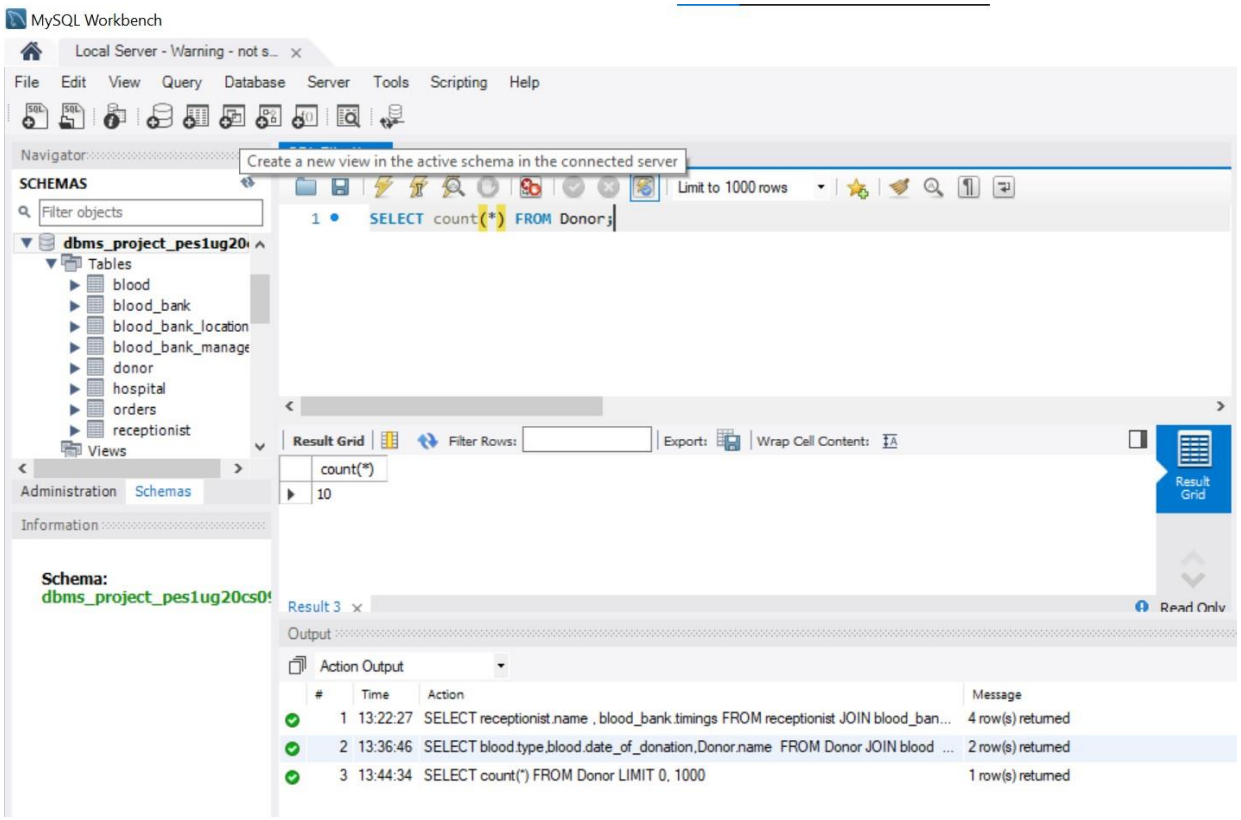
Aggregate Functions

Showcase at least 4 Aggregate function queries

Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

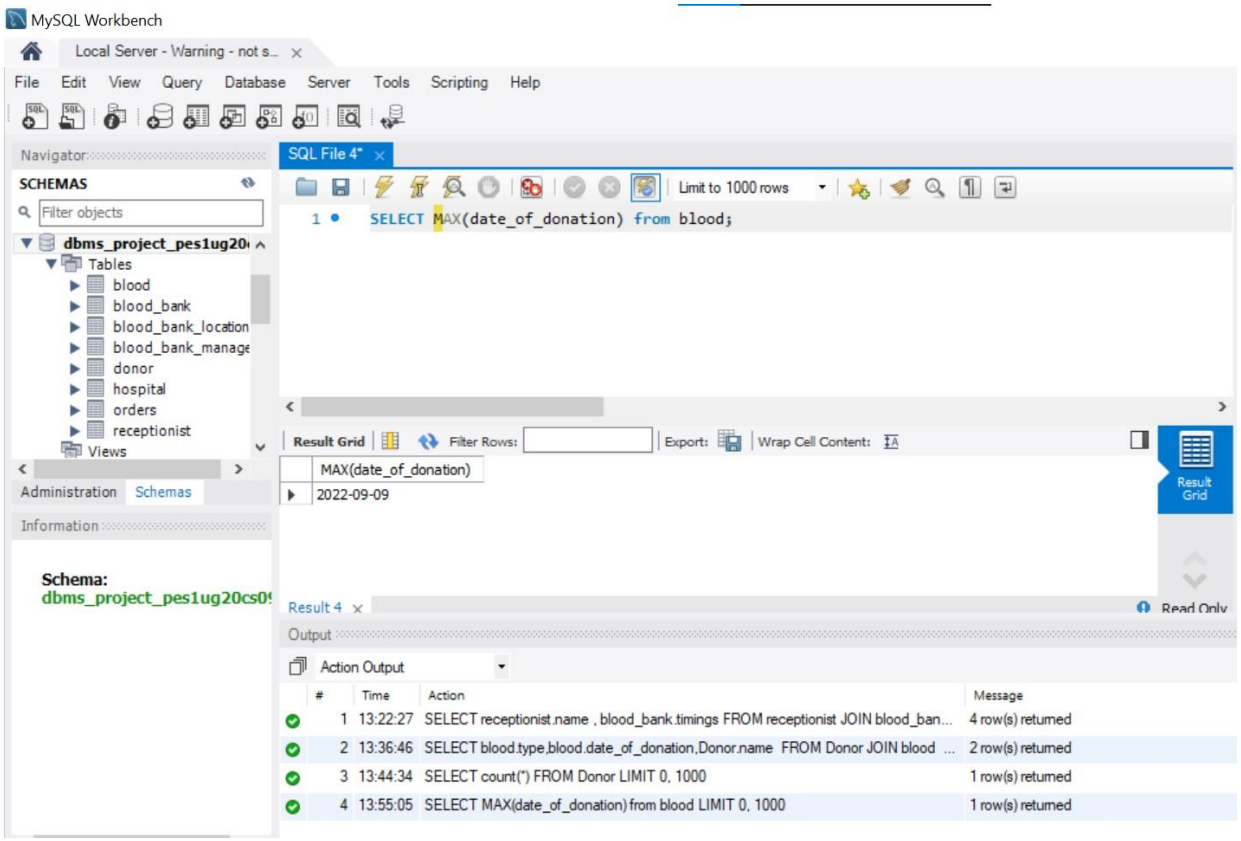
Aggregate functions- count, min, max , avg ;

Count the number of donors



Displaying the latest donation:

SELECT MAX(date_of_donation) from blood;



Set Operations

Showcase at least 4 Set Operations queries

Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

UNION, INTERSECT, MINUS

UNION:

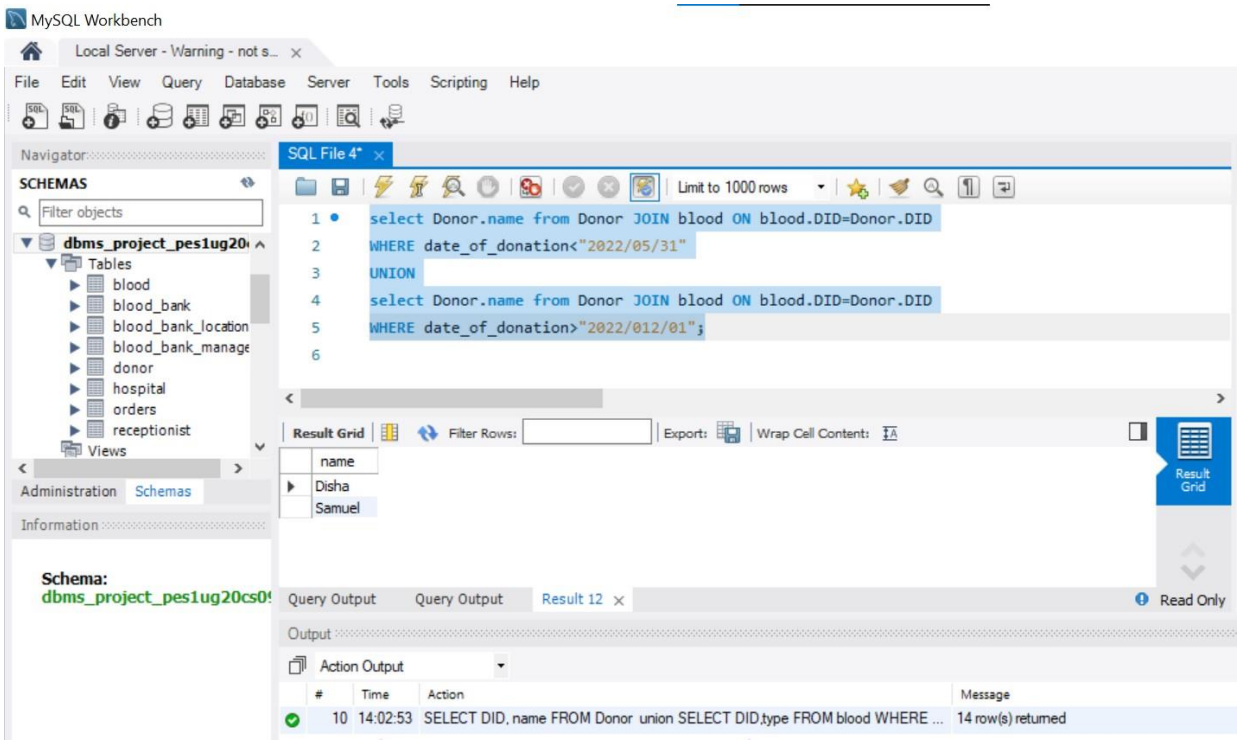
Find list of all donors who donated between feb and may 2022:

select Donor.name from Donor JOIN blood ON blood.DID=Donor.DID

WHERE date_of_donation<"2022/05/31" UNION select Donor.name

from Donor JOIN blood ON blood.DID=Donor.DID

WHERE date_of_donation>"2022/012/01";

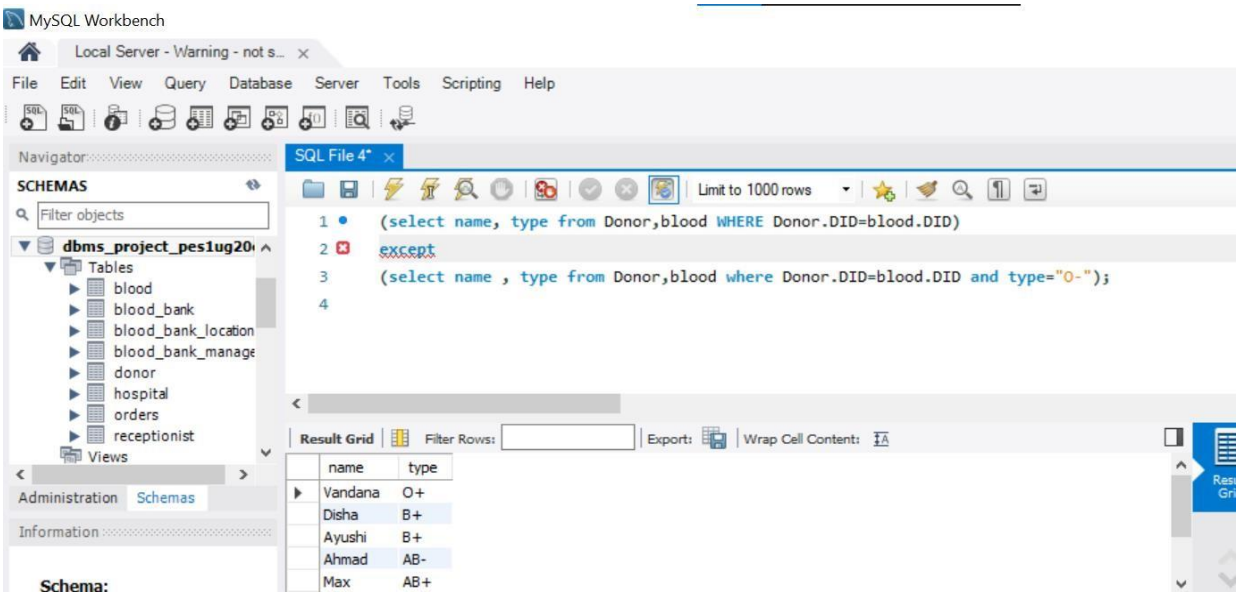


Find all donors who aren't O-

MINUS-

(select name, type from Donor,blood WHERE Donor.DID=blood.DID) except

(select name , type from Donor,blood where Donor.DID=blood.DID and type="O-");



Functions and Procedures

Create a Function and Procedure. State the objective of the function / Procedure. Run and display the results.

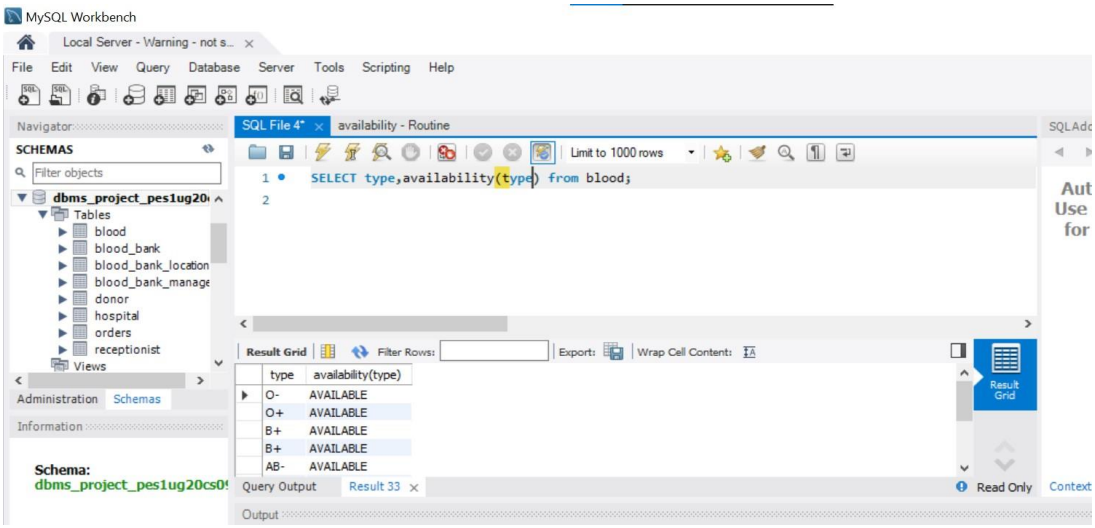
FUNCTION:

Write a function to find the availability of a particular type of blood .if the date of donation is before july 2022 then return a message that the blood is expired

CODE:

```
DELIMITER $$

CREATE DEFINER=`root`@`localhost` FUNCTION `availability`(type_of_blood varchar(10))
RETURNS varchar(50) CHARSET utf8mb4

    DETERMINISTIC
```

```
BEGIN
 DECLARE RESULT VARCHAR(50);
 DECLARE num int;
 SELECT count(*) into num from blood where type=type_of_blood
and date_of_donation>"2022/05/01";  if(num>0)
THEN
 SET RESULT="AVAILABLE";
 else
 SET RESULT="NOT AVAILABLE";
 END IF;
RETURN RESULT;
END;
$$ DELIMITER
```

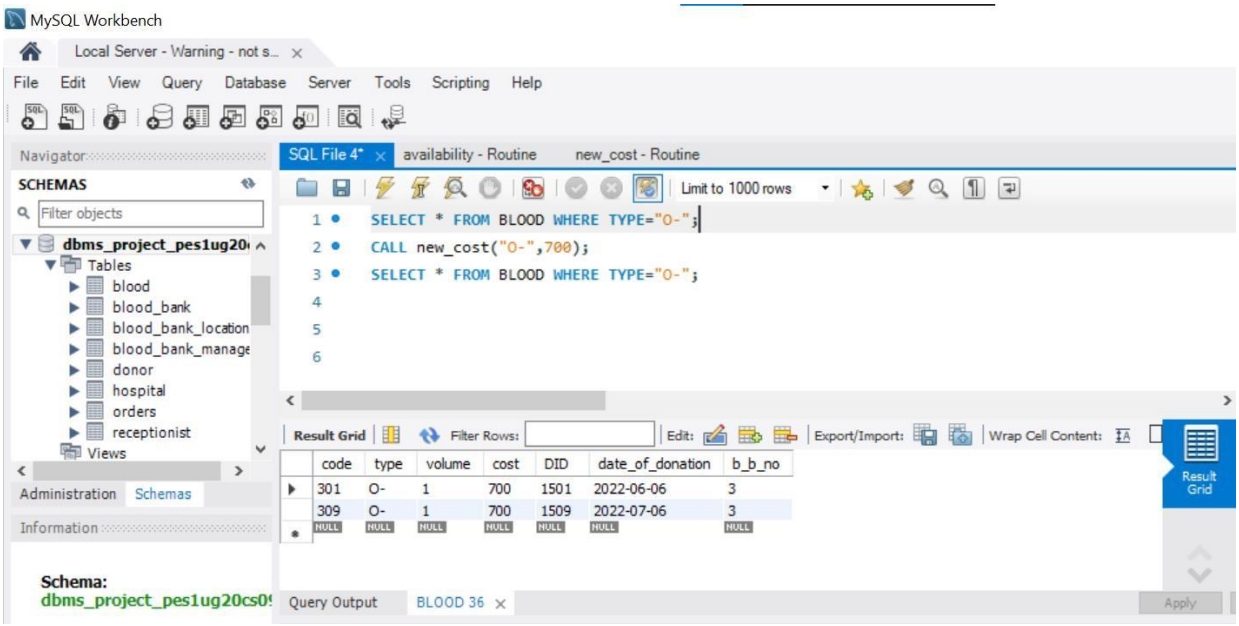


PROCEDURES:

Updating the cost of given type by 200 more.

Code:

```
Delimiter $$

CREATE DEFINER=`root`@`localhost` PROCEDURE `new_cost`(IN type_of_blood varchar(10), IN cost int)

BEGIN

 DECLARE new_cost int;  set new_cost=cost+200;  update

blood set cost=new_cost where type_of_blood=type;

END;

$$ DELIMITER
```

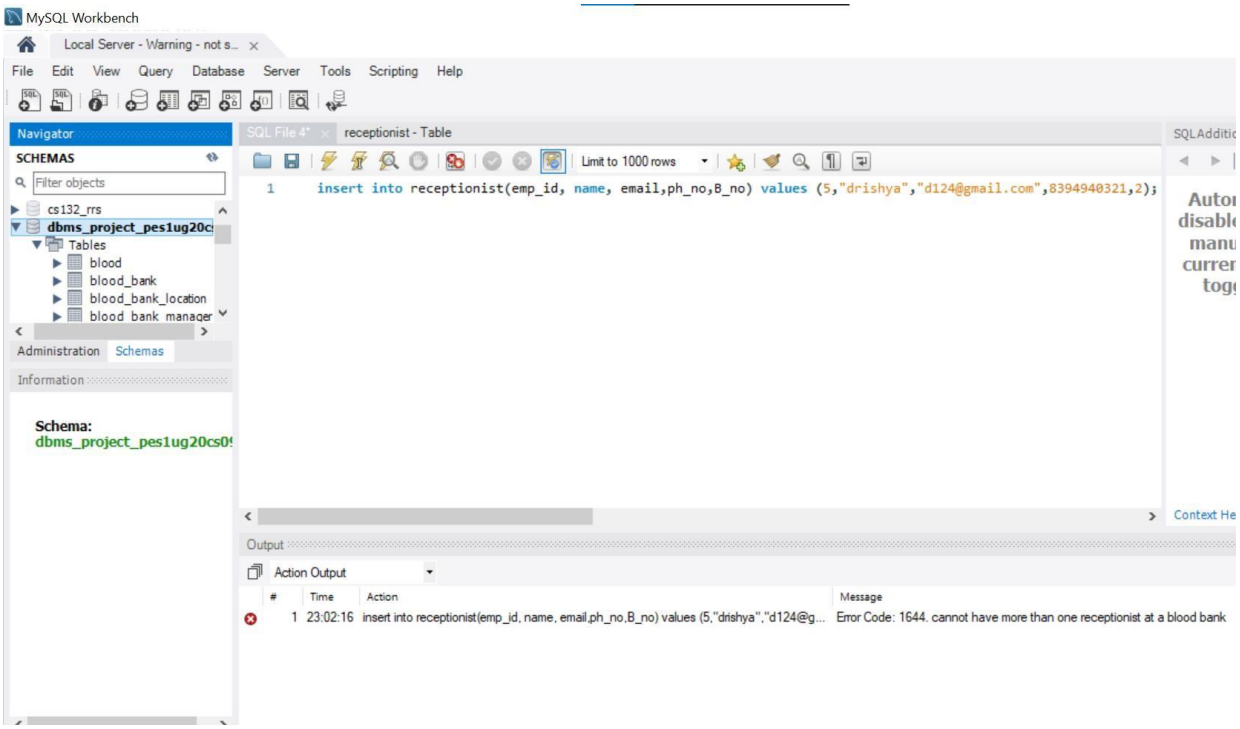


Triggers and Cursors

Create a Trigger and a Cursor. State the objective. Run and display the results.

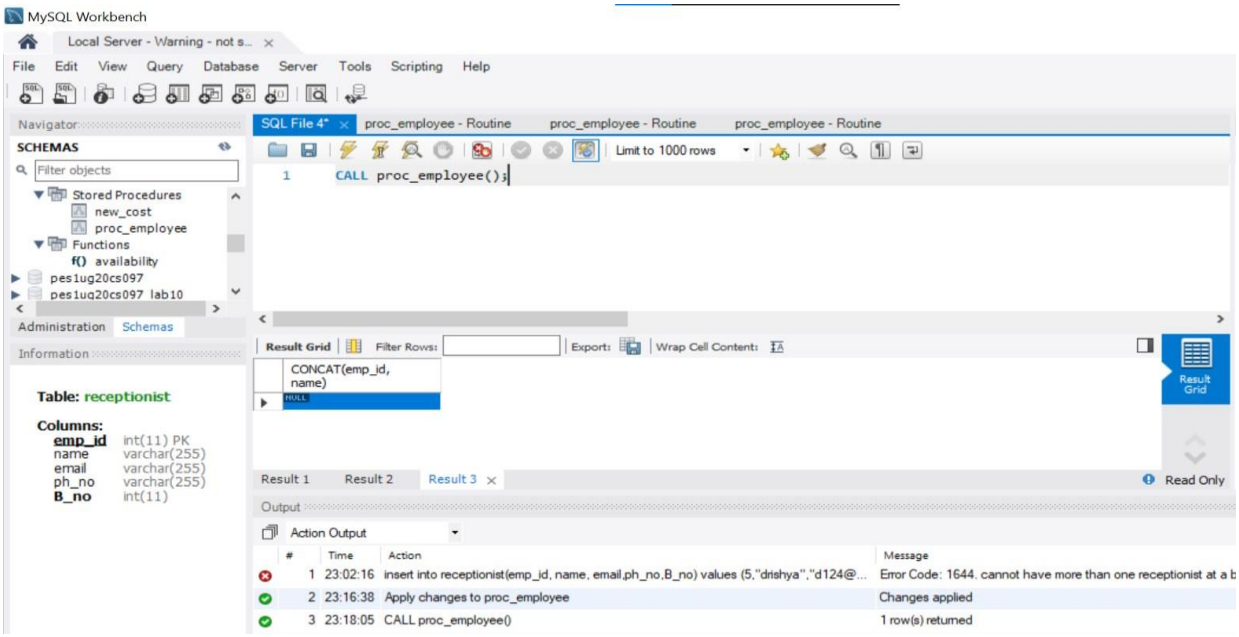
Trigger to display error message when more than one receptionist is inserted for a blood_bank

```
CREATE DEFINER=`root`@`localhost` TRIGGER BeforeInsert
BEFORE INSERT
ON receptionist FOR EACH ROW
BEGIN
 DECLARE err_msg VARCHAR(255);
 DECLARE n int;
 SET err_msg =('cannot have more than one receptionist at a blood bank');
select count(B_no) into n from receptionist where B_no=B_no;  if(n>1)
THEN
 SIGNAL SQLSTATE '45000'
 SET MESSAGE_TEXT = err_msg;
 END IF;
END
```



CURSORS:

```
CREATE DEFINER=`root`@`localhost` PROCEDURE `proc_employee`()
BEGIN
   DECLARE emp_id VARCHAR(50);
   DECLARE name VARCHAR(50);
   DECLARE var_check_row INTEGER DEFAULT 0;
   DECLARE c1 CURSOR FOR SELECT emp_id, name FROM blood_bank_manager;
   DECLARE CONTINUE HANDLER FOR NOT FOUND set var_check_row=1;
   OPEN c1; get_emp : LOOP
      FETCH c1 INTO emp_id,name;
      IF var_check_row=1 THEN
         LEAVE get_emp;
      END IF;
      SELECT CONCAT(emp_id, name);
   END LOOP get_emp;
   CLOSE c1;
END
```

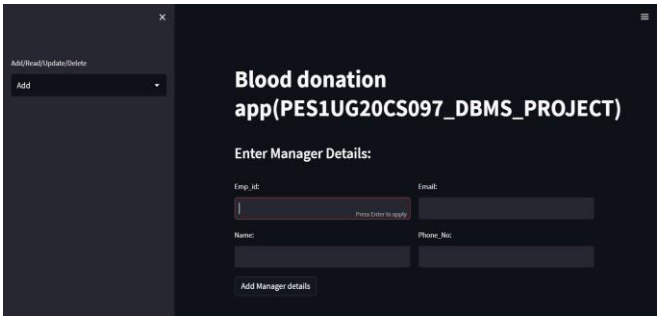


Developing a Frontend

The frontend should support

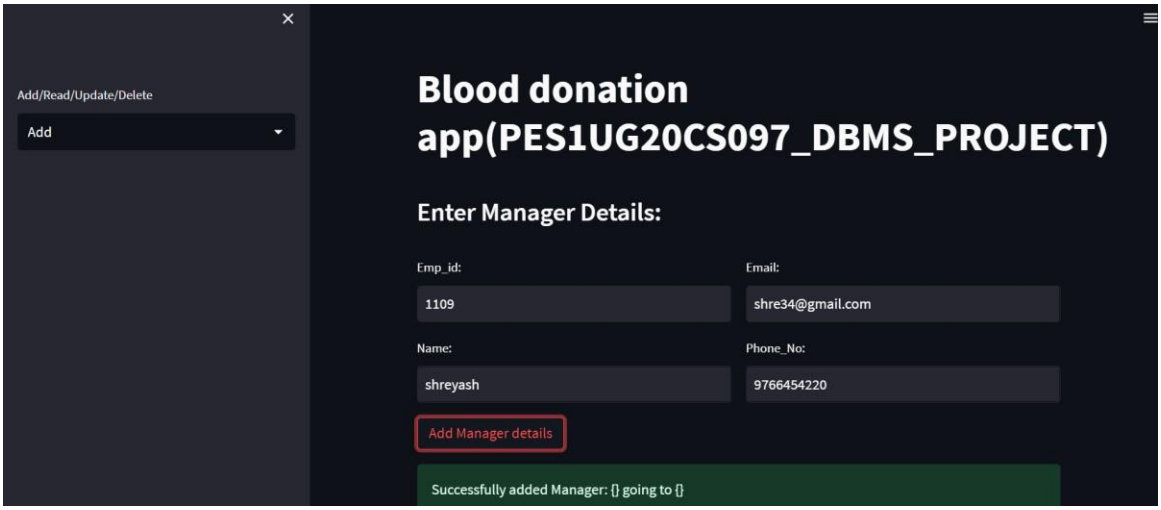
1. Addition, Modification and Deletion of records from any chosen table
2. There should be an window to accept and run any SQL statement and display the result

GUI

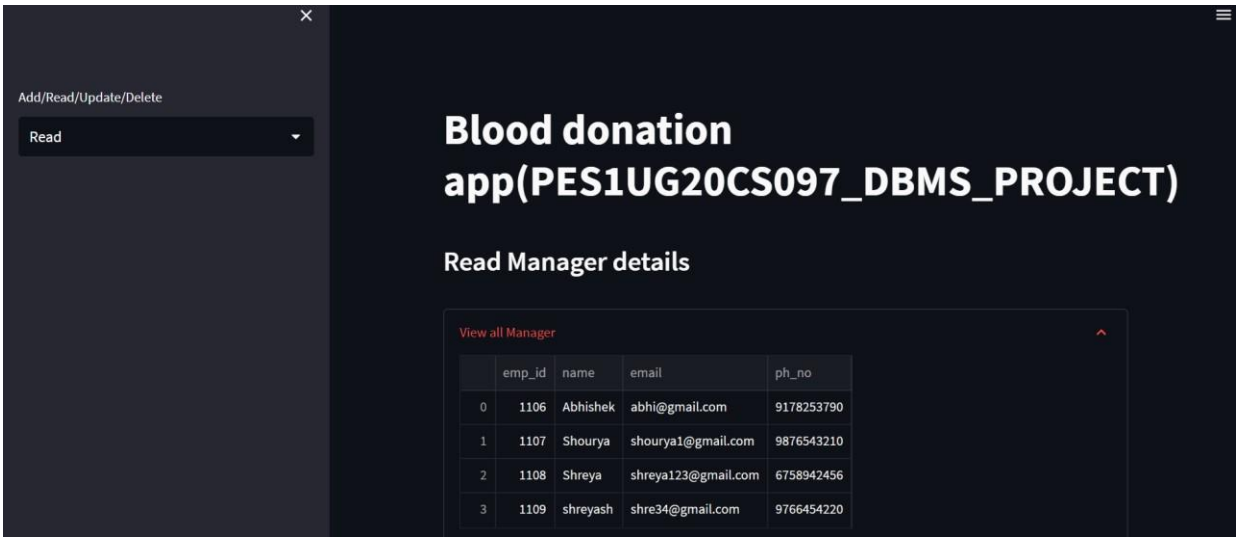


1. PERFORMING CRUD OPERATIONS USING GUI:

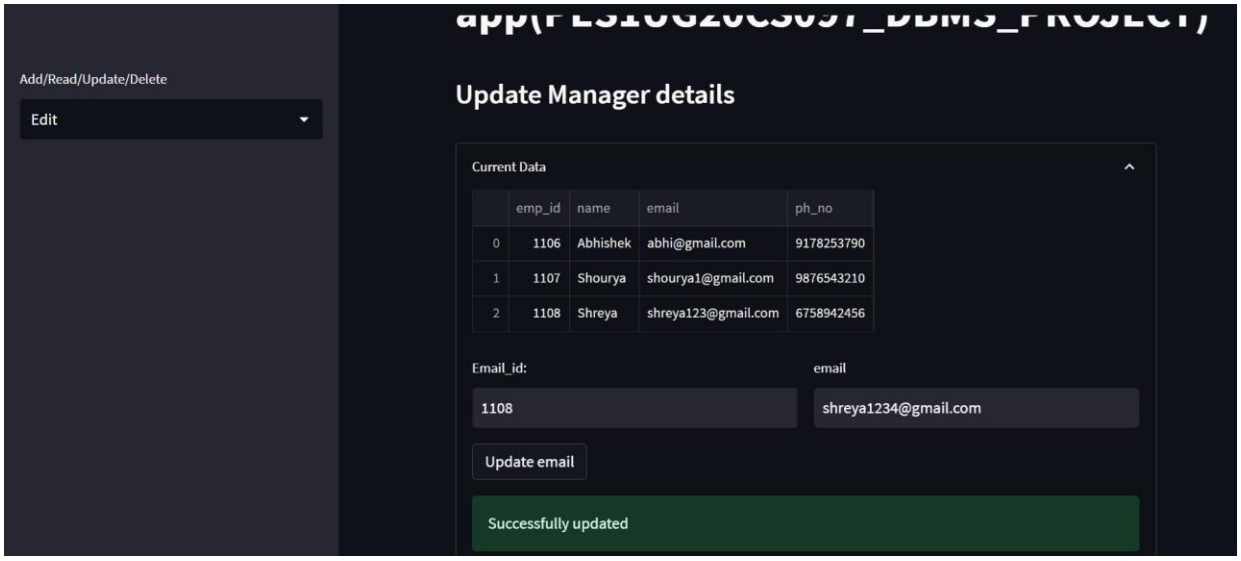
ADDITION:



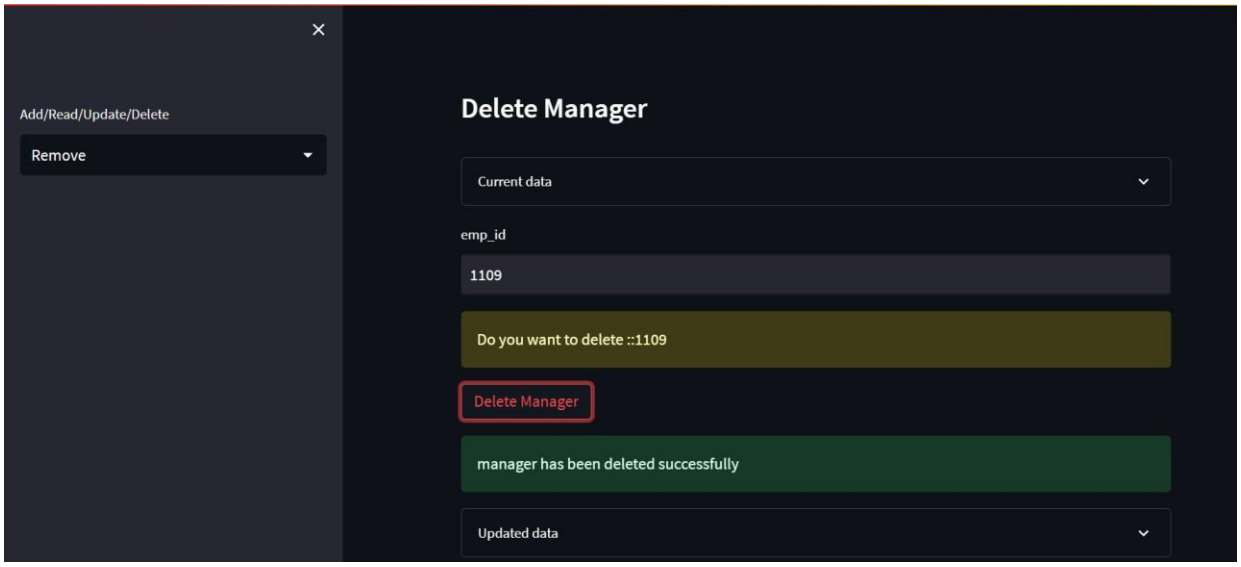
READ:



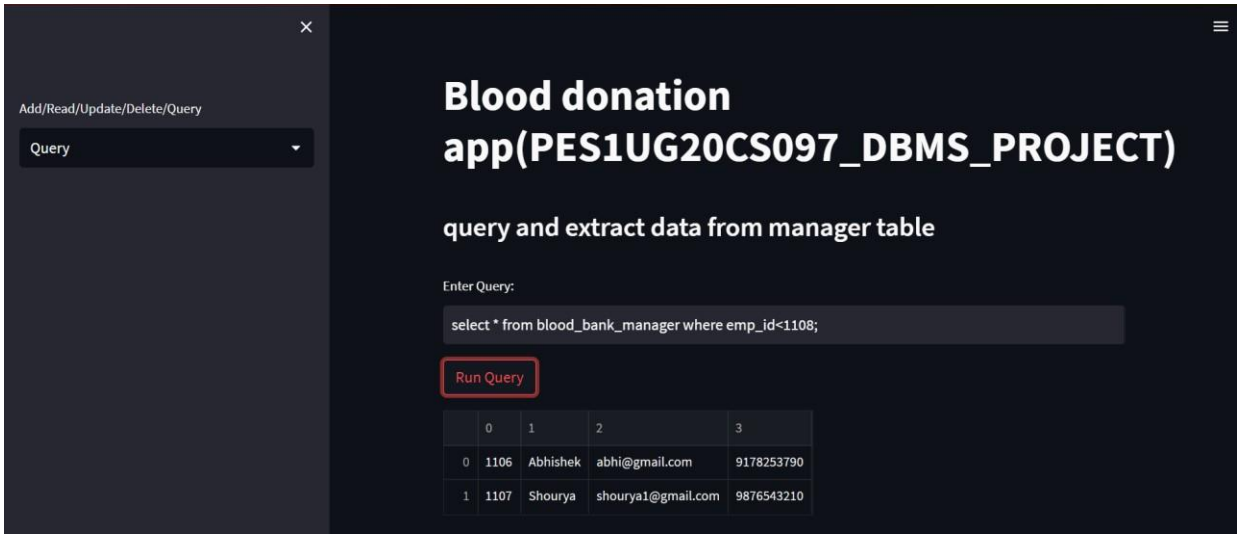
MODIFICATION:


Add/Read/Update/Delete
Edit
Update Manager details
Current Data
emp_id name email ph_no
0 1106 Abhishek abhi@gmail.com 9178253790
1 1107 Shourya shourya1@gmail.com 9876543210
2 1108 Shreya shreya123@gmail.com 6758942456
Email_id:
1108
email
shreya1234@gmail.com
Update email
Successfully updated

DELETION:

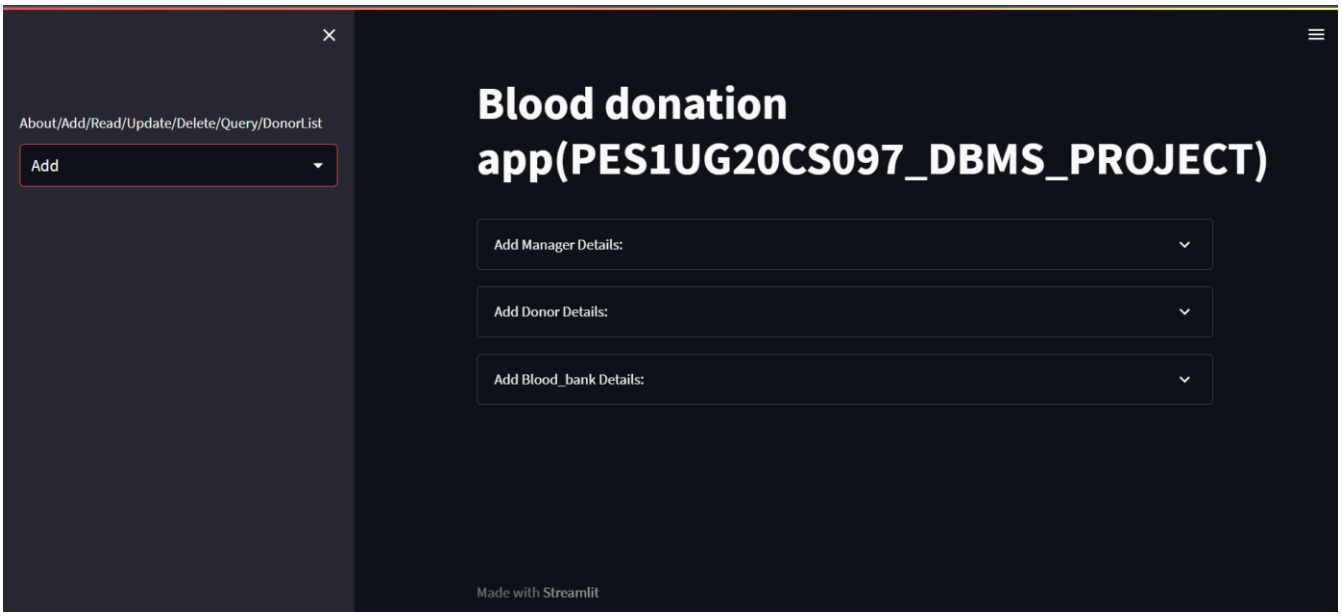

Add/Read/Update/Delete
Remove
Delete Manager
Current data
emp_id
1109
Do you want to delete ::1109
Delete Manager
manager has been deleted successfully
Updated data

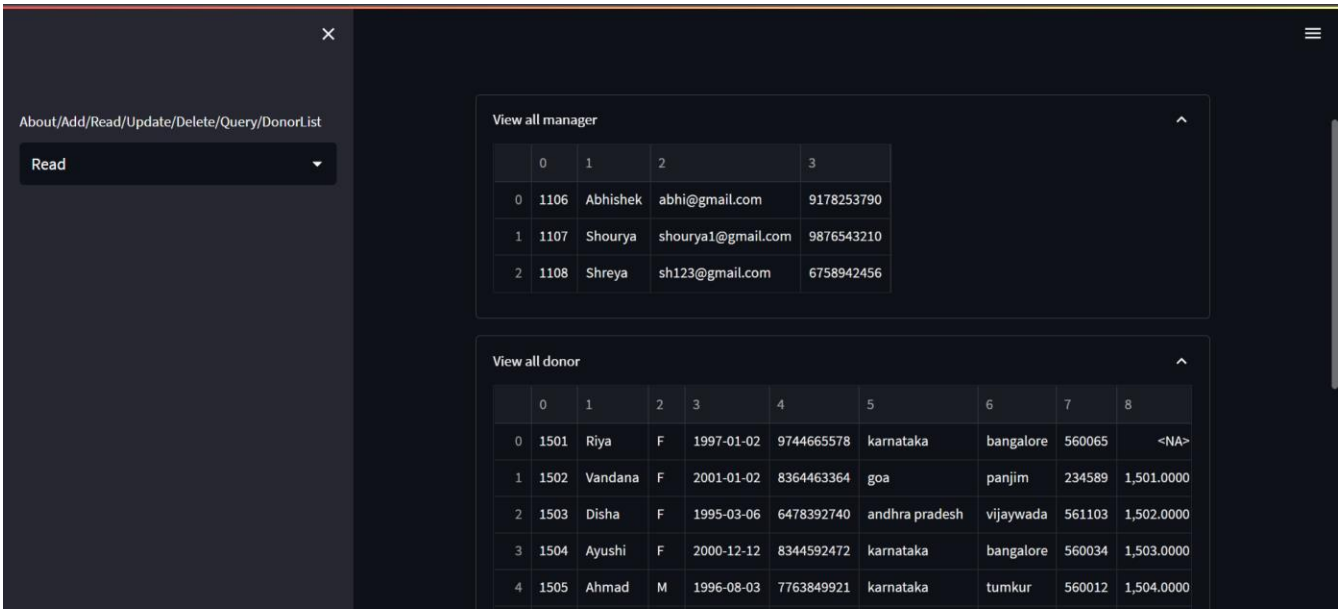
2. Window to accept and run queries:



MODIFICATIONS ASKED TO BE DONE:

1.) CRUD OPERATIONS ON ALL THE MAIN TABLES:





2.) Creating a Find Donor Page which takes the blood group as input and displays the donor details: