# Group Project (UCS310)


# BLOOD BANK MANAGEMENT SYSTEM

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# Introduction

Even though the technology has advanced much already, still, today's system in blood banks are usually manual systems. Usually, when a person requires a particular type of blood and that type is not available in the hospital, the persons send messages to family members, relatives, and friends if they can donate. As such, it is time consuming and laborious, and may risk the life of the person who needs blood urgently.

The Database ensures that there is mobility of blood bags across the country, it is easier to check for hospitals which hospital has the available needed blood types. Shortage of blood bags of particular blood type can be avoided. Likewise, there will be blood donors' registration, thus, ensuring that blood transfusion services will be safe and secured. Subsequently, the application is of great help for doctors, nurses, medical practitioners, patients and others in ensuring a better health care system.

In 2016, 10.9 million donations were reported whereas in 2020, 12.7 million donations were reported, lower than projected but still enough even due to pandemic. So, we as engineers have tried to ease this task to maintain all records.

We created a database which will store all the details about donor, recipient, blood inventory, organization and camps which can be used to retrieve, update and capture data.

# ER Diagram

**ER Model** stands for Entity Relationship Model is a high-level conceptual data model diagram. ER model helps to systematically analyse data requirements to produce a well-designed database. The ER Model represents real-world entities and the relationships between them.

Creating an ER Model in DBMS is considered as a best practice before implementing your database. The ER Entity Relation diagram is a visual representation of all the entities and their attributes with their relationships.

The entity-relationship diagram of Blood Bank Management System shows all the visual instrument of database tables and the relations between Blood Group, Donor, Blood, etc. It uses structure data and to define the relationships between structured data groups of Blood Bank Management System functionalities.

The ER diagram made for our project consists of five entities with their 30 attributes describing how the various processes and entities are related in our database.

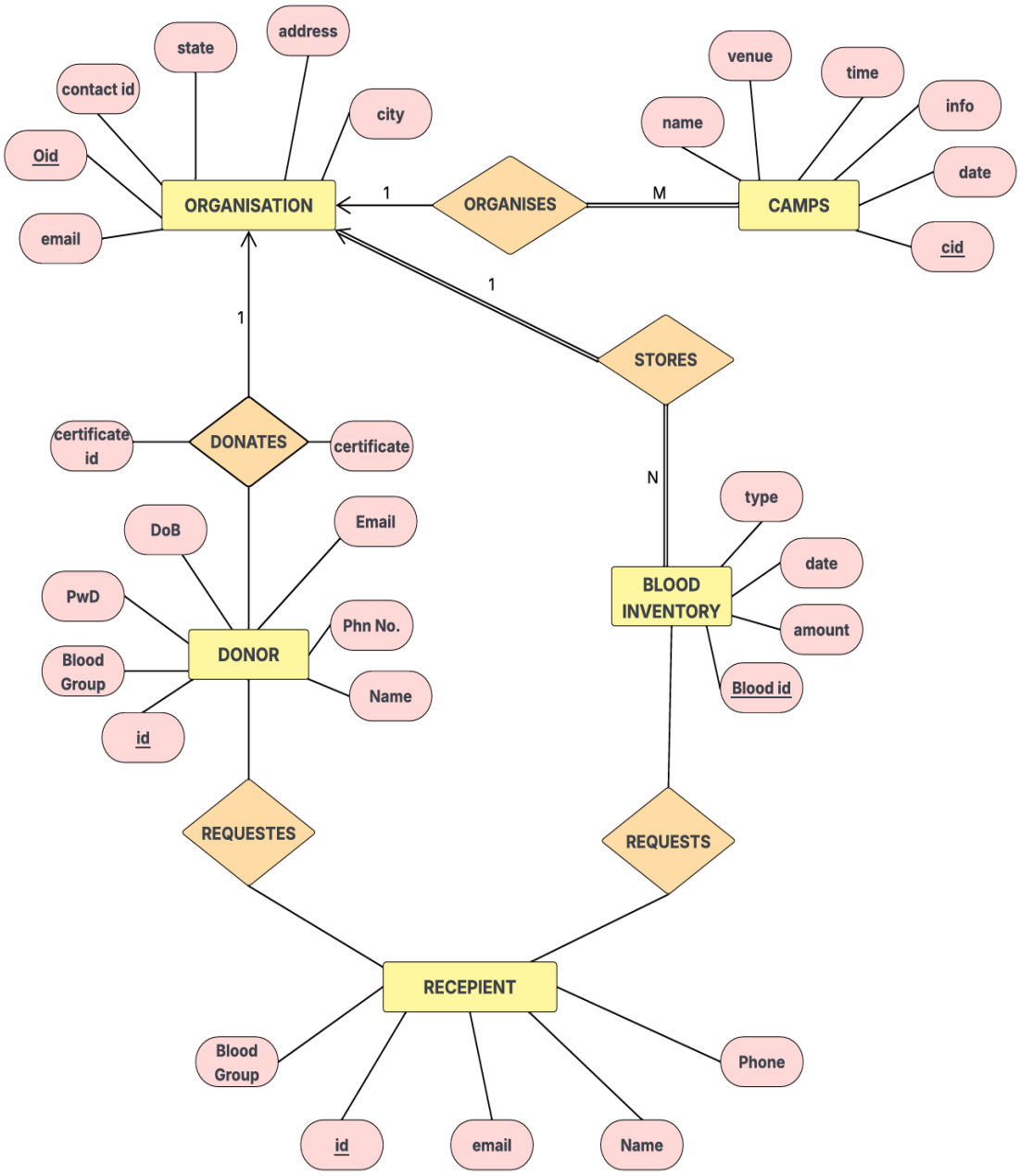



Figure: ER Diagram

## ENTITIES AND ATTRIBUTES:

1. **Donor**: Donor is the physical entity or specifically the customer who would like to provide his details for blood donation which serves the motive for our database.

   Attributes associated with this entity are:

   ID: The ID is a unique **primary key** for the donor and will be a numeric value for every customer.

   Name: It is a variable string field provided for the user to provide their name.

   Phone no: It is a 10-digit phone number associated with the donor**.**

   Email: It is a varchar2 type field to store email id of the user**.**

   DOB: It is a **single value** attribute to store date of birth in dd mm-yyyy format.

   Blood Group: It is a **single valued** varchar2 type field used for storing the blood group of donors.

   PwD: It is an attribute used to store the Password of the user in encrypted format.

   Donor entity can be associated with '*donates*' and '*request' processes directly.*

2. **Organisation:** This is a physical entity related to donor and blood inventory directly by many to many relationships. The donor and organization both participate partially in this relation. The attributes of this entities are explained further.

   Attributes of the entity mentioned are:

   Email: It is a varchar2 type field to store email id**.**

State: It is a single valued field that stores a valid state

name as a part of their address.

Address: It is a single valued field that stores local/ regional address of the user.

City: It is a single valued field that stores valid city name for the organization.

Contact ID: It is a field which identifies the donor and receiver individually.

OID: Organization ID a single valued key to uniquely identify an organization.

3. **Donation:** This is a relationship between two entities, 'Donor' and 'Organisation'.

   Its attributes are:

   Certificate ID: This is a **unique** certificate ID when they donate blood.

   Certificate: This refers to the certificate issued by the organisation for the global cause of donating blood.

4. **Recipient:** This is a physical entity which provides the details of the recipients of blood and is related to '**donor**' entity by the relation '**request**' and also '**requests**' blood from the '**blood inventory**' entity.

   Attributes associated with this entity are:

   ID: The ID is a **primary key** for the recipient and will be a numeric value for every customer.

Blood Group: It is an attribute which will tell about the blood group needed by the recipient and will be a string.

Email: It is a string storing the email addresses of the recipients.

Name: It is the attribute containing the names of all the recipients of string type.

Phone: It is an attribute storing the phone no. of recipients and is of type number.

5. **Blood inventory:** This is a physical entity related to '**Organization**' entity by many to many relationships of '**stores**' as it stores all the information about the blood donors and to '**recipient**' by the relation '**request**'. The relationship between blood inventory and organisation is having total participation from both sides.

   Attributes associated with this entity are:

   Blood id: It is a **primary key** attribute which is a number and is given to each donor uniquely.

   Type: It is a string attribute for storing the blood type stored.

   Amount: It is a number attribute storing the price of blood.

   Date: It is a single valued attribute of 'date' type.

6. **Camps:** This is a physical entity related to '**Organization**' entity by many to one relationship of '**stores**' as it stores all the information about the camps organized by various organisations. The relationship between camps and organisation is having total participation and partial participation respectively. It is a case of weak relationship with camps being the weak entity.

   Attributes associated with this entity are

Cid: It is the primary key of weak entity named camps. It stores a numeric value that can uniquely identify each camp.

Name: It is a single valued attribute that can store the name of each camp in string format(varchar).

Date: It is a single valued attribute of 'date' type.

Time: It is a single valued attribute of 'time' type.

Venue: It denotes the location of the camp organized and stores it in varchar format.

Info: It stores some miscellaneous information about the camp in varchar format.

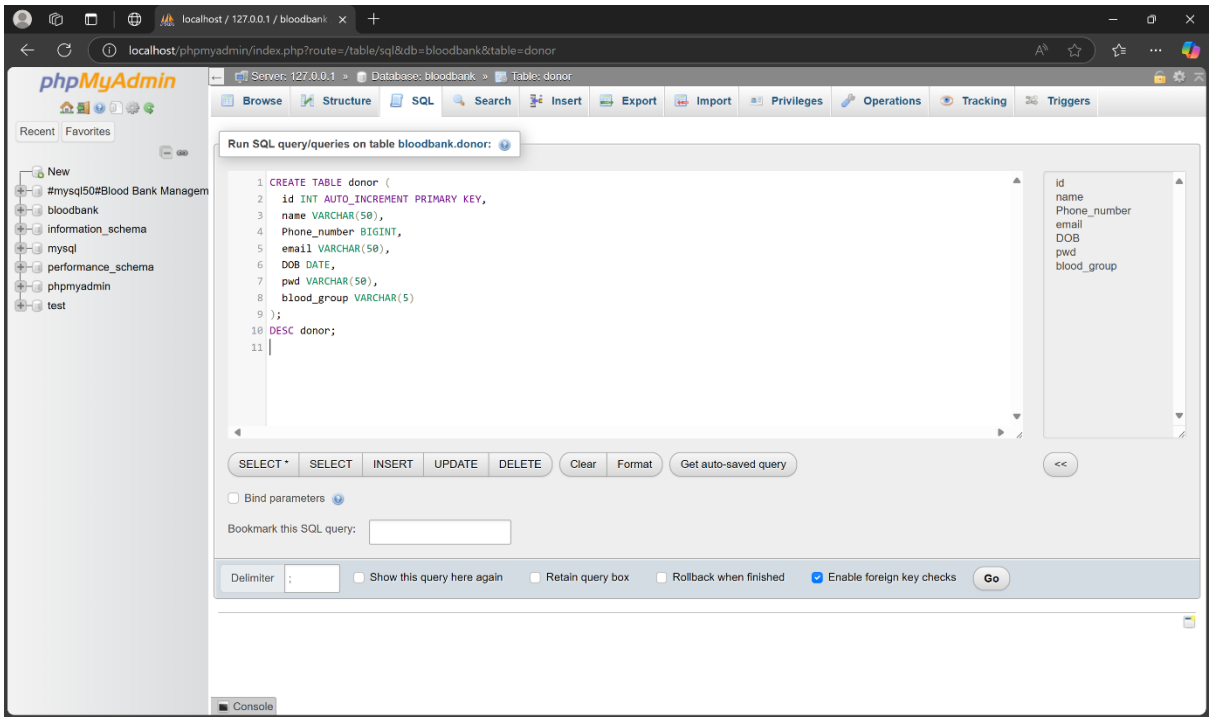
# ER to Table

## Creating tables:

### Donor Table:

```
CREATE TABLE donor (
  id INT AUTO_INCREMENT PRIMARY KEY,
  name VARCHAR(50),
  Phone_number BIGINT,
  email VARCHAR(50),
  DOB DATE,
  pwd VARCHAR(50),
  blood_group VARCHAR(5)
);
```

DESC donor;




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| id | int(11) | NO | PRI | *NULL* | auto_increment |
| name | varchar(50) | YES | | *NULL* | |
| Phone_number | bigint(20) | YES | | *NULL* | |
| email | varchar(50) | YES | | *NULL* | |
| DOB | date | YES | | *NULL* | |
| pwd | varchar(50) | YES | | *NULL* | |
| blood_group | varchar(5) | YES | | *NULL* | |

## Recipient Table:

CREATE TABLE recipient (

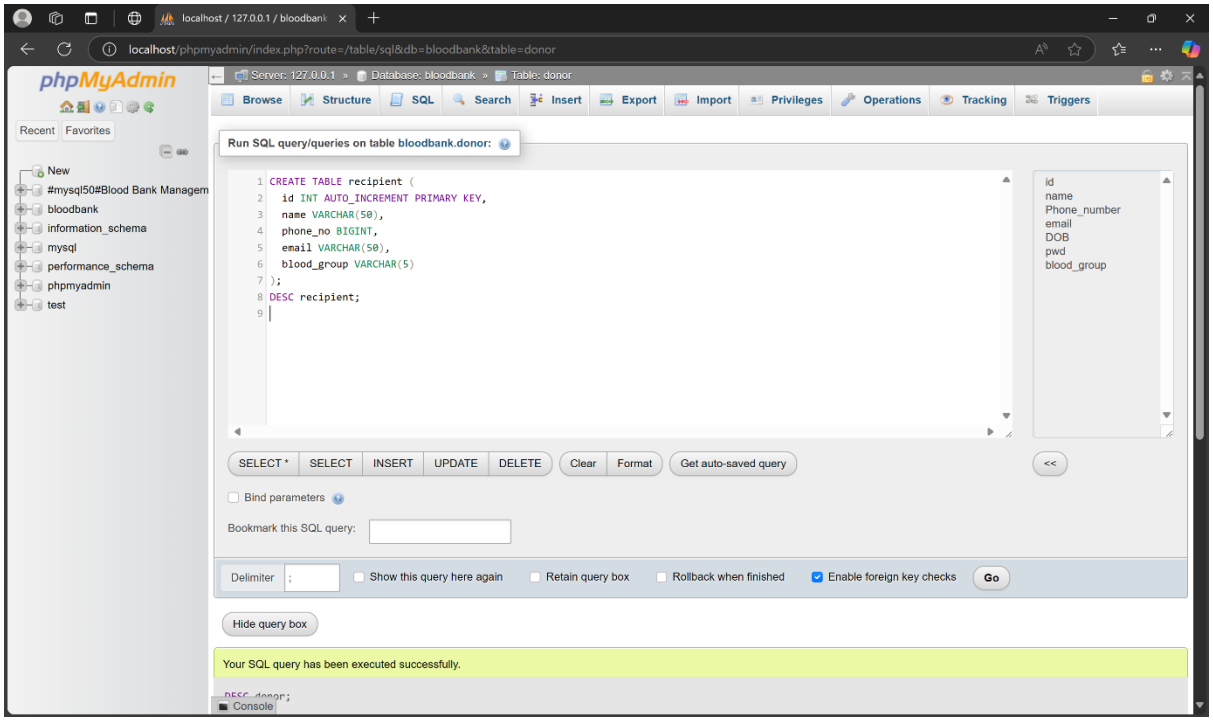
id INT AUTO_INCREMENT PRIMARY KEY,

name VARCHAR(50),

phone_no BIGINT,

email VARCHAR(50),

```
  blood_group VARCHAR(5)
);
DESC recipient;
```




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| id | int(11) | NO | PRI | *NULL* | auto_increment |
| name | varchar(50) | YES | | *NULL* | |
| phone_no | bigint(20) | YES | | *NULL* | |
| email | varchar(50) | YES | | *NULL* | |
| blood_group | varchar(5) | YES | | *NULL* | |

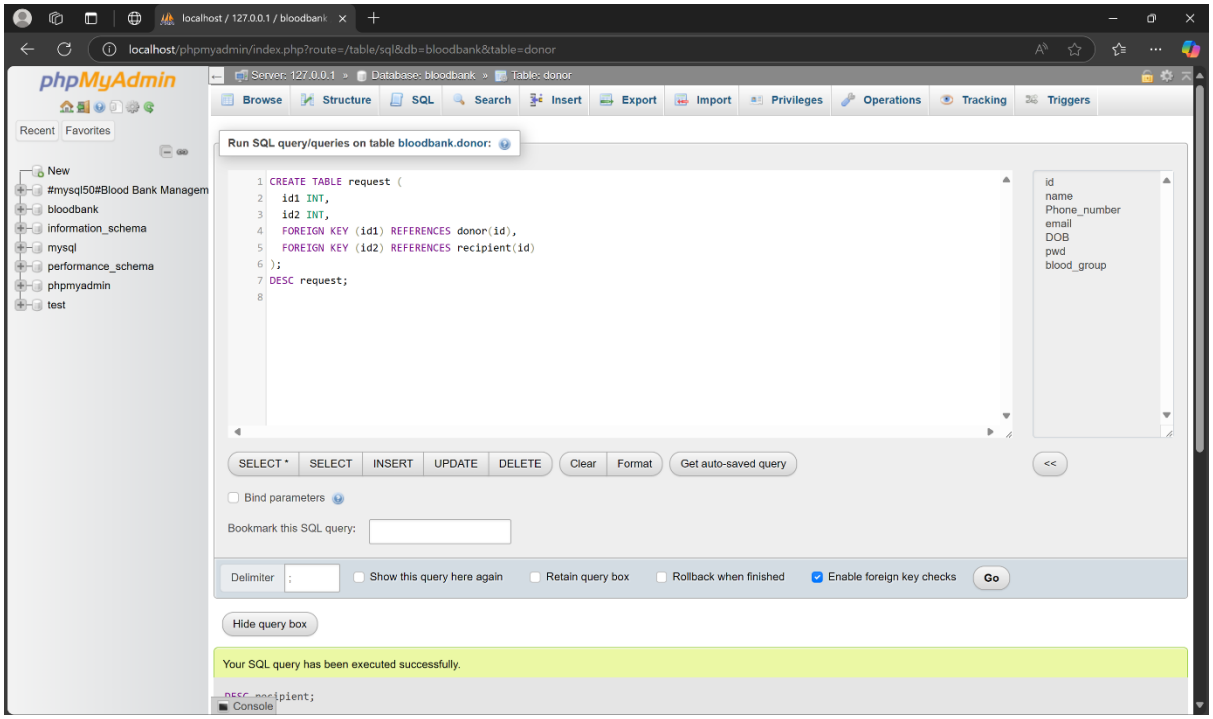
## Request Table:

```
CREATE TABLE request (
  id1 INT,
  id2 INT,
  FOREIGN KEY (id1) REFERENCES donor(id),
```

FOREIGN KEY (id2) REFERENCES recipient(id)

);

DESC request;




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| id1 | int(11) | YES | MUL | *NULL* | |
| id2 | int(11) | YES | MUL | *NULL* | |

## Donation Table:

CREATE TABLE donation (

id INT PRIMARY KEY,

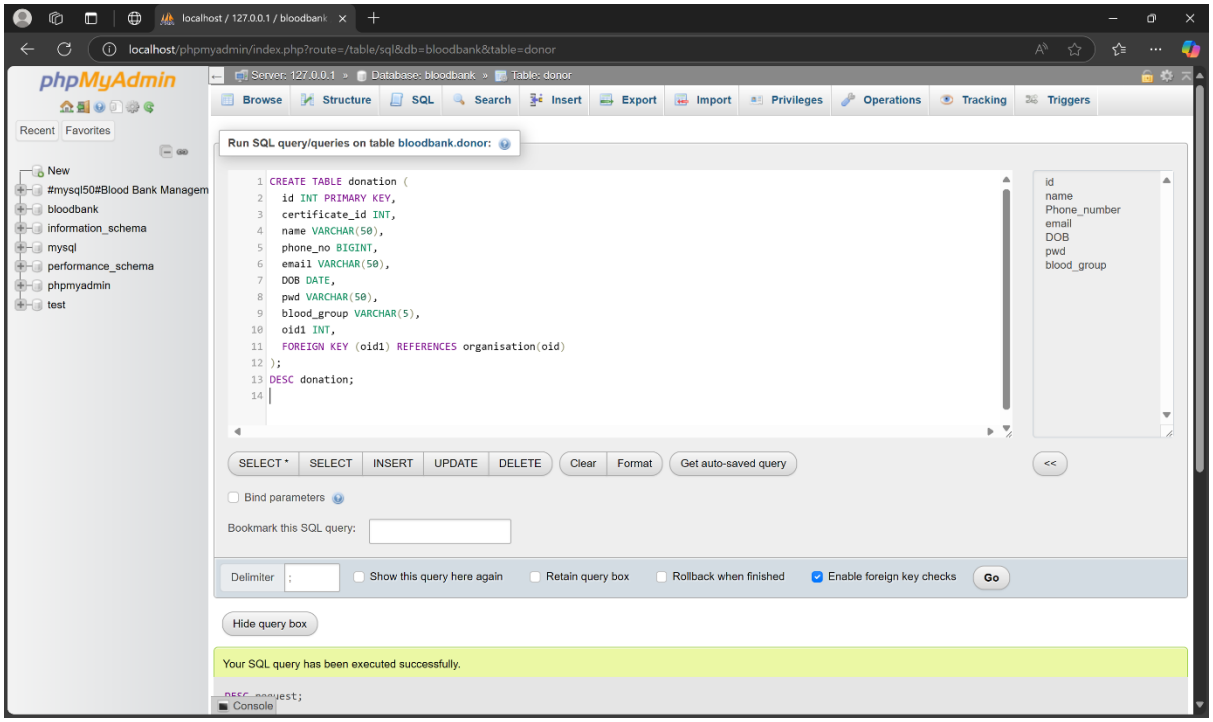
certificate_id INT,

name VARCHAR(50),

phone_no BIGINT,

email VARCHAR(50),

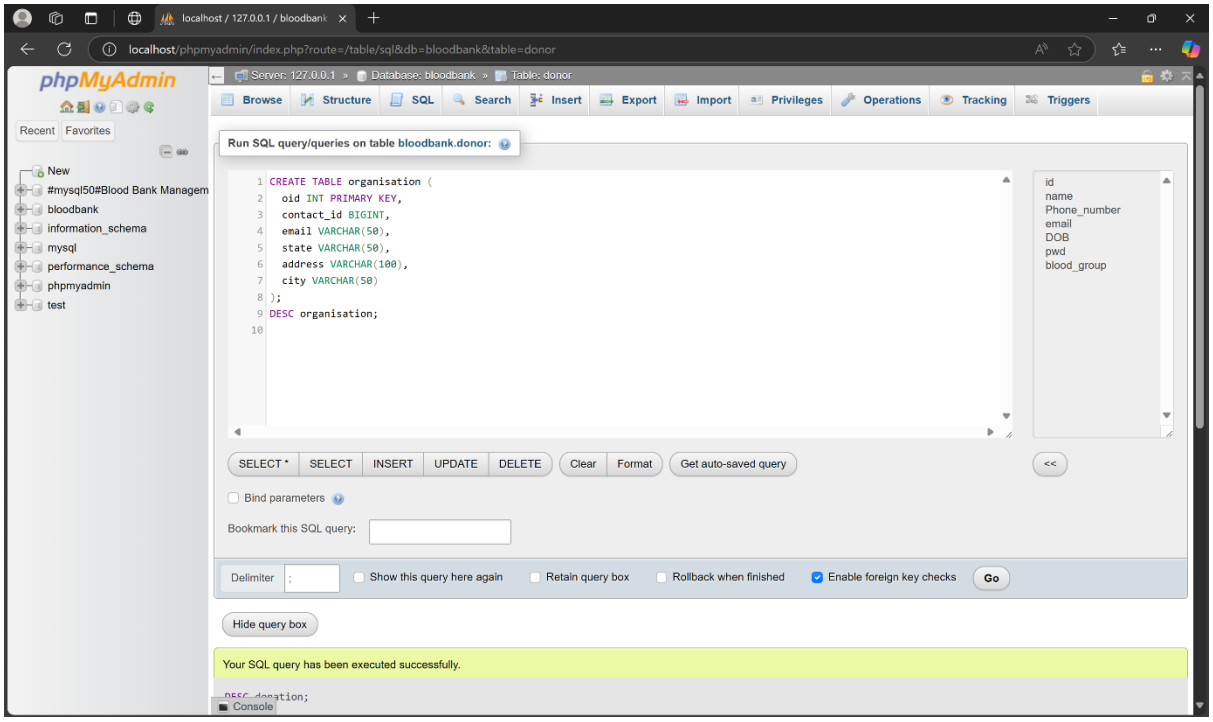
```
  DOB DATE,
  pwd VARCHAR(50),
  blood_group VARCHAR(5),
  oid1 INT,
  FOREIGN KEY (oid1) REFERENCES organisation(oid)
);
DESC donation;
```




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| id | int(11) | NO | PRI | *NULL* | |
| certificate_id | int(11) | YES | | *NULL* | |
| name | varchar(50) | YES | | *NULL* | |
| phone_no | bigint(20) | YES | | *NULL* | |
| email | varchar(50) | YES | | *NULL* | |
| DOB | date | YES | | *NULL* | |
| pwd | varchar(50) | YES | | *NULL* | |
| blood_group | varchar(5) | YES | | *NULL* | |
| oid1 | int(11) | YES | MUL | *NULL* | |

## Organisation Table:

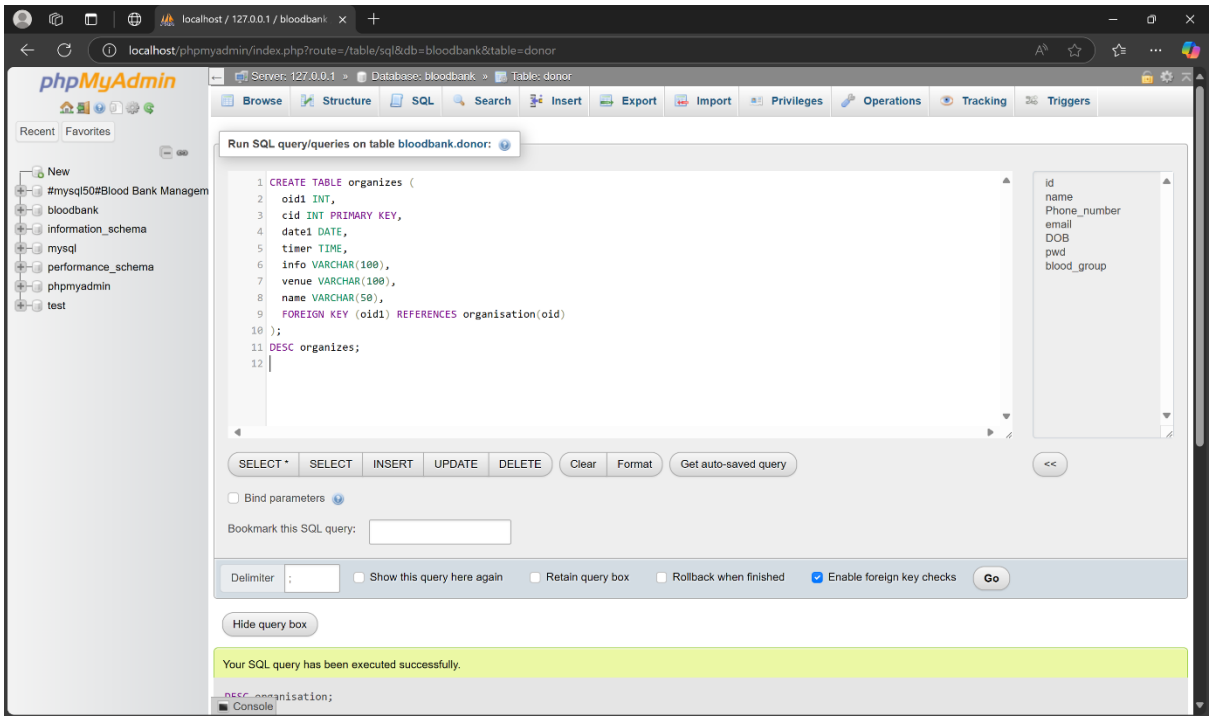
```
CREATE TABLE organisation (
  oid INT PRIMARY KEY,
  contact_id BIGINT,
  email VARCHAR(50),
  state VARCHAR(50),
  address VARCHAR(100),
  city VARCHAR(50)
);DESC organisation;
```




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| oid | int(11) | NO | PRI | *NULL* | |
| contact_id | bigint(20) | YES | | *NULL* | |
| email | varchar(50) | YES | | *NULL* | |
| state | varchar(50) | YES | | *NULL* | |
| address | varchar(100) | YES | | *NULL* | |
| city | varchar(50) | YES | | *NULL* | |

## Organizes Table:

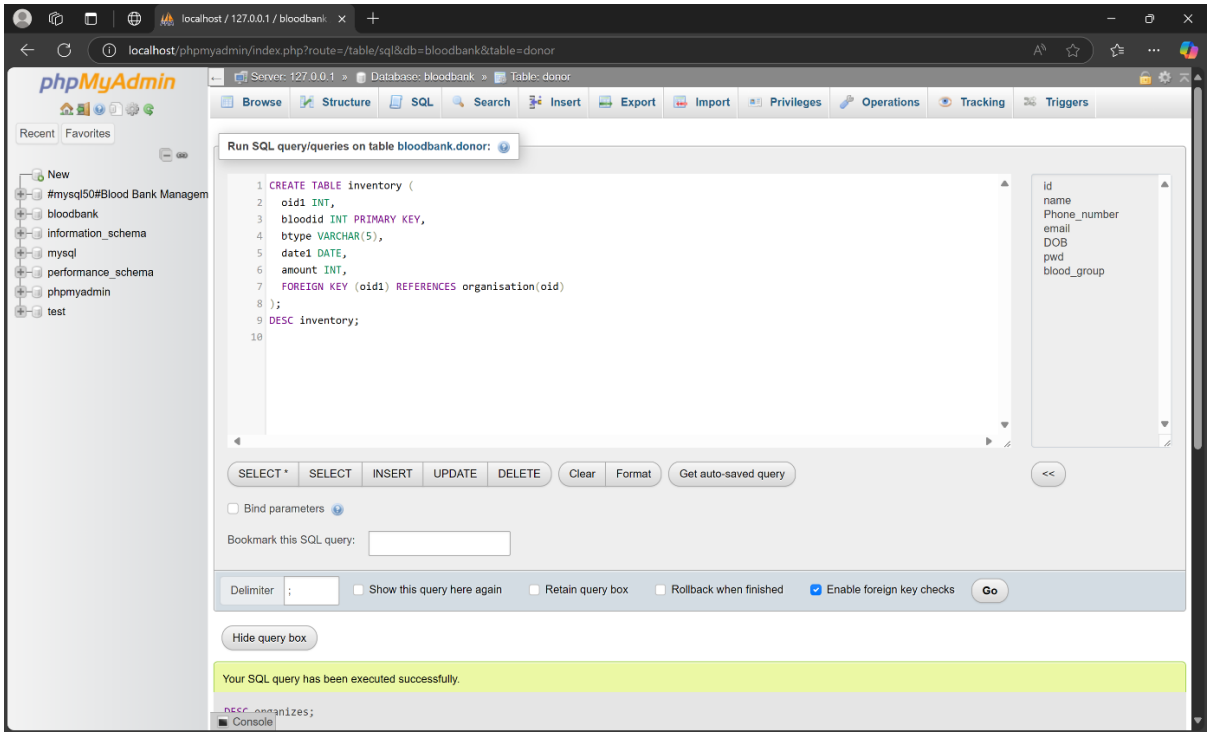
```
CREATE TABLE organizes (
  oid1 INT,
  cid INT PRIMARY KEY,
  date1 DATE,
  timer TIME,
  info VARCHAR(100),
  venue VARCHAR(100),
  name VARCHAR(50),
  FOREIGN KEY (oid1) REFERENCES organisation(oid)
);
DESC organizes;
```



| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| oid1 | int(11) | YES | MUL | *NULL* | |
| cid | int(11) | NO | PRI | *NULL* | |
| date1 | date | YES | | *NULL* | |
| timer | time | YES | | *NULL* | |
| info | varchar(100) | YES | | *NULL* | |
| venue | varchar(100) | YES | | *NULL* | |
| name | varchar(50) | YES | | *NULL* | |

## Inventory Table:

```
CREATE TABLE inventory (
  oid1 INT,
  bloodid INT PRIMARY KEY,
  btype VARCHAR(5),
  date1 DATE,
  amount INT,
  FOREIGN KEY (oid1) REFERENCES organisation(oid)
);
DESC inventory;
```

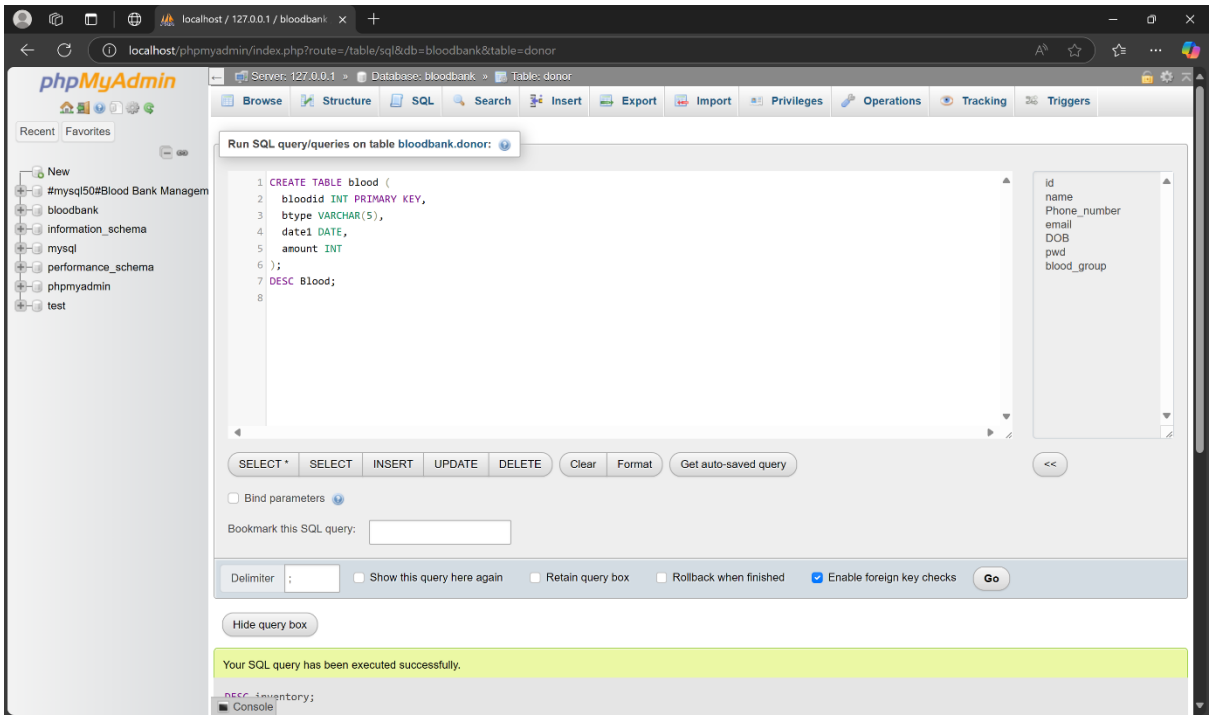



| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| oid1 | int(11) | YES | MUL | *NULL* | |
| bloodid | int(11) | NO | PRI | *NULL* | |
| btype | varchar(5) | YES | | *NULL* | |
| date1 | date | YES | | *NULL* | |
| amount | int(11) | YES | | *NULL* | |

## Blood Table:

```
CREATE TABLE blood (
  bloodid INT PRIMARY KEY,
  btype VARCHAR(5),
  date1 DATE,
  amount INT
);
```

DESC Blood;




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| bloodid | int(11) | NO | PRI | *NULL* | |
| btype | varchar(5) | YES | | *NULL* | |
| date1 | date | YES | | *NULL* | |
| amount | int(11) | YES | | *NULL* | |

## Recipient1 Table:

CREATE TABLE recipient1 (

id INT PRIMARY KEY,

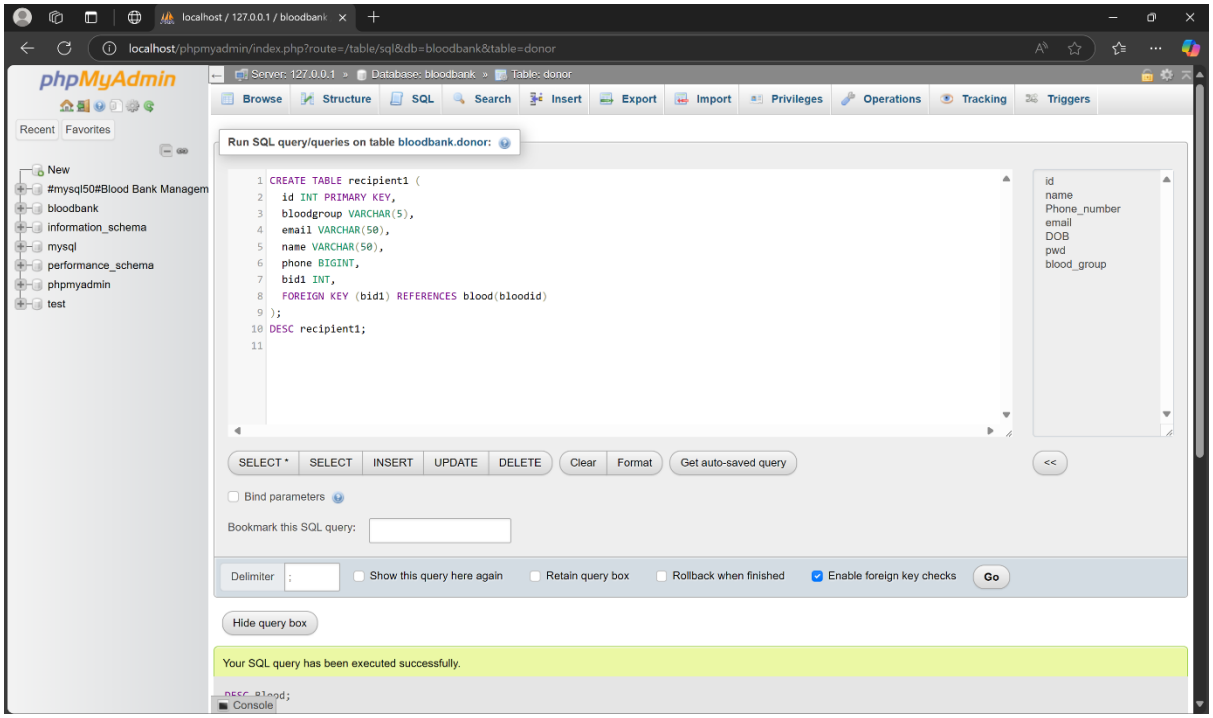
bloodgroup VARCHAR(5),

email VARCHAR(50),

name VARCHAR(50),

phone BIGINT,

```
  bid1 INT,
  FOREIGN KEY (bid1) REFERENCES blood(bloodid)
);
DESC recipient1;
```




| Field | Type | Null | Key | Default | Extra |
|---|---|---|---|---|---|
| id | int(11) | NO | PRI | *NULL* | |
| bloodgroup | varchar(5) | YES | | *NULL* | |
| email | varchar(50) | YES | | *NULL* | |
| name | varchar(50) | YES | | *NULL* | |
| phone | bigint(20) | YES | | *NULL* | |
| bid1 | int(11) | YES | MUL | *NULL* | |

# Normalization

## 1NF/First Normal Form

A table is said to be in first normal form id there are no multiple values for a cell in a table. The tables used in our project such as DONOR, DONATIONS and so on are in first normal form as they do not accept multiple values of an attribute per tuple.

The fields such as Email, Phone number can have multiple values per tuple so either multiple columns such as phone1, phone2 were to be provided or decomposition was to be done which was preferred.

## 2NF/Second Normal Form

This normal form states that partial functional dependencies cannot exist. To keep tables in second normal form, primary keys assigned have only one attribute in case of each table.

We have primary keys such as ID, OID etc which consist of only one attribute which solves the problem of partial functional dependency.

## 3NF/ Third Normal Form

Third normal form states that transitive functional dependencies cannot exist.

The 5 entities in our ER diagram are decomposed into 9 tables including tables for relationships. This is done in order to separate attributes into multiple tables such that no transitive relationship exists.

# Inserting Values

## Donor Table:

```
INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (1, 'Ram', 9898989898, '1@gmail.com', '2001-01-01', 'xyzabc', 'b+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (2, 'Ama', 9898989898, '2@gmail.com', '2001-01-02', 'xyzabc', 'A+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (3, 'jili', 9898989898, '3@gmail.com', '2001-01-03', 'xyzabc', 'o+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (4, 'Juli', 9898989898, '4@gmail.com', '2001-01-04', 'xyzabc', 'A+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (5, 'aka', 9898989898, '5@gmail.com', '2001-01-05', 'xyzabc', 'B+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (6, 'baka', 9898989898, '6@gmail.com', '2001-01-06', 'xyzabc', 'C+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (7, 'daka', 9898989898, '7@gmail.com', '2001-01-07', 'xyzabc', 'A+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (8, 'sid', 9898989898, '8@gmail.com', '2001-01-10', 'xyzabc', 'B+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (9, 'mid', 9898989898, '9@gmail.com', '2001-01-11', 'xyzabc', 'C+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (10, 'rewa', 9898989898, '10@gmail.com', '2001-01-12', 'xyzabc',
'B+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (11, 'raywa', 9898989898, '11@gmail.com', '2001-01-13', 'xyzabc',
'AB+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group)
VALUES (12, 'rahwa', 9898989898, '12@gmail.com', '2001-01-14', 'xyzabc', 'O-
');
```

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (13, 'gourab', 9898989898, '13@gmail.com', '2001-01-15', 'xyzabc', 'A+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (14, 'Gaurav', 9898989898, '14@gmail.com', '2001-01-16', 'xyzabc', 'b+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (15, 'Kasis', 9898989898, '15@gmail.com', '2001-01-17', 'xyzabc', 'AB-');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (16, 'Kosis', 9898989898, '16@gmail.com', '2001-01-18', 'xyzabc', 'A-');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (17, 'kasol', 9898989898, '17@gmail.com', '2001-01-19', 'xyzabc', 'B+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (18, 'Bani', 9898989898, '18@gmail.com', '2001-01-20', 'xyzabc', 'AB+');

INSERT INTO donor (id, name, Phone_number, email, DOB, pwd, blood_group) VALUES (19, 'Banno', 9898989898, '19@gmail.com', '2001-01-21', 'xyzabc', 'B-');

## Recipient Table:

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (2, 'KAma', 9898989898, '2@gmail.com', 'A+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (1, 'KRam', 9898189898, '1@gmail.com', 'b+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (3, 'Kjili', 9892989898, '3@gmail.com', 'o+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (4, 'KJuli', 9892989898, '4@gmail.com', 'A+');

```
INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (5, 'Kaka', 9898289898, '5@gmail.com', 'B+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (6, 'kbaka', 9892989898, '6@gmail.com', 'C+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (7, 'kdaka', 9893989898, '7@gmail.com', 'A+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (8, 'ksid', 9898984898, '8@gmail.com', 'B+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (9, 'kmid', 9898989898, '9@gmail.com', 'C+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (10, 'krewa', 9898939898, '10@gmail.com', 'B+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (11, 'kraywa', 9898389898, '11@gmail.com', 'AB+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (12, 'krahwa', 9898389898, '12@gmail.com', 'O-');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (13, 'kgourab', 9893989898, '13@gmail.com', 'A+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (14, 'kGaurav', 9898398989, '14@gmail.com', 'b+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (16, 'kKosis', 9898939898, '16@gmail.com', 'A-');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (15, 'kKasis', 9898939898, '15@gmail.com', 'AB-');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (17, 'kkasol', 9898989898, '17@gmail.com', 'B+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (18, 'kBani', 9198989898, '18@gmail.com', 'AB+');
```

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (19, 'kBanno', 9298989898, '19@gmail.com', 'B-');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (21, 'kRama', 9198949898, '1@gmail.com', 'b+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (22, 'kAmaa', 9298949898, '2@gmail.com', 'A+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (23, 'kjilia', 9398289898, '3@gmail.com', 'o+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (24, 'kJulia', 9498589898, '4@gmail.com', 'A+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (25, 'kakaa', 9818969898, '5@gmail.com', 'B+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (26, 'kbakaa', 9198589898, '6@gmail.com', 'C+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (27, 'kdkakaa', 9198889898, '7@gmail.com', 'A+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (28, 'kskida', 9818979898, '8@gmail.com', 'B+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (29, 'kmida', 9891959898, '9@gmail.com', 'C+');

INSERT INTO recipient (id, name, phone_no, email, blood_group) VALUES (20, 'krewaa', 9818389898, '10@gmail.com', 'B+');

## Request Table:

INSERT INTO request (id1, id2) VALUES (2, 1);

INSERT INTO request (id1, id2) VALUES (1, 2);

INSERT INTO request (id1, id2) VALUES (3, 3);

INSERT INTO request (id1, id2) VALUES (4, 4);

INSERT INTO request (id1, id2) VALUES (5, 5);

INSERT INTO request (id1, id2) VALUES (6, 6);

INSERT INTO request (id1, id2) VALUES (7, 7);

INSERT INTO request (id1, id2) VALUES (8, 8);

INSERT INTO request (id1, id2) VALUES (9, 9);

INSERT INTO request (id1, id2) VALUES (10, 10);

INSERT INTO request (id1, id2) VALUES (11, 11);

INSERT INTO request (id1, id2) VALUES (12, 12);

INSERT INTO request (id1, id2) VALUES (13, 13);

INSERT INTO request (id1, id2) VALUES (14, 14);

INSERT INTO request (id1, id2) VALUES (15, 15);

INSERT INTO request (id1, id2) VALUES (1, 16);

INSERT INTO request (id1, id2) VALUES (17, 17);

INSERT INTO request (id1, id2) VALUES (18, 18);

INSERT INTO request (id1, id2) VALUES (19, 19);

## Organisation Table:

INSERT INTO organisation (oid, contact_id, email, state, address, city) VALUES (1111, 9898989898, 'org1@gmail.com', 'Punjab', 'TIET', 'Patiala');

INSERT INTO organisation (oid, contact_id, email, state, address, city) VALUES (1112, 9898989898, 'org2@gmail.com', 'Punjab', 'Abc road', 'Ludhiana');

INSERT INTO organisation (oid, contact_id, email, state, address, city) VALUES (1113, 1898989898, 'org3@gmail.com', 'Punjab', 'BT NAGAR', 'Amritsar');

INSERT INTO organisation (oid, contact_id, email, state, address, city) VALUES (1114, 9298989898, 'org4@gmail.com', 'Punjab', 'RP ROAD', 'Bhatinda');

## Donation Table:

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (10, 10, 'rewa', 9898989898, '10@gmail.com', '2001-01-12', 'xyzabc', 'B+', 1111);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (11, 11, 'raywa', 9898989898, '11@gmail.com', '2001-01-13', 'xyzabc', 'AB+', 1112);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (12, 12, 'rahwa', 9898989898, '12@gmail.com', '2001-01-14', 'xyzabc', 'O-', 1113);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (13, 13, 'gourab', 9898989898, '13@gmail.com', '2001-01-15', 'xyzabc', 'A+', 1114);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (14, 14, 'Gaurav', 9898989898, '14@gmail.com', '2001-01-16', 'xyzabc', 'b+', 1111);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (15, 15, 'Kasis', 9898989898, '15@gmail.com', '2001-01-17', 'xyzabc', 'AB-', 1112);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (16, 16, 'Kosis', 9898989898, '16@gmail.com', '2001-01-18', 'xyzabc', 'A-', 1113);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (17, 17, 'kasol', 9898989898, '17@gmail.com', '2001-01-19', 'xyzabc', 'B+', 1114);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (18, 18, 'Bani', 9898989898, '18@gmail.com', '2001-01-20', 'xyzabc', 'AB+', 1111);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (19, 19, 'Banno', 9898989898, '19@gmail.com', '2001-01-21', 'xyzabc', 'B-', 1112);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (20, 21, 'Rama', 9898949898, '1@gmail.com', '2001-01-01', 'xyzfbc', 'b+', 1113);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (21, 22, 'Amaa', 9898949898, '2@gmail.com', '2001-01-02', 'xyzfbc', 'A+', 1114);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (22, 23, 'jilia', 9898289898, '3@gmail.com', '2001-01-03', 'xyfabc', 'o+', 1111);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (23, 24, 'Julia', 9898589898, '4@gmail.com', '2001-01-04', 'xyfabc', 'A+', 1112);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (24, 25, 'akaa', 9898969898, '5@gmail.com', '2001-01-05', 'xyfabc', 'B+', 1113);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (25, 26, 'bakaa', 9898589898, '6@gmail.com', '2001-01-06', 'xfzabc', 'C+', 1114);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (26, 27, 'dakaa', 9898889898, '7@gmail.com', '2001-01-07', 'xyzafc', 'A+', 1111);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (27, 28, 'sida', 9898979898, '8@gmail.com', '2001-01-10', 'xyzabf', 'B+', 1112);

INSERT INTO donation (id, certificate_id, name, phone_no, email, DOB, pwd, blood_group, oid1) VALUES (28, 29, 'mida', 9898959898, '9@gmail.com', '2001-01-11', 'xyzafc', 'C+', 1113);

## Organizes Table:

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1111, 21, '2022-01-10', '10:00:00', 'weekly blood donation camp', 'abc Chowk', 'camp1');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1112, 31, '2022-02-09', '11:00:00', 'monthly blood donation camp', 'abc Chowk', 'camp2');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1113, 40, '2022-03-08', '12:00:00', 'weekly blood donation camp', 'ab road', 'camp3');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1114, 50, '2022-04-07', '13:00:00', 'quarterly blood donation camp', 'aadarsh nagar', 'camp4');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1111, 22, '2022-05-06', '14:00:00', 'weekly blood donation camp', 'rc colony', 'camp5');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1112, 32, '2022-06-05', '14:00:00', 'monthly blood donation camp', 'op road', 'camp6');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1113, 41, '2022-07-04', '11:00:00', 'weekly blood donation camp', 'nabha road', 'camp7');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1114, 51, '2022-08-03', '12:00:00', 'yearly blood donation camp', 'tiet road', 'camp8');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1111, 23, '2022-09-02', '13:00:00', 'weekly blood donation camp', 'a colony', 'camp9');

INSERT INTO organizes (org_id, camp_id, camp_date, camp_time, description, location, name) VALUES (1112, 33, '2022-10-01', '14:00:00', 'monthly blood donation camp', 'akas homes', 'camp10');

## Inventory Table:

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 100, 'B+', '2021-05-01', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 101, 'AB+', '2021-05-04', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 102, 'AB-', '2021-05-06', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 103, 'b+', '2021-03-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 104, 'AB-', '2021-05-10', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 105, 'b+', '2021-03-01', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 106, 'b+', '2021-05-20', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 107, 'b-', '2021-05-01', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 108, 'AB+', '2021-02-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 109, 'o-', '2021-05-30', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 110, 'b+', '2021-02-03', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 111, 'AB-', '2021-04-25', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 112, 'b+', '2021-05-11', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 113, 'o+', '2021-05-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 114, 'b+-', '2021-05-12', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 115, 'o+', '2021-06-13', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 116, 'AB+', '2021-05-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 117, 'o+', '2021-03-01', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 118, 'b-', '2021-05-16', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 119, 'AB+', '2021-05-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 120, 'o-', '2021-02-20', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 121, 'b+', '2021-05-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 122, 'b-', '2021-02-11', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 123, 'AB+', '2021-05-01', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 124, 'o+', '2021-05-13', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1112, 125, 'b+', '2021-03-22', 2);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1113, 126, 'o-', '2021-05-23', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1114, 127, 'AB+', '2021-04-08', 1);

INSERT INTO inventory (org_id, blood_id, blood_group, collection_date, quantity) VALUES (1111, 128, 'o-', '2021-05-09', 1);

## Blood Table:

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (100, 'B+', '2021-05-01', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (101, 'AB+', '2021-05-04', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (102, 'AB-', '2021-05-06', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (103, 'b+', '2021-03-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (104, 'AB-', '2021-05-10', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (105, 'b+', '2021-03-01', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (106, 'b+', '2021-05-20', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (107, 'b-', '2021-05-01', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (108, 'AB+', '2021-02-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (109, 'o-', '2021-05-30', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (110, 'b+', '2021-02-03', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (111, 'AB-', '2021-04-25', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (112, 'b+', '2021-05-11', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (113, 'o+', '2021-05-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (114, 'b+-', '2021-05-12', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (115, 'o+', '2021-06-13', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (116, 'AB+', '2021-05-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (117, 'o+', '2021-03-01', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (118, 'b-', '2021-05-16', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (119, 'AB+', '2021-05-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (120, 'o-', '2021-02-20', 2);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (121, 'b+', '2021-05-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (122, 'b-', '2021-02-11', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (123, 'AB+', '2021-05-01', 1);

INSERT INTO blood (blood_id, blood_group, collection_date, quantity) VALUES (124, 'o+', '2021-05-13', 1);

## Recipient1 Table:

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('A+', 1001, '1@gmail.com', 'ram', 6565656565, 100);

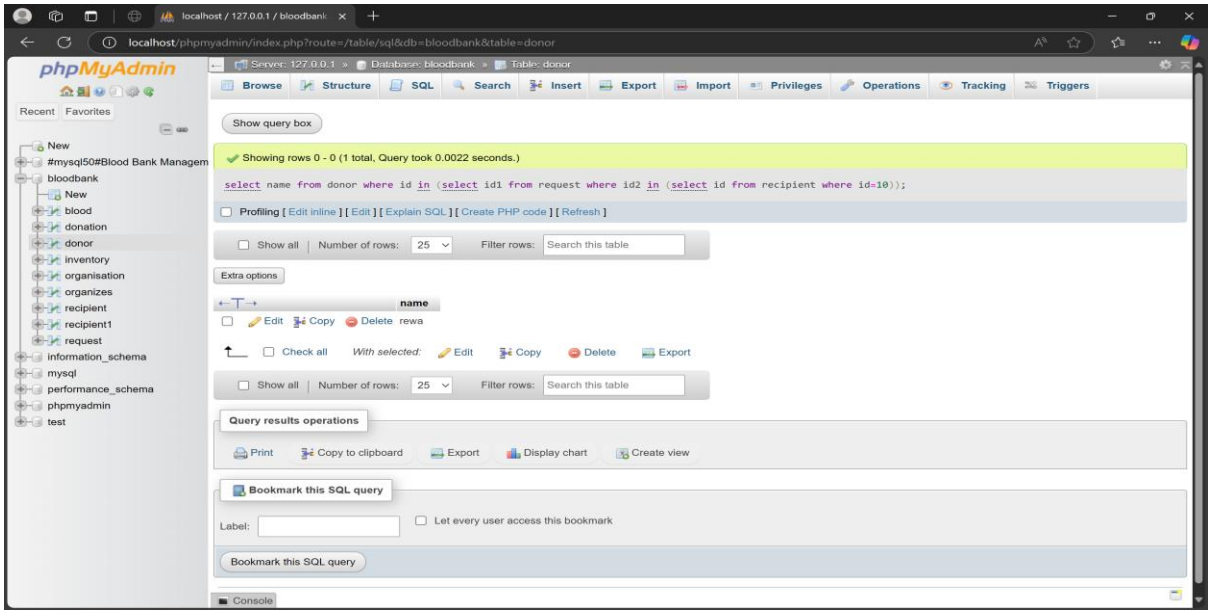
```
INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('O+', 1002, '2@gmail.com', 'Shayam', 6565656565, 101);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AB+', 1003, '3@gmail.com', 'Shyama', 6565656565, 102);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('A+', 1004, '4@gmail.com', 'rama', 6565656565, 103);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1005, '5@gmail.com', 'Harsh', 6565656565, 104);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('O+', 1006, '6@gmail.com', 'Harsha', 6565636565, 105);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AO+', 1007, '7@gmail.com', 'Hari', 6565616565, 106);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AB+', 1008, '8@gmail.com', 'Haria', 6562656565, 107);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('A+', 1009, '9@gmail.com', 'Rahul', 6565656565, 108);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AB+', 1010, '10@gmail.com', 'Rohit', 6565656565, 109);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1011, '11@gmail.com', 'Raghav', 6565656165, 110);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('O+', 1012, '12@gmail.com', 'Ram', 6565656561, 111);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AB+', 1013, '13@gmail.com', 'Rohit', 6565651565, 112);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('O+', 1014, '14@gmail.com', 'Raman', 6565651565, 113);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AO+', 1015, '15@gmail.com', 'Gaurav', 6561656565, 114);
```

```
INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('AO+', 1016, '16@gmail.com', 'Anamik', 6562656565, 115);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('BA+', 1017, '17@gmail.com', 'Ana', 6565656265, 116);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1018, '18@gmail.com', 'Aman', 6565656365, 117);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1020, '19@gmail.com', 'Amanik', 6565456565, 118);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1021, '20@gmail.com', 'Ram', 6565456565, 119);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1022, '21@gmail.com', 'ram', 6515656565, 120);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1023, '22@gmail.com', 'ram', 6265656565, 121);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1024, '23@gmail.com', 'ram', 6565636565, 122);

INSERT INTO recipient1 (blood_group, recipient_id, email, name, phone, blood_id) VALUES ('B+', 1025, '24@gmail.com', 'ram', 6565636565, 123);
```

# SQL / PLSQL QUERIES:

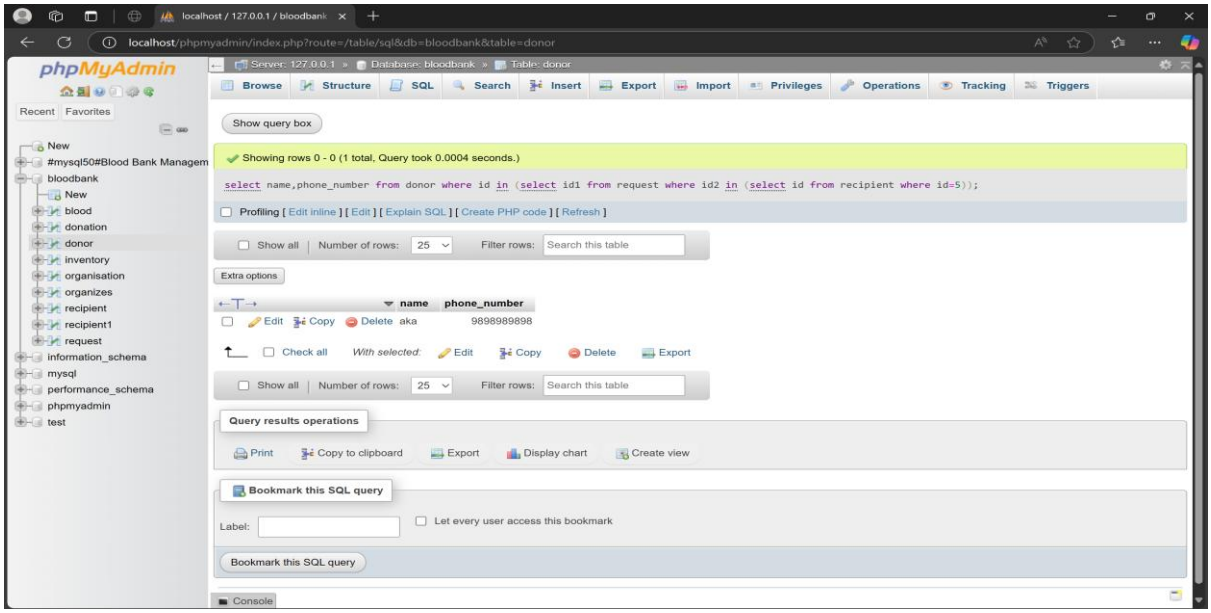
## FIND THE NAME OF DONOR FOR RECIPENT WHO RECEIVED BLOOD FROM UID 10!

select name from donor where id in (select id1 from request where id2 in (select id from recipient where id=10))



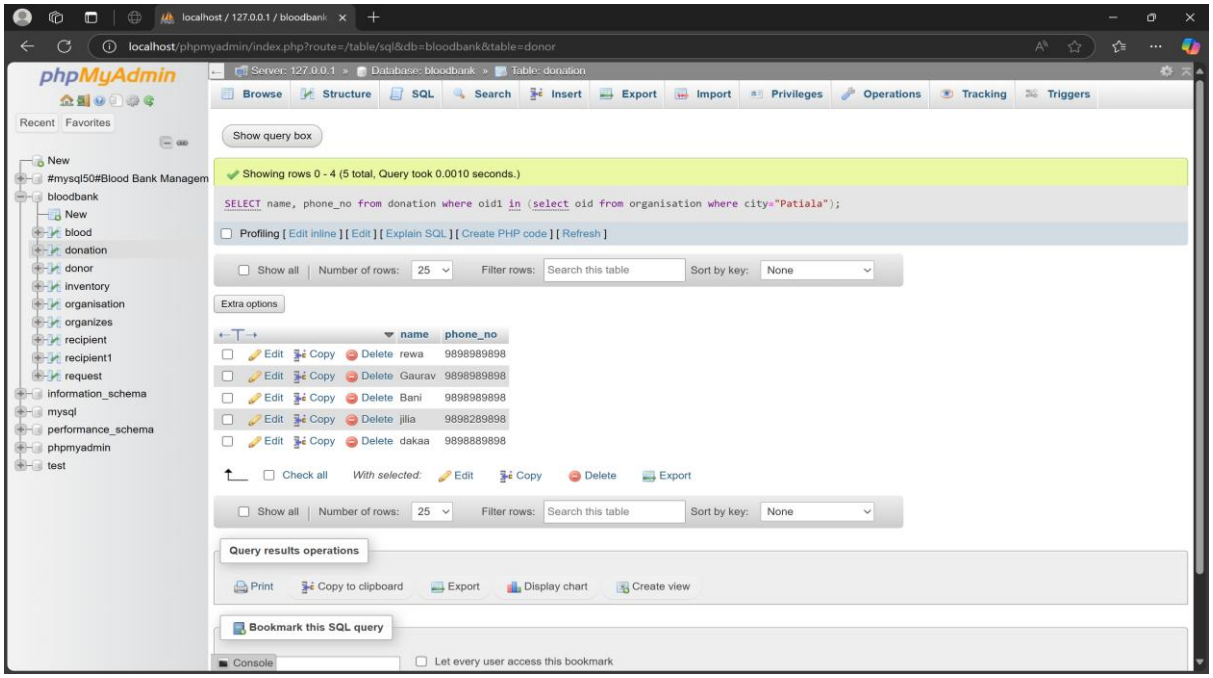

## FIND THE NAME AND PHONE NUMBER OF DONOR FOR RECIPENT WHO RECEIVED BLOOD FROM UID 5!

select name, phone_number from donor where id in (select id1 from request where id2 in (select id from recipient where id=5))



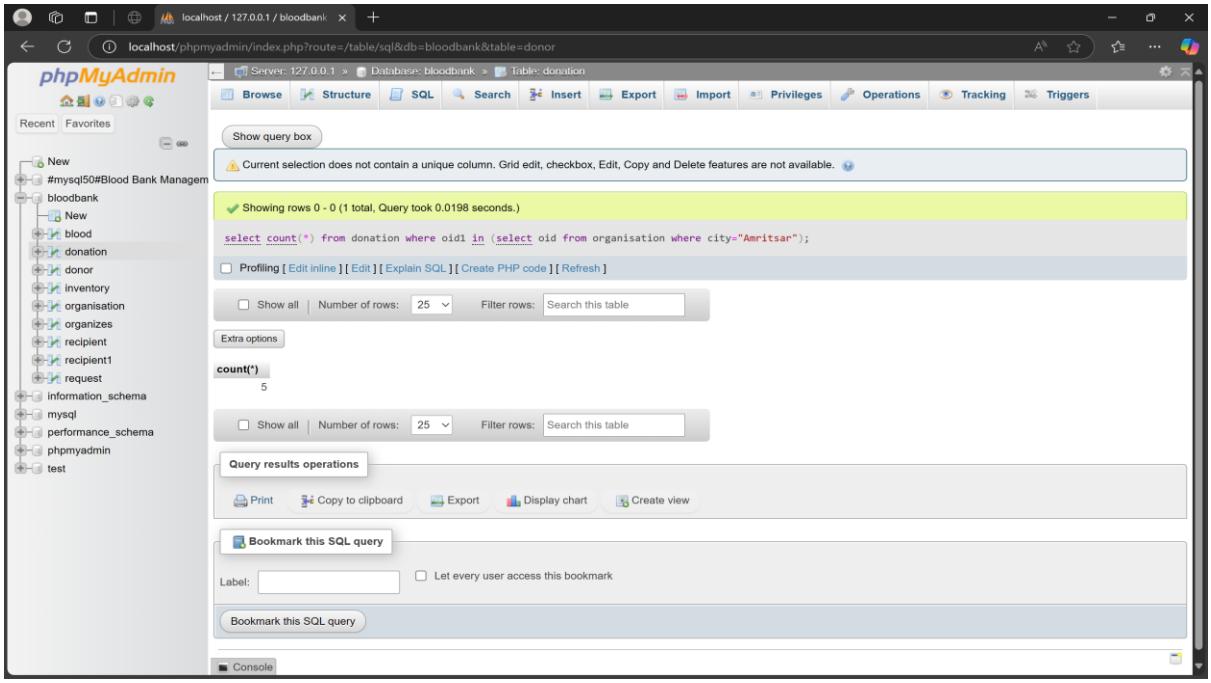
**DISPLAY THE NAMES AND CONTACT OF THE PEOPLE WHO HAVE DONATED BLOOD IN PATIALA CITY.**

SELECT name, phone_no from donation where oid1 in (select oid from organisation where city="Patiala");



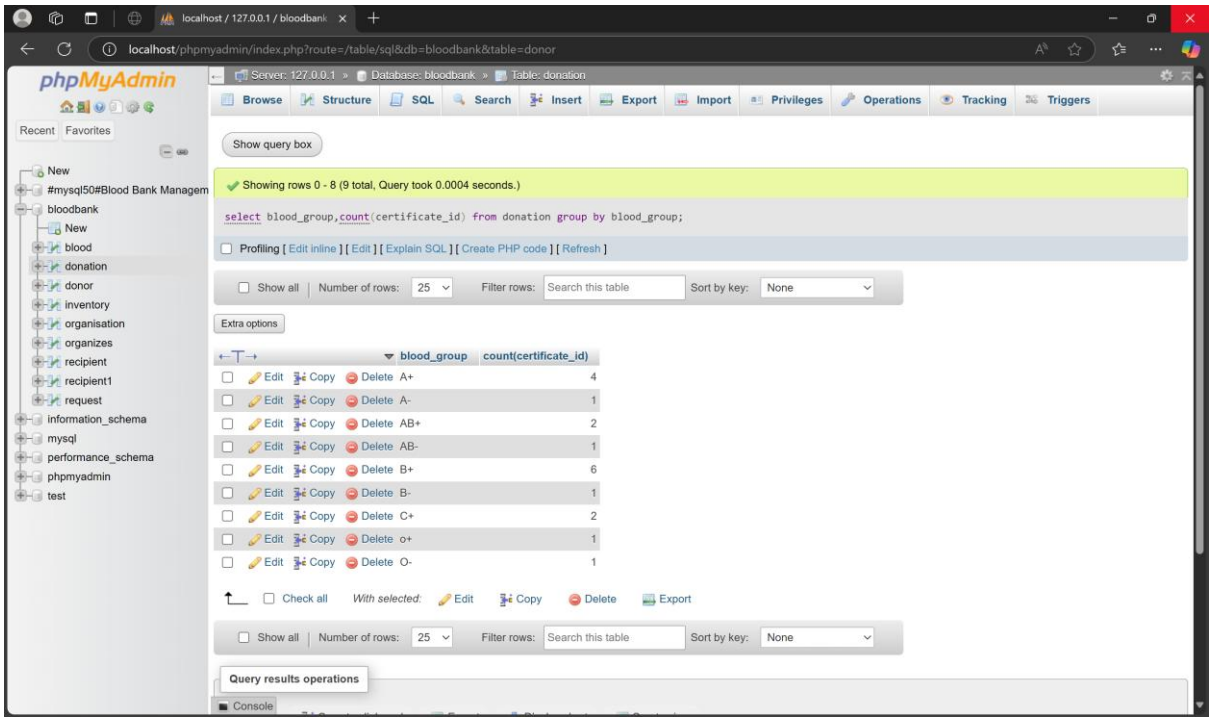

**COUNT THE NUMBER OF DONATIONS IN AMRITSAR CITY**

select count(*) from donation where oid1 in (select oid from organisation where city="Amritsar");



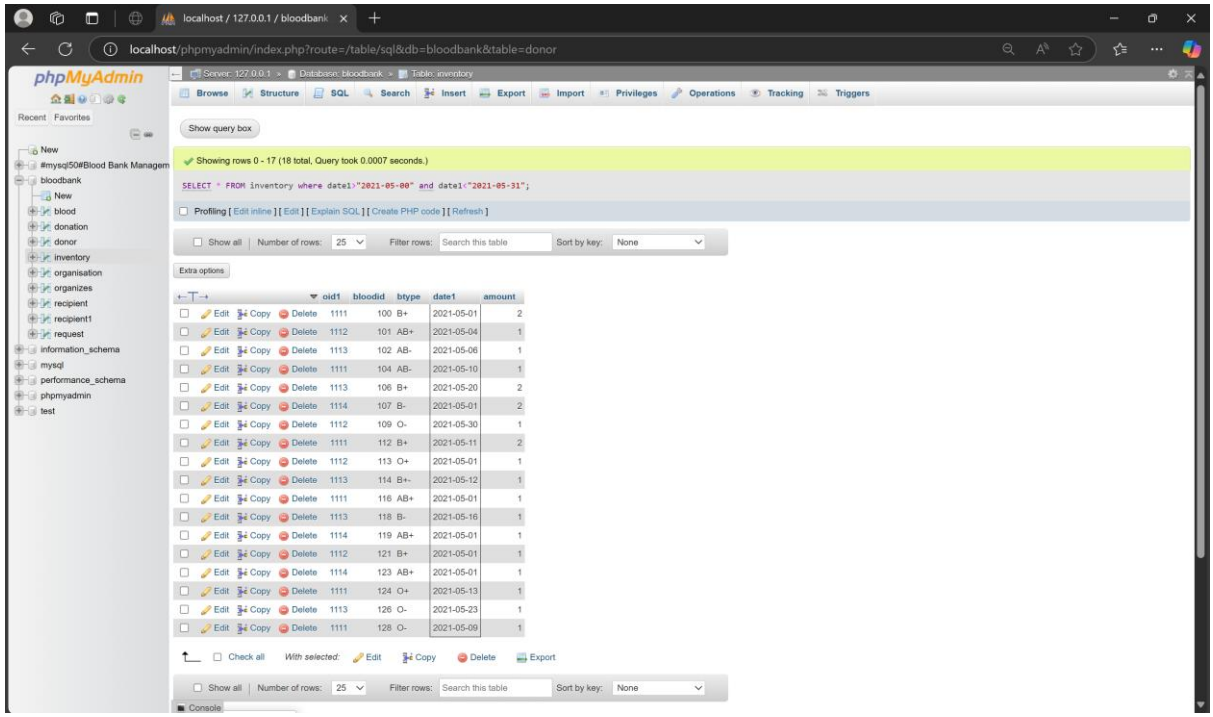
## DISPLAY TOTAL NUMBER OF DONATIONS BLOOD GROUP WISE

select blood_group,count(certificate_id) from donation group by blood_group;



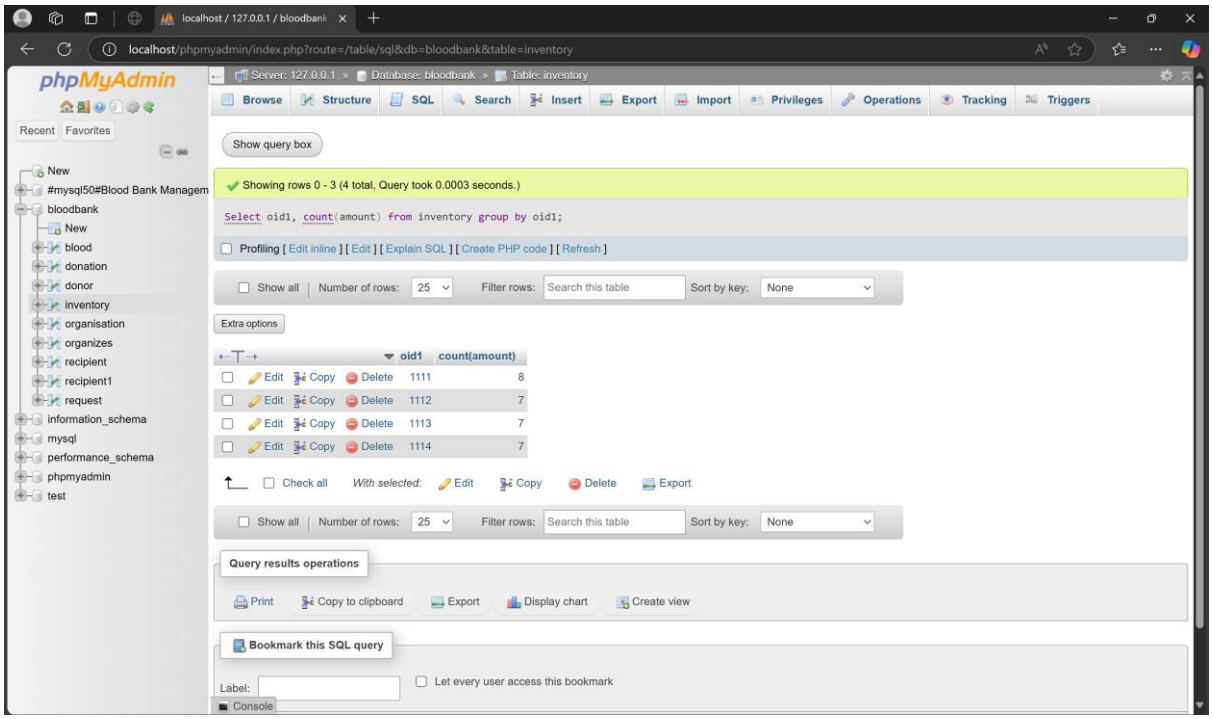

## DISPLAY ALL BLOOD SAMPLES COLLECTED IN 5TH MONTH IN THE INVENTORY

SELECT * FROM inventory where date1>"2021-05-00" and date1<"2021-05-31";



**DISPLAY COUNT OF TOTAL SAMPLES CITY WISE.**

Select oid1, count(amount) from inventory group  by oid1;




## PL/SQL QUERIES:

**WRITE A CODE TO CHECK IF THE USER HAS ENTERED VALUES ACCORDING TO THE CORRECT DATA TYPE**

```
DELIMITER //

CREATE PROCEDURE insert_donor_sample()

BEGIN

   DECLARE CONTINUE HANDLER FOR SQLEXCEPTION

   BEGIN

      SELECT 'Conversion of string to number failed' AS error_message;

   END;
```

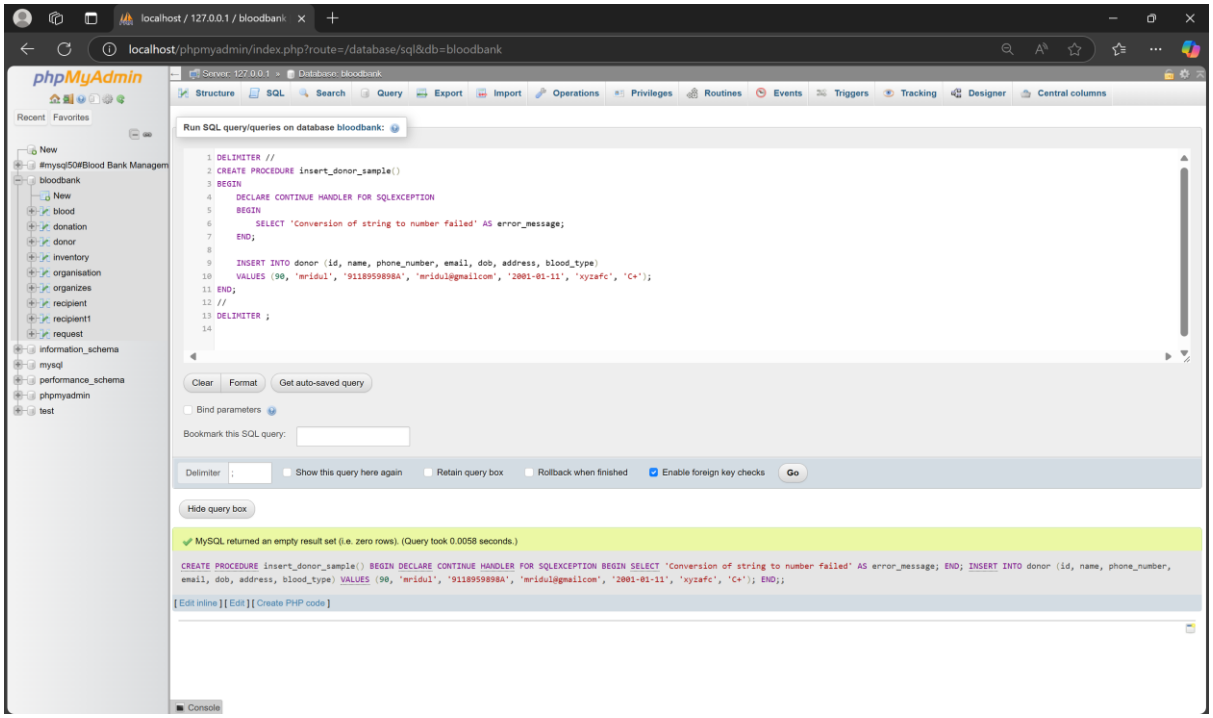
INSERT INTO donor (id, name, phone_number, email, dob, address, blood_type)

VALUES (90, 'mridul', '9118959898A', 'mridul@gmailcom', '2001-01-11', 'xyzafc', 'C+');

END;

//

DELIMITER;




**USING CURSOR:**

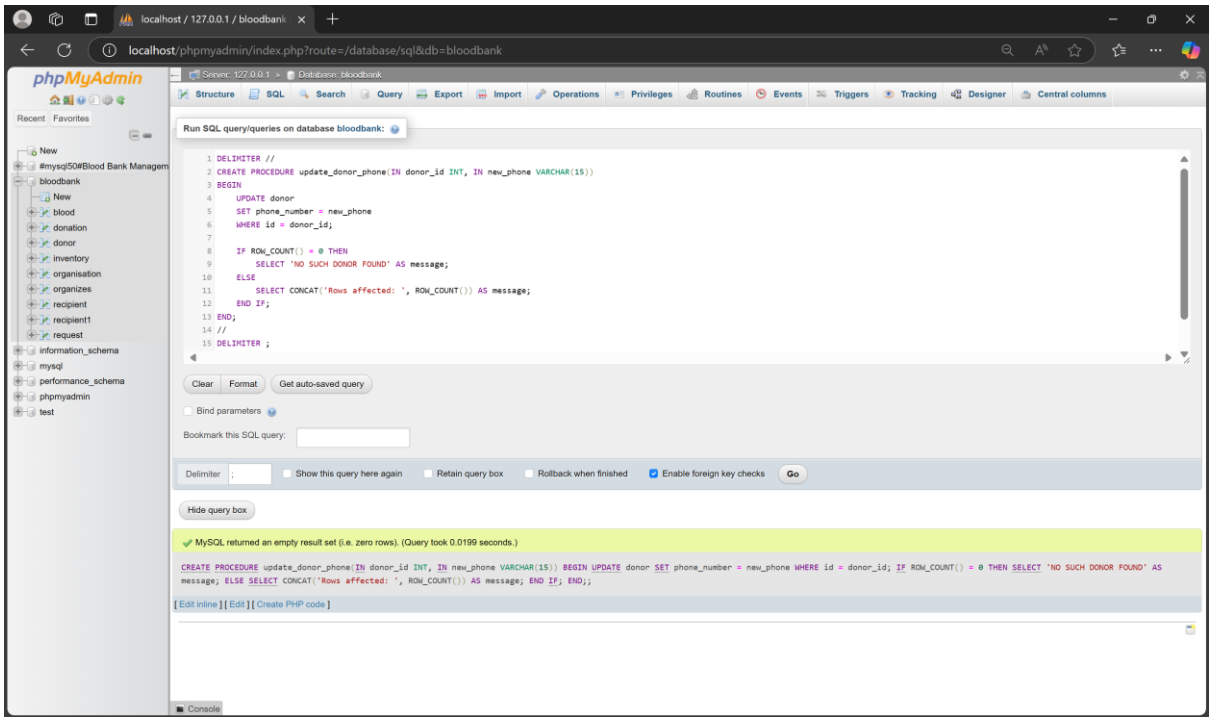
**UPDATE THE DONOR DATA BUT FIRST CHECK IF THE DONOR EXISTES ELSE RAISE EXCEPTION**

DELIMITER //

CREATE PROCEDURE update_donor_phone(IN donor_id INT, IN new_phone VARCHAR(15))

BEGIN

```
    UPDATE donor
    SET phone_number = new_phone
    WHERE id = donor_id;
    IF ROW_COUNT() = 0 THEN
        SELECT 'NO SUCH DONOR FOUND' AS message;
    ELSE
        SELECT CONCAT('Rows affected: ', ROW_COUNT()) AS message;
    END IF;
END;
//
DELIMITER;
```



# Conclusion

The Blood Bank Management System project is now complete, and it can be said that the system is an efficient way to manage blood donations and inventories. A comprehensive understanding of the relationships between various entities and their attributes is provided by the Entity Relationship Diagram (ERD) developed for the system. The ERD has made it simple for the developers to build the required tables and construct connections between them.

The required tables were created using SQL instructions, and the procedures, functions, and triggers needed for the system to operate correctly were written using PL/SQL commands. To guarantee data consistency and integrity, the tables were built with the proper attributes and constraints.

Overall, the use of a well-designed ERD, appropriate table constructions, and efficient SQL and PL/SQL commands allowed for the successful implementation of the Blood Bank Management System. The technology has the potential to make blood donation and inventory management more efficient, which would be advantageous to both blood donors and patients who require blood.

# References


1. LMS slides for SQL, PL SQL commands and ER Diagram.
2. A project for Reference: https://github.com/varunsardana004/Blood-Bank-And-Donation-Management-System