

CSC 785- Information Retrieval
Project 3 – Blood Donation System
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1. Design a database: blood donation system and satisfy following:

(a) A system in which data of Patient, data of donor, data of blood bank would be saved and will be interrelation with each other.

(b) DATA OF PATIENT: Patient Name, Patient Id, Patient Blood Group, Patient Disease

(c) DATA OF DONAR: Donar Name, Donar Id, Donar Blood Group, Donar Medical report, Donar Address
, Donar Contact number

(d) DATA OF BLOOD BANK: Blood Bank Name, Blood Bank Address, Blood bank Donars name, Blood Bank Contact Number, Blood Bank Address

1. **Patient Table**- The Patient table stores information about patients. It has the following attributes:

- a. PatientId: A unique identifier for each patient.
- b. PatientName: The name of the patient.
- c. BloodGroup: The blood group of the patient.
- d. PatientDisease: Any disease or medical condition the patient may have.

```
mysql> CREATE TABLE Patient ( PatientId INT PRIMARY KEY, PatientName VARCHAR(255), BloodGroup VARCHAR(5), PatientDisease VARCHAR(255) );
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> INSERT INTO Patient (PatientId, PatientName, BloodGroup, PatientDisease) VALUES
(1, 'John Doe', 'A+', 'None'), (2, 'Jane Smith', 'B-', 'Hypertension'), (3, 'Michael Johnson', 'O+', 'Diabetes'), (4, 'Emily Davis', 'AB+', 'None'), (5, 'KC Santosh', 'O-', 'Asthma'), (6, 'Srijana Raut', 'O-', 'Diabetes');
Query OK, 6 rows affected (0.01 sec)
Records: 6 Duplicates: 0 Warnings: 0
```

```
[mysql> select * from patient;
```

PatientId	PatientName	BloodGroup	PatientDisease
1	John Doe	A+	None
2	Jane Smith	B-	Hypertension
3	Michael Johnson	O+	Diabetes
4	Emily Davis	AB+	None
5	KC Santosh	O-	Asthma
6	Srijana Raut	O-	Diabetes

```
6 rows in set (0.00 sec)
```

2. **Donor Table:** The Donor table stores information about individuals who are potential blood donors. It has the following attributes:
- DonorId: A unique identifier for each donor.
 - DonorName: The name of the donor.
 - BloodGroup: The blood group of the donor.
 - MedicalReport: This field is assumed to store the medical report of the donor, but it's set as NULL for now.
 - Address: The address of the donor.
 - ContactNumber: The contact number of the donor.

```
mysql> INSERT INTO Donor (DonorId, DonorName, BloodGroup, MedicalReport, Address, ContactNumber)
-> VALUES
-> (1, 'Sarah Brown', 'A+', NULL, '123 Main St', '555-123-4567'),
-> (2, 'Robert Lee', 'B-', NULL, '456 Elm St', '555-987-6543'),
-> (3, 'Susan White', 'O+', NULL, '789 Oak St', '555-321-7890'),
-> (4, 'Sristi Raut', 'AB+', NULL, '101 Pine St', '555-555-5555'),
-> (5, 'Shreya Poudel', 'O-', NULL, '422 N Dakota', '984-123-8877');
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Donor;
```

DonorId	DonorName	BloodGroup	MedicalReport	Address	ContactNumber
1	Sarah Brown	A+	NULL	123 Main St	555-123-4567
2	Robert Lee	B-	NULL	456 Elm St	555-987-6543
3	Susan White	O+	NULL	789 Oak St	555-321-7890
4	Sristi Raut	AB+	NULL	101 Pine St	555-555-5555
5	Shreya Poudel	O-	NULL	422 N Dakota	984-123-8877

```
5 rows in set (0.00 sec)
```

3. **BloodBank Table:** The BloodBank table stores information about blood banks or centers that collect and distribute blood. It has the following attributes:
- BloodBankName: A unique identifier for each blood bank.
 - Address: The address of the blood bank.
 - DonorName: This field is intended to reference the name of the donor associated with the blood bank.

Here, while creating the table BloodBank, I got an error related to the foreign key constraint on the DonorName column. To modify an existing table in MySQL to add a UNIQUE constraint to a column, I have used the ALTER TABLE statement. In this case, I want to add a UNIQUE constraint to the DonorName column in the Donor table.

```
mysql> ALTER TABLE Donor
-> ADD CONSTRAINT UC_DonorName UNIQUE (DonorName);
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> CREATE TABLE BloodBank (DonorBloodBankName VARCHAR(255), Address VARCHAR(255), DonorName VARCHAR(255),
ContactNumber VARCHAR(15), FOREIGN
KEY (DonorName) REFERENCES Donor(DonorName) );
Query OK, 0 rows affected (0.02 sec)
```

```
[mysql> select * from BloodBank;
```

BloodBankName	Address	DonorName	ContactNumber
City Blood Bank	123 Oak Ave	Sristi Raut	555-111-2222
Community Blood Center	456 Elm St	Sarah Brown	555-222-3333
County Blood Services	202 Birch St	Shreya Poudel	555-555-6666
National Blood Center	101 Maple St	Susan White	555-444-5555
Regional Blood Bank	789 Pine St	Robert Lee	555-333-4444

```
5 rows in set (0.01 sec)
```

Example Query

Example 1 - The query will return the names of patients with the blood group 'O-' from the Patient table.

```
mysql> SELECT
-> PatientName
-> FROM
-> Patient
-> WHERE
-> BloodGroup = 'O-';
```

PatientName
KC Santosh
Srijana Raut

```
2 rows in set (0.00 sec)
```

Example 2 - The query will return the names of donors who donated blood of type 'O-' along with the corresponding BloodBankAddress and BloodBank name from the BloodBank table.

```
mysql> SELECT
->     Donor.DonorName,
->     BloodBank.Address AS BloodBankAddress,
->     BloodBank.BloodBankName
-> FROM
->     Donor
-> JOIN
->     BloodBank
-> ON
->     Donor.DonorName = BloodBank.DonorName
-> WHERE
->     Donor.BloodGroup = 'O-';
+-----+-----+-----+
| DonorName      | BloodBankAddress | BloodBankName      |
+-----+-----+-----+
| Shreya Poudel  | 202 Birch St     | County Blood Services |
+-----+-----+-----+
1 row in set (0.00 sec)
```

Findings while doing Project 3

1. Every table can have (but doesn't have to have) a primary key. The primary key of one table may also help to identify records in other tables.
 - a. Blood Bank table has no primary key i.e., ID are not mentioned.
 - b. The Blood_Bank table references the Donor table through the Donor_Name field. However, using the donor's name as a foreign key may not be the most effective way to establish this relationship because names are not guaranteed to be unique.
2. To associate as a foreign key that column should hold uniqueness in the table from where it is associated. We have DonorName in Blood Bank table which is the foreign key of Donor table. Thus, it should be unique constraint so that we can reference to foreign key as DonorName table.
3. No Direct relation between Patient's table and the Donor's table.
4. No Direct relation between Patient's table and the Blood_Bank table.
5. Blood bank Address is a duplicate column name in Blood_Bank table.
6. Also, if we go as real time then the blood group receiver and donor should also be matched while entering data.