DBMS PROJECT REVIEW II
BLOOD BANK MANAGEMENT SYSTEM

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DECEMBER 2021

ABSTRACT

This Project ‘Blood Bank Management System’ is an automated digital system that stores and retrieves the information related to blood donation. The project aims to provide an efficient and convenient way to manage Blood Bank System.

This system allows the donor or receiver to enter the system and choose his or her purpose and store the details corresponding to their need. After that he or she gets a confirmation message regarding their purpose and their slot booking details.

This system also allows the donor or receiver to register to the system and give the information such as blood group, dob, appointment, etc.

Blood Bank Management System allows the donor to store the details regarding their donation. After that the receiver who needs the blood will check the availability of blood with the help of the system. After the availability is checked, corresponding message is shown and the status in stored in the database regarding the receiving of the blood.

The relations in our project are

- Register
- Donation_details
- Receiving_details
- Donation_Status
- Receiving_Status

RELATION DESCRIPTION

- **Register**

Our Register contains First Name, Last Name, Mobile Number, User ID, DOB, Gender, Weight, Blood Group, Password, Address, Disability.

- **Donation_details**

Our Donation_details contains User ID, Donation ID, Donor Blood Group, Donating Branch, Amount of Blood Donating, Donating Date, Donating Time slot.

- **Receiving_details**

Our Receiving_details contains User ID, Receiver ID, Receiver Blood Group, Receiving Branch, Amount of Blood Receiving, Receiving Date, Receiving Time slot.

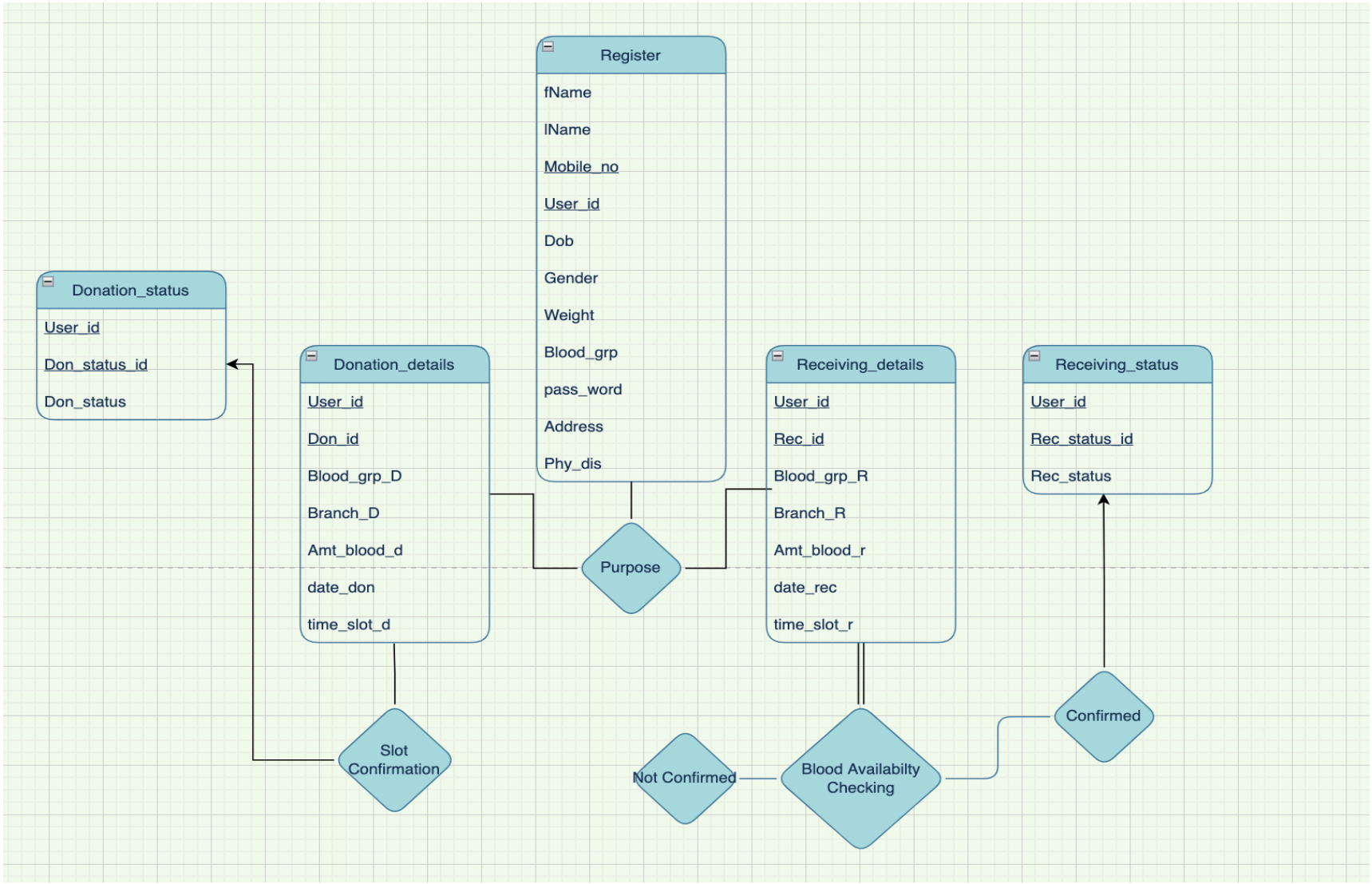
- **Donation_Status**

Our Donation_Status contains User ID, Donation status ID, Donation status like confirmed or not.

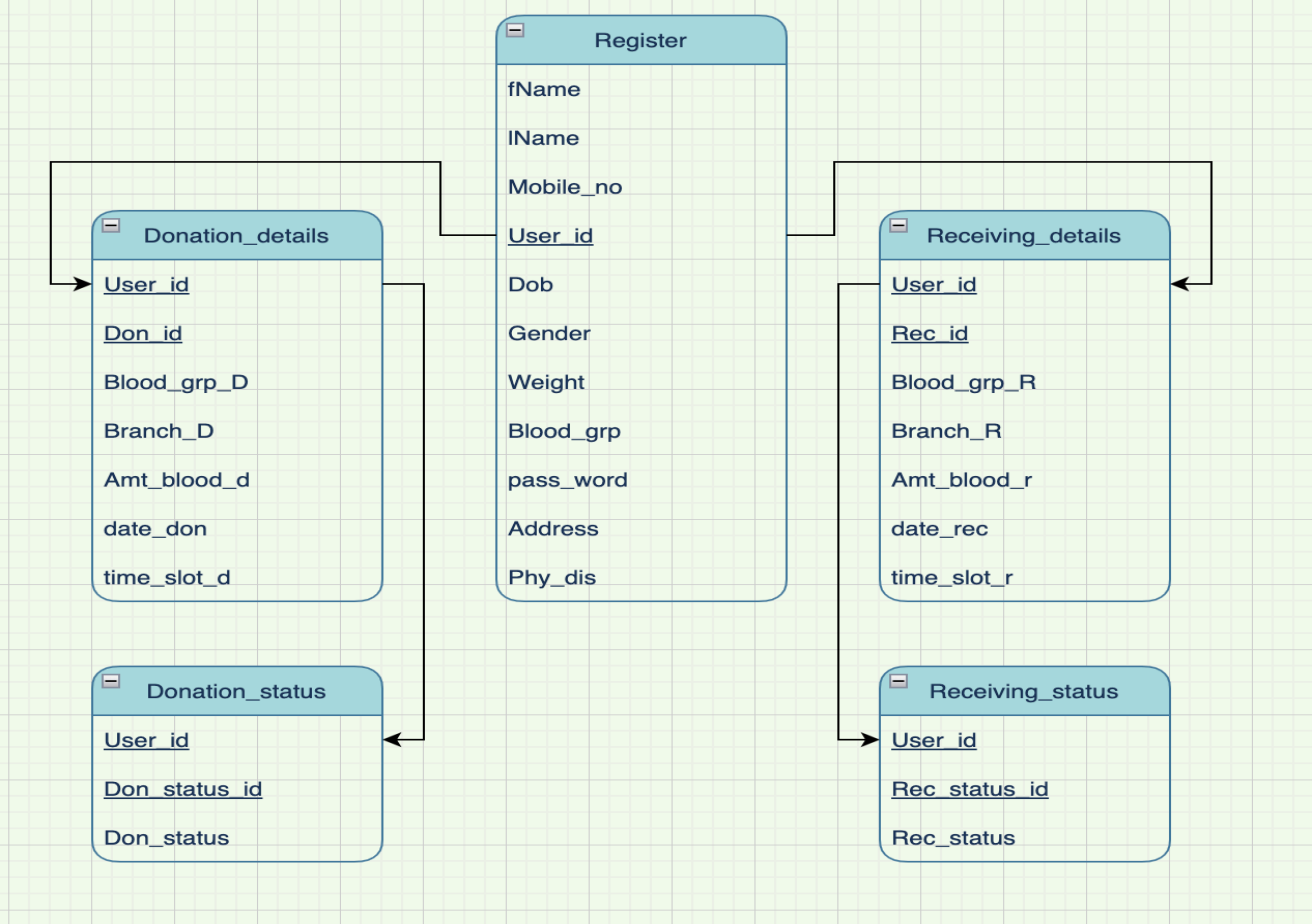
- **Receiving_Status**

Our Receiving _Status contains User ID, Receiving status ID, Receiving status like confirmed or not.

ER DIAGRAM


Register
fName
lName
Mobile_no
User_id
Dob
Gender
Weight
Blood_grp
pass_word
Address
Phy_dis
Donation_status
User_id
Don_status_id
Don_status
Donation_details
User_id
Don_id
Blood_grp_D
Branch_D
Amt_blood_d
date_don
time_slot_d
Receiving_details
User_id
Rec_id
Blood_grp_R
Branch_R
Amt_blood_r
date_rec
time_slot_r
Receiving_status
User_id
Rec_status_id
Rec_status
Purpose
Slot Confirmation
Not Confirmed
Blood Availabilty Checking
Confirmed

SCHEMA DIAGRAM



ADDITIONAL INFORMATION

- User_id - The ID assigned to a user while registering. One User will only have one User ID.
- Don_id - The ID assigned to a user while Donating. One Donor will only have one Donor ID.
- Rec_id - The ID assigned to a user while Receiving. One Donor will only have one Receiver ID.
- Don_Status_id- The ID given after confirmation of Donation.
- Rec_Status_id- The ID given after confirmation of Receiving.

Relation	Primary Key
Register	User_id
Donation_details	Don_id
Receiving_details	Rec_id
Donation_Status	Don_Status_id
Receiving_Status	Rec_Status_id

NORMALIZATION

UNIVERSAL TABLE

fName	lName	Mobile_no	User_id	Dob	Gender	Weight	Blood_grp	pass_word	Address	Phy_dis	Don_id	Blood_grp_D	Branch_D	Amt_blood_d

date_don	time_slot_d	Rec_id	Blood_grp_R	Branch_R	Amt_blood_r	date_rec	time_slot_r	Don_status_id	Don_status	Rec_status_id	Rec_status

1NF

- A relation will be 1NF if it contains an atomic value.
- It states that an attribute of a table cannot hold multiple values. It must hold only single-valued attribute.
- First normal form disallows the multi-valued attribute, composite attribute, and their combinations.

Our relation does not have multi-valued attributes and all the attributes are single valued attributes. This relation does not contain any composite attributes.

Our Universal table follows the rules of 1NF

fName	lName	Mobile_no	User_id	Dob	Gender	Weight	Blood_grp	pass_word	Address	Phy_dis	Don_id	Blood_grp_D	Branch_D	Amt_blood_d

date_don	time_slot_d	Rec_id	Blood_grp_R	Branch_R	Amt_blood_r	date_rec	time_slot_r	Don_status_id	Don_status	Rec_status_id	Rec_status

2NF

- In the 2NF, relational must be in 1NF.
- In the second normal form, all non-key attributes are fully functional dependent on the primary key

We don’t have any partial dependency and all non-key attributes are fully functional dependent on the primary key.

Following the rules of 2NF

Register

fName	lName	Mobile_no	User_id	Dob	Gender	Weight	Blood_grp	pass_word	Address	Phy_dis

Donation_details

User_id	Don_id	Blood_grp_D	Branch_D	Amt_blood_d	date_don	time_slot_d

Receiving_details

User_id	Rec_id	Blood_grp_R	Branch_R	Amt_blood_r	date_rec	time_slot_r

Donation_Status

User_id	Don_status_id	Don_status

Receiving _Status

User_id	Rec_status_id	Rec_status

3NF

- A relation will be in 3NF if it is in 2NF and not contain any transitive partial dependency.
- 3NF is used to reduce the data duplication. It is also used to achieve the data integrity.
- If there is no transitive dependency for non-prime attributes, then the relation must be in third normal form.

Since we don't have any transitive dependency for non-prime attributes our relation is in 3NF

Following the rules of 3NF

Register

fName	lName	Mobile_no	User_id	Dob	Gender	Weight	Blood_grp	pass_word	Address	Phy_dis

Donation_details

User_id	Don_id	Blood_grp_D	Branch_D	Amt_blood_d	date_don	time_slot_d

Receiving_details

User_id	Rec_id	Blood_grp_R	Branch_R	Amt_blood_r	date_rec	time_slot_r

Donation_Status

User_id	Don_status_id	Don_status

Receiving _Status

User_id	Rec_status_id	Rec_status

DDL STATEMENTS

Register

```
create table Register(
    fName VARCHAR (20) NOT NULL,
    lName VARCHAR (20) ,
    Mobile_no numeric NOT NULL,
    User_id VARCHAR (25) NOT NULL Primary key,
    Dob DATE NOT NULL,
    Gender VARCHAR(10),
    Weight INT NOT NULL,
    Blood_grp VARCHAR(10) NOT NULL,
    Pass_word VARCHAR(30) NOT NULL,
    Address VARCHAR(100),
    Phy_dis VARCHAR (5) NOT NULL
);
```

Donation_details

```
create table Donation_details(
    User_id VARCHAR (25),
    Don_id VARCHAR (25) NOT NULL Primary key ,
    Blood_grp_D VARCHAR(10) NOT NULL,
    Branch_D VARCHAR (20) NOT NULL,
    Amt_blood_D INT NOT NULL,
    Date_Don DATE NOT NULL,
    Time_slot_D VARCHAR (20) NOT NULL,
    FOREIGN KEY (user_id) REFERENCES Register(user_id)
);
```

Receiving_details

```
create table Receiving_details(
    User_id VARCHAR (25),
    Rec_id VARCHAR (25) NOT NULL Primary key,
    Blood_grp_R VARCHAR(10) NOT NULL,
    Branch_R VARCHAR (20) NOT NULL,
    Amt_blood_R INT NOT NULL,
    Date_Rec DATE NOT NULL,
    Time_slot_r VARCHAR (20) NOT NULL,
    FOREIGN KEY (user_id) REFERENCES Register(user_id)
);
```

Donation_Status

```
create table Donation_Status(
    User_id VARCHAR (25),
    Don_status_id VARCHAR (25) NOT NULL Primary key,
    Don_status VARCHAR (25) NOT NULL,
    FOREIGN KEY (user_id) REFERENCES Register(user_id)

);
```

Receiving _Status

```
create table Receiving_Status(
    User_id VARCHAR (25),
    Rec_status_id VARCHAR (25) NOT NULL Primary key,
    Rec_status VARCHAR (25) NOT NULL,
    FOREIGN KEY (user_id) REFERENCES Register(user_id)

);
```

INSERTION QUERIES

```
insert into register values
('Devesh','Kumar',8139820891,'u1','2002-11-20','M',50,'O+','nest01','Thalassery','No'),
('Sree','sankar',6282564178,'u2','2002-08-25','M',70,'A+','test02','Kannur','No'),
('Abhi',null,8768738469,'u3','1990-01-10','M',80,'A+','abhi@100','Thiruvananthapuram','No'),
('Aman','Kumar',4396808343,'u4','2000-08-15','M',60,'B+','hello30','Calicut','No'),
('Aaditya','A',0864291608,'u5','1989-04-28','M',88,'O+','lm10','Thalassery','Yes'),
('Thomas','KT',9019617186,'u6','2001-09-09','M',64,'A+','ktcr7','Kannur','No'),
('Devika','A',8656151970,'u7','1998-02-15','F',69,'AB+','nice@10','Thiruvananthapuram','No'),
('Anjali','Nair',6803197032,'u8','1999-12-20','F',64,'B+','nair122','vadakara','No');
```

```
select * from Register;
```

Notifications **Data Output** Explain Messages

	fname character varying (20)	lname character varying (20)	mobile_no numeric	user_id [PK] character varying (25)	dob date	gender character varying (10)	weight integer	blood_grp character varying (10)	pass_word character varying (30)
1	Devesh	Kumar	8139820891	u1	2002-11-20	M	50	O+	nest01
2	Sree	sankar	6282564178	u2	2002-08-25	M	70	A+	test02
3	Abhi	[null]	8768738469	u3	1990-01-10	M	80	A+	abhi@100
4	Aman	Kumar	4396808343	u4	2000-08-15	M	60	B+	hello30
5	Aaditya	A	864291608	u5	1989-04-28	M	88	O+	lm10
6	Thomas	KT	9019617186	u6	2001-09-09	M	64	A+	ktcr7
7	Devika	A	8656151970	u7	1998-02-15	F	69	AB+	nice@10
8	Anjali	Nair	6803197032	u8	1999-12-20	F	64	B+	nair122

address character varying (100)	phy_dis character varying (5)
Thalassery	No
Kannur	No
Thiruvananthapuram	No
Calicut	No
Thalassery	Yes
Kannur	No
Thiruvananthapuram	No
vadakara	No

```
insert into Donation_details values
('u1','D1','O+','Chokli',250,'2021-12-25','9:00 - 10:00'),
('u2','D2','A+','Kollam',450,'2021-11-23','10:00 - 11:00'),
('u3','D3','AB+','Kochi',350,'2022-01-25','11:00 - 12:00'),
('u4','D4','B+','Calicut',250,'2022-02-15','9:00 - 10:00');

select * from Donation_details;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	don_id [PK] character varying (25)	blood_grp_d character varying (10)	branch_d character varying (20)	amt_blood_d integer	date_don date	time_slot_d character varying (20)
1	u1	D1	O+	Chokli	250	2021-12-25	9:00 - 10:00
2	u2	D2	A+	Kollam	450	2021-11-23	10:00 - 11:00
3	u3	D3	AB+	Kochi	350	2022-01-25	11:00 - 12:00
4	u4	D4	B+	Calicut	250	2022-02-15	9:00 - 10:00

```
insert into Donation_Status values
('u1','DS1','Confirmed'),
('u2','DS2','Confirmed'),
('u3','DS3','Confirmed'),
('u4','DS4','Confirmed');
```

```
select * from Donation_Status;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	don_status_id [PK] character varying (25)	don_status character varying (25)
1	u1	DS1	Confirmed
2	u2	DS2	Confirmed
3	u3	DS3	Confirmed
4	u4	DS4	Confirmed

```
insert into Receiving_details values
('u5','R1','O+','Chokli',250,'2021-12-26','9:00 - 10:00'),
('u6','R2','AB-','Kollam',450,'2021-12-23','10:00 - 11:00'),
('u7','R3','A+','Thalassery',350,'2022-02-25','10:00 - 11:00'),
('u8','R4','B+','Calicut',250,'2022-02-20','11:00 - 12:00');
```

```
select * from Receiving_details;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	rec_id [PK] character varying (25)	blood_grp_r character varying (10)	branch_r character varying (20)	amt_blood_r integer	date_rec date	time_slot_r character varying (20)
1	u5	R1	O+	Chokli	250	2021-12-26	9:00 - 10:00
2	u6	R2	AB-	Kollam	450	2021-12-23	10:00 - 11:00
3	u7	R3	A+	Thalassery	350	2022-02-25	10:00 - 11:00
4	u8	R4	B+	Calicut	250	2022-02-20	11:00 - 12:00

```
insert into Receiving_Status values
('u5','RS1','Confirmed'),
('u6','RS2','Not Confirmed'),
('u7','RS3','Not Confirmed'),
('u8','RS4','Confirmed');
```

```
select * from Receiving_Status;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	rec_status_id [PK] character varying (25)	rec_status character varying (25)
1	u5	RS1	Confirmed
2	u6	RS2	Not Confirmed
3	u7	RS3	Not Confirmed
4	u8	RS4	Confirmed

QUERIES AND ITS RESULTS

1. **Aggregate functions, Group by...having**

```
select count(User_id) as no_users,Blood_grp from register group by Blood_grp;
```

Notifications | **Data Output** | Explain | Messages

	no_users bigint	blood_grp character varying (10)
1	1	AB+
2	3	A+
3	2	B+
4	2	O+

2. **Order by**

```
select * from Donation_details order by Amt_Blood_d desc;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	don_id [PK] character varying (25)	blood_grp_d character varying (10)	branch_d character varying (20)	amt_blood_d integer	date_don date	time_slot_d character varying (20)
1	u2	D2	A+	Kollam	450	2021-11-23	10:00 - 11:00
2	u3	D3	AB+	Kochi	350	2022-01-25	11:00 - 12:00
3	u1	D1	O+	Chokli	250	2021-12-25	9:00 - 10:00
4	u4	D4	B+	Calicut	250	2022-02-15	9:00 - 10:00

3. **Join, Outer Join**

```
select Rec_id,blood_grp_r,Receiving_Status.Rec_status
from Receiving_details
inner join Receiving_Status
on Receiving_details.user_id = Receiving_Status.user_id;
```

Notifications **Data Output** Explain Messages

	rec_id character varying (25)	blood_grp_r character varying (10)	rec_status character varying (25)
1	R1	O+	Confirmed
2	R2	AB-	Not Confirmed
3	R3	A+	Not Confirmed
4	R4	B+	Confirmed

```
select Receiving_details.User_id, Register.fName ,Register.lName
from Receiving_details
left join Register
on Receiving_details.User_id = Register.User_id;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	fname character varying (20)	lname character varying (20)
1	u5	Aaditya	A
2	u6	Thomas	KT
3	u7	Devika	A
4	u8	Anjali	Nair

4. **Query having Boolean operators**

```
select user_id, gender, Blood_grp from Register
where(Blood_grp='O+' or Blood_grp='A+') and Dob>'2002-01-01';
```

Notifications **Data Output** Explain Messages

	user_id [PK] character varying (25)	gender character varying (10)	blood_grp character varying (10)
1	u1	M	O+
2	u2	M	A+

5. **Query having arithmetic operators**

```
select user_id,Blood_grp_D,(Amt_blood_d*0.001)
as Unit_of_Blood_in_Litres from Donation_details;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)	blood_grp_d character varying (10)	unit_of_blood_in_litres numeric
1	u1	O+	0.250
2	u2	A+	0.450
3	u3	AB+	0.350
4	u4	B+	0.250

6. **A search query using string operators**

```
select fName,User_id,Gender,Blood_grp from Register
where(fName like 'A%')and (Blood_grp like '%+');
```

Notifications **Data Output** Explain Messages

	fname character varying (20)	user_id [PK] character varying (25)	gender character varying (10)	blood_grp character varying (10)
1	Abhi	u3	M	A+
2	Aman	u4	M	B+
3	Aaditya	u5	M	O+
4	Anjali	u8	F	B+

7. **Usage of to_char, extract**

```
select fName , lName , TO_CHAR(dob,'fmDD Month YYYY')
As Date_of_Birth from register where Extract (year from (dob))>2000;
```

Notifications **Data Output** Explain Messages

	fname character varying (20)	lname character varying (20)	date_of_birth text
1	Devesh	Kumar	20 November 2002
2	Sree	sankar	25 August 2002
3	Thomas	KT	9 September 2001

8. **Between, IN, Not between, Not IN**

```
select fName, lName, Dob as Date_of_Birth from Register
where(extract (Year from (Dob))between 1990 and 2002)
and (extract(month from(Dob))not between 5 and 8);
```

Notifications **Data Output** Explain Messages

	fname character varying (20)	lname character varying (20)	date_of_birth date
1	Devesh	Kumar	2002-11-20
2	Abhi	[null]	1990-01-10
3	Thomas	KT	2001-09-09
4	Devika	A	1998-02-15
5	Anjali	Nair	1999-12-20

```
select concat(fName,' ' ,lName) as Name, Mobile_no,Blood_grp from Register
where User_id in (select User_id from Donation_details );
```

Notifications **Data Output** Explain Messages

	name text	mobile_no numeric	blood_grp character varying (10)
1	Devesh Kumar	8139820891	O+
2	Sree sankar	6282564178	A+
3	Abhi	8768738469	A+
4	Aman Kumar	4396808343	B+

9. **Set operations**

```
select User_id from Register
intersect
select User_id from Receiving_details;
```

Notifications **Data Output** Explain Messages

	user_id character varying (25)
1	u8
2	u5
3	u7
4	u6

10. Subquery using EXISTS / NOT EXISTS, ANY, ALL

```
select User_id,fName, Dob from Register
where exists
(select User_id from Receiving_details where Register.User_id=Receiving_details.User_id and Amt_blood_R>300);
```

Notifications **Data Output** Explain Messages

	user_id [PK] character varying (25)	fname character varying (20)	dob date
1	u6	Thomas	2001-09-09
2	u7	Devika	1998-02-15

```
select concat(fName,' ' ,lName) as Name, Mobile_no ,Address from register
where
register.User_id = any (select User_id from Receiving_details where Amt_blood_R<400);
```

Notifications **Data Output** Explain Messages

	name text	mobile_no numeric	address character varying (100)
1	Aaditya A	864291608	Thalassery
2	Devika A	8656151970	Thiruvananthapuram
3	Anjali Nair	6803197032	vadakara

****