Title: Blood Donation management System

Scope of Database:

Gives information about blood banks and donors and also gives information about the requests and requistions done by patients and hospitals.

Description/Requirements:

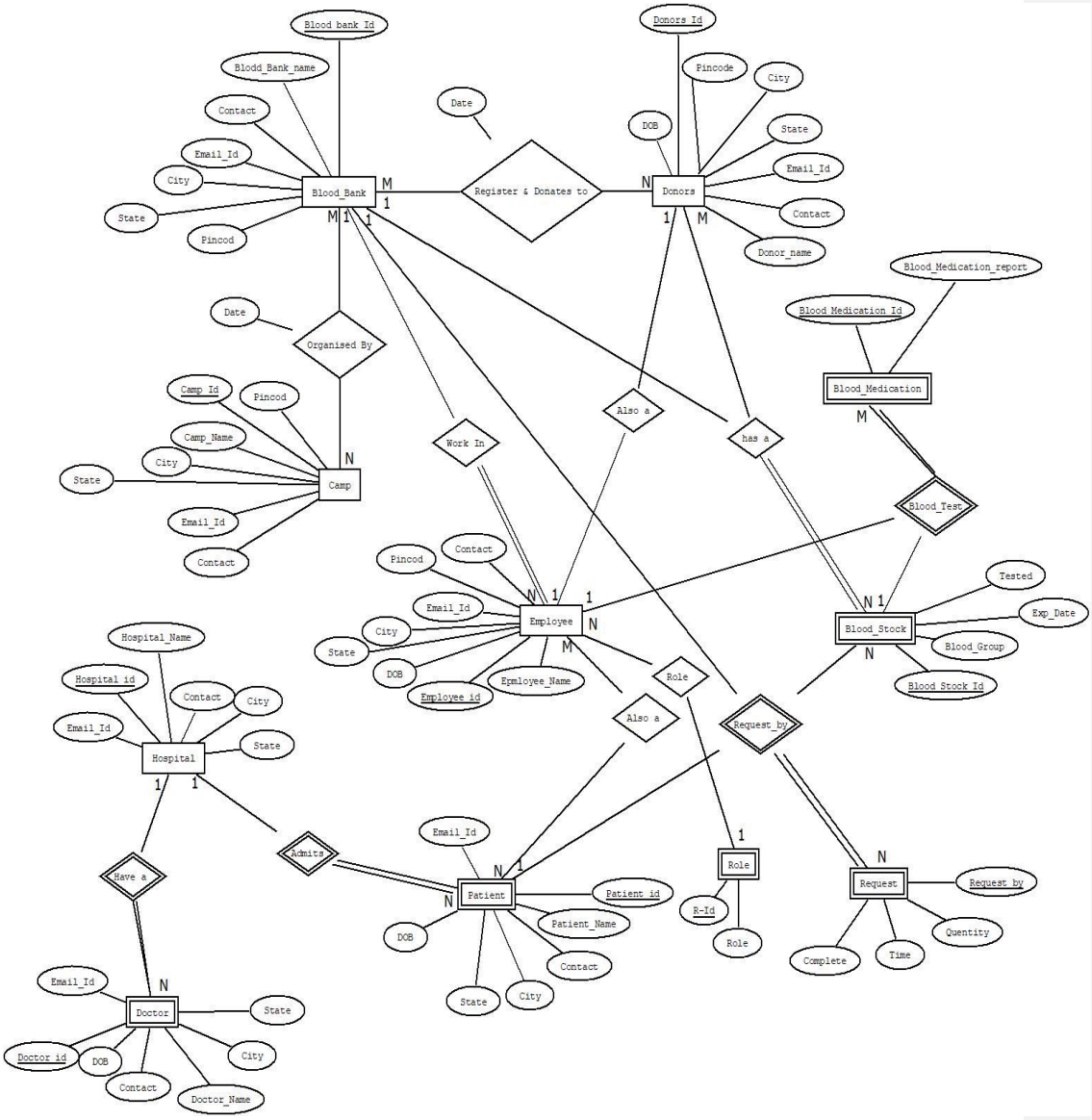
- Blood bank have their name, contact details, area, phone no, city, pin uniquely identified by the blood_bank_id.
- Each blood bank have multiple donors and each donor can donate blood in multiple blood banks.
- Blood bank has many employees identified by e_name, blood_group, dob, address, contact, city, state uniquely identified by e_id but one employee can work only in one blood bank.
- Each employee in blood bank has a associated manager and he is also a employee of that blood bank.
- Each employee has role associated with him but a role can have multiple employees associated.
- Blood bank arranges many camps identified by c_name, c_address, c_contact, c_city, c_state identified by c_id and single camp can be arranged by many blood banks.
- There is a blood stock with blood group, tested, expiry date identified by unique id.
- There is only one blood stock from one blood bank and one blood bank has only one blood stock associated.
- There can be blood bank without bloodstock but bloodstock cannot be there without a bloodbank.
- Patient details with name, contact details, blood group identified by their id.
- Each patient can be admitted in one hospital but hospital can have multiple patients.
- Each hospital can have multiple doctors but a single doctor can be only in single hospital.
- Blood medication shows medication reports and tested by which employee.
- Each employee can test many blood stock but one stock can be tested by one employee.
- Request and Requsition history showing the blood request asked for identified by the time its asked for.
- Each blood bank has many donors and each donor can donate blood in many blood banks.
- Blood stock can be requested by many patients and can be received by only one patient.
- One patient can give multiple request and multiple request can be there from one patient.
- One blood bank can have multiple request and one request can be there for multiple blood banks.

- Each bloodstock must have a single donor.
- Camp must be organized by a blood bank.
- There is one donor for the blood and that blood can be used by one patient.
- Blood is donated by the donor which is available at some blood bank.
- There cannot be medications without blood availability.
- There cannot be patients without hospitals.

Queries that the database system should be able to answer:

1) Donors available for donation as on current date.
2) Total Blood Stock Available in particular Bank.
3) Total Blood Stock Available in particular Bank and particular blood_group.
4) Show total number of request for particular blood group.
5) Patients in particular hospital.
6) Doctors in particular hospital.
7) Total number of times donor has donated blood.
8) Donations more than average number of donations done.
9) Employee who is Donor And has donated Blood.
10) Employee who is manager and donor.
11) Camp Details which is occurred atleast twice.
12) Donor Who has donated blood atleast 5 times.
13) Employee and is manager who has donated blood atleast twice.
14) Pathologist at each blood bank.
15) Blood stock from which blood_bank and from which donor.
16) Which blood group is tested by which employee.
17) Patient who is also employee.
18) Donor who has denoted blood maximum times.
19) Number of camps organized by one blood_bank.
20) Maximum Camps times a particular camp occurred and blood bank hosting that camp.
21) Which blood bank has not done a any camp.
22) All patient with their respective hospital who not request for blood .
23) A particular donors who donate blood at which blood bank .
24) no of donors available in one particular blood_bank.
25)FIND BLOOD BANK ID WHO ORGANIZED ALL THE CAMP AT LEAST ONCE.

E R Model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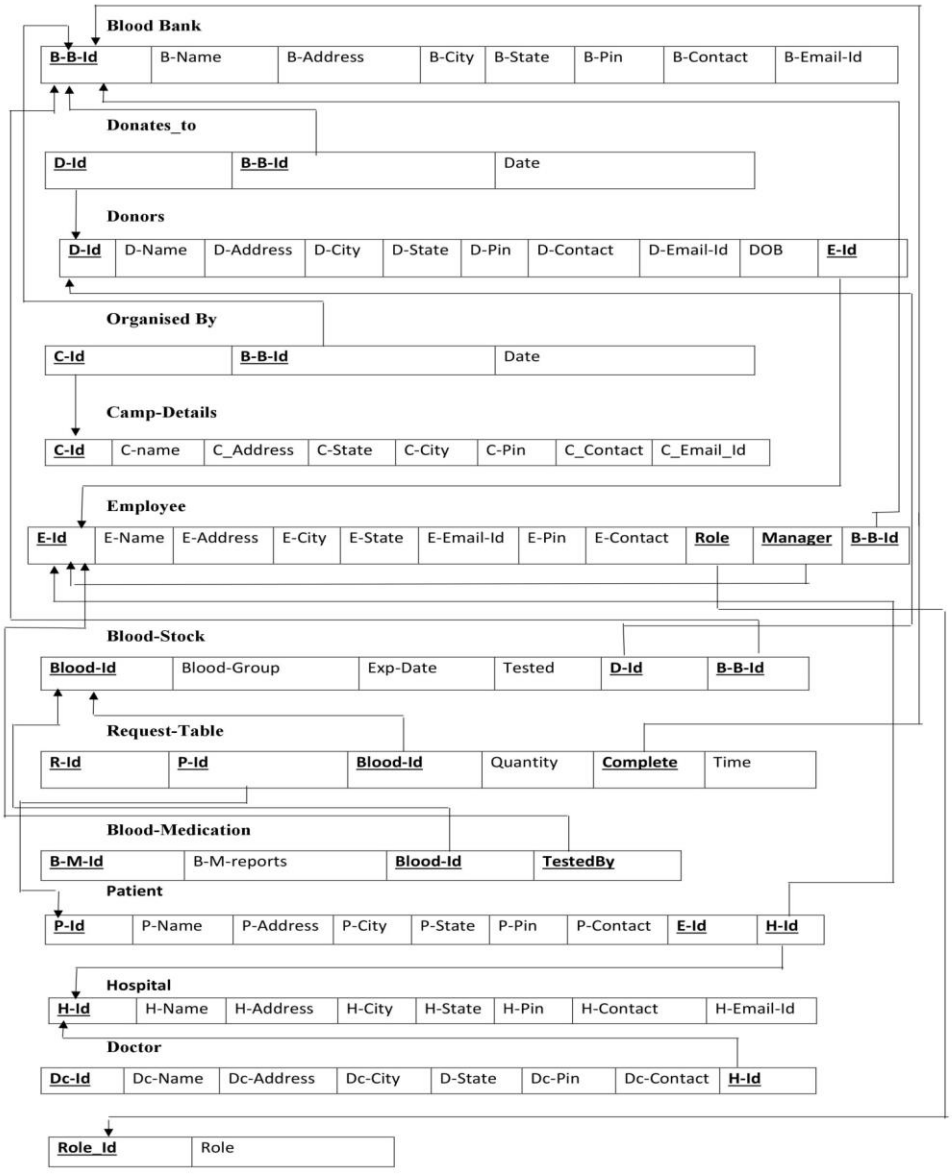
Doctor_Name

Relatioal Model



DDL

```
create schema bms;
SET search_path to bms;

CREATE TABLE blood_bank (
B_B_id integer NOT NULL PRIMARY KEY,
B_Namevarchar(30) NOT NULL,
B_Addressvarchar(50) NOT NULL,
B_Cityvarchar(20) NOT NULL,
B_pin int NOT NULL,
B_Statevarchar(20) NOT NULL,
B_Contactbigint NOT NULL,
B_Email_Idvarchar(30) NOT NULL
);

CREATE TABLE ROLE (
        role_id INTEGER NOT NULL PRIMARY KEY,
        role varchar(30) NOT NULL
);


CREATE TABLE employee (
E_id INTEGER NOT NULL PRIMARY KEY,
E_namevarchar(30) NOT NULL,
  E_DOB DATE not null,
Blood_grpvarchar(10) NOT NULL CHECK(Blood_grp IN ('O+','O-','A+','A-','B+','B-
','AB+','AB-')),
E_Addressvarchar(30) NOT NULL,
E_contactbigint NOT NULL,
E_cityvarchar(30) NOT NULL,
E_statevarchar(30) NOT NULL,
E_Email_idvarchar(30) NOT NULL,
  manager INTEGER,
B_B_id INTEGER NOT NULL,
  role INTEGER NOT NULL,
  FOREIGN KEY(B_B_ID) REFERENCES blood_bank(B_B_id) ON UPDATE CASCADE
ON DELETE RESTRICT,
  FOREIGN KEY(role) REFERENCES ROLE(role_id) ON UPDATE CASCADE ON
DELETE RESTRICT,
  FOREIGN KEY(manager) REFERENCES employee(E_id) on UPDATE CASCADE ON
DELETE SET NULL
);
```

```
CREATE TABLE donors(
D_Id INTEGER NOT NULL PRIMARY KEY,
D_Namevarchar(30) NOT NULL,
  D_DOB DATE not null,
D_Addressvarchar(30) NOT NULL,
D_Cityvarchar(20) NOT NULL,
D_Pin INTEGER NOT NULL,
D_statevarchar(20) NOT NULL,

Blood_grpvarchar(10) NOT NULL CHECK(Blood_grp IN ('O+','O-','A+','A-','B+','B-
','AB+','AB-')),
D_Contactbigint NOT NULL,
D_Email_idvarchar(30) NOT NULL,
E_id INTEGER,
  FOREIGN KEY(E_id) REFERENCES employee(E_id) on UPDATE CASCADE ON
DELETE SET NULL

);
CREATE TABLE donates_to (
D_id INTEGER NOT NULL,
B_B_id INTEGER NOT NULL,
  Date date NOT NULL,
  FOREIGN KEY(D_id) REFERENCES donors(D_Id) on UPDATE CASCADE ON DELETE
SET NULL,
  FOREIGN KEY(B_B_iD) REFERENCES blood_bank(B_B_id) ON UPDATE CASCADE
ON DELETE RESTRICT
);
CREATE TABLE camp_details(
C_Id INTEGER NOT NULL PRIMARY KEY,
C_Namevarchar(30) NOT NULL,
C_Addressvarchar(30) NOT NULL,
C_cityvarchar(30) NOT NULL,
C_Statevarchar(30) NOT NULL,
C_pin INTEGER NOT NULL,
C_Contactnumeric(10,0) NOT NULL
);

CREATE TABLE organized_by (
C_id INTEGER NOT NULL,
B_B_id INTEGER NOT NULL,
  Date date NOT NULL,
  FOREIGN KEY(C_id) REFERENCES camp_details(C_Id) on update cascade on delete set
null,
```

```
  FOREIGN KEY(B_B_id) REFERENCES blood_bank(B_B_id) ON UPDATE CASCADE
ON DELETE RESTRICT
);
CREATE TABLE hospital (
H_id INTEGER NOT NULL PRIMARY KEY,
H_namevarchar(30) NOT NULL,
H_addressvarchar(30) NOT NULL,
H_cityvarchar(30) NOT NULL,
H_statevarchar(30) NOT NULL,
H_pin INTEGER NOT NULL,
H_contactbigint NOT NULL,
H_Email_idvarchar(30) NOT NULL
);
CREATE TABLE doctors (
Dc_id INTEGER NOT NULL PRIMARY KEY,
Dc_Namevarchar(30) NOT NULL,
Dc_DOB DATE not null,
Blood_grpvarchar(10) NOT NULL CHECK(Blood_grp IN ('O+','O-','A+','A-','B+','B-
','AB+','AB-')),
Dc_Addressvarchar(30) NOT NULL,
Dc_cityvarchar(30) NOT NULL,
Dc_Statevarchar(30) NOT NULL,
Dc_pin INTEGER NOT NULL,
Dc_Contactbigint NOT NULL,
Dc_Email_idvarchar(30) NOT NULL,
H_id INTEGER NOT NULL,
  FOREIGN KEY(H_id) REFERENCES hospital(H_id) on update cascade on delete set null
);
CREATE TABLE blood_stock (
Blood_id int NOT NULL PRIMARY KEY,
Blood_groupvarchar(10) NOT NULL,
Exp_Date timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ,
  Tested varchar(6) NOT NULL,
D_Id int NOT NULL,
B_B_id INTEGER NOT NULL,
  FOREIGN KEY(D_Id) REFERENCES donors(D_Id) ON UPDATE CASCADE ON
DELETE SET NULL,
  FOREIGN KEY(B_B_ID) REFERENCES blood_bank(B_B_id) ON UPDATE CASCADE
ON DELETE RESTRICT
);
CREATE TABLE patient (
P_id INTEGER NOT NULL PRIMARY KEY,
P_namevarchar(30) NOT NULL,
  P_DOB DATE not null,
```

```
P_blood_grpvarchar(10) NOT NULL CHECK(P_blood_grp IN ('O+','O-','A+','A-','B+','B-
','AB+','AB-')),
P_addressvarchar(30) NOT NULL,
P_cityvarchar(30) NOT NULL,
P_statevarchar(30) NOT NULL,
P_pin INTEGER NOT NULL,
P_contact     bigint not null,

E_idINTEGER ,
H_idINTEGER ,
  FOREIGN KEY(E_id) REFERENCES employee(E_id) on UPDATE CASCADE ON
DELETE SET NULL,
  FOREIGN KEY(H_id) REFERENCES hospital(H_id) ON UPDATE CASCADE ON
DELETE SET NULL
);
CREATE TABLE blood_medication (
B_M_id int NOT NULL PRIMARY KEY,
B_M_reportsvarchar(10) NOT NULL,
blood_id int NOT NULL,
Tested_by int NOT NULL,
  FOREIGN KEY(blood_id) REFERENCES blood_stock(Blood_id) on update cascade on
delete set null,
  FOREIGN KEY(Tested_by) REFERENCES employee(E_id) on update cascade on delete set
null
);
CREATE TABLE reqeust_table (
R_id INTEGER NOT NULL PRIMARY KEY,
requested_by INTEGER NOT NULL,
Blood_id INTEGER NOT NULL,
completed_by INTEGER NOT NULL,
  completed BOOLEAN NOT NULL,
  time timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY(Blood_id)     REFERENCES blood_stock(Blood_id) on update cascade on
delete set null,
  FOREIGN KEY(completed_by) REFERENCES blood_bank(B_B_id)        ON UPDATE
CASCADE ON DELETE SET NULL,
  FOREIGN KEY(requested_by) REFERENCES patient(P_id) ON UPDATE CASCADE ON
DELETE SET NULL
);
```

Queries

1) Donors available for donation as on current date.

Ans) select distinct * from donors JOIN donates_to on donors.d_id = donates_to.d_id where current_date - interval '3' month>donates_to.date;

Data Output | Explain | Messages | Query History

	d_id integer	d_name character varying (30)	d_dob date	d_address character varying (30)	d_ci char	d_pin integer	d_state character varying (20)	bloc char	d_contact bigint	d_email_id character varying (30)	e_id inte	d_id inte	b_b inte	date date
1	1001	Yash Mehta	1998-0...	Indroda Circle	G...	382007	Gujarat	O+	9427660443	yash_85@gmail.com	null)	001	1	2018-01-01
2	1011	Vrushti Shah	1998-0...	Paldi	S...	394650	Gujarat	O+	8980753154	fgnfo@gmail.com	null)	011	2	2014-10-11
3	1003	Nidhi Singh	1994-0...	Mandvi	B...	370001	Gujarat	O+	9408318883	kishori_65@gmail.com	null)	003	8	2017-03-04
4	1019	Ronak Singh	1998-0...	Malad	...	394650	Gujarat	A...	8980753162	jyudada@gmail.com	null)	019	10	2017-05-19
5	1004	Sejal Shaparia	1993-0...	Ghatkoper(e)	...	382007	Maharastra	A+	7788999654	sejal@gmail.com	123	004	7	2017-04-05
6	1035	Prashil Shah	1998-0...	Bhattha	S...	394650	Gujarat	B+	8980753178	jyu489ghjg@gmail.com	null)	035	6	2015-01-07
7	1011	Vrushti Shah	1998-0...	Paldi	S...	394650	Gujarat	O+	8980753154	fgnfo@gmail.com	null)	011	9	2016-04-12
8	1006	Hasmukh Panchara	1998-0...	Howrah Bridge	K...	700028	West Bengal	O+	9897945920	hasu@gmail.com	null)	006	6	2016-10-06

2) Total Blood Stock Available in particular Bank.(Stock of Blood bank 1)

Ans) select count(*) from blood_stock join blood_bank on blood_stock.b_b_id = blood_bank.b_b_id where blood_bank.b_b_id=1;

Data Output | Explain | Messages | Query His

	count bigint
1	8

3) Total Blood Stock Available in particular Bank and particular blood_group.(Stock of Blood bank 1 and blood group = O+)

Ans)select count(*) from blood_stock join blood_bank on blood_stock.b_b_id = blood_bank.b_b_id where blood_bank.b_b_id=1 and blood_stock.blood_group='O+';

Data Output | Explain | Messages | Query History

	count bigint
1	3

4) Show total number of request for particular blood group.(Blood Group A+)

Ans) select * from reqeust_table as rt join blood_stock as bs on(rt.blood_id=bs.blood_id) where bs.blood_group='A+';

Data Output | Explain | Messages | Query History

	r_id integer	requested_by integer	blood_id integer	completed_by integer	completed boolean	time timestamp without time zone	blood_id integer	blood_group character varying (10)	exp_date date	tested character varying (6)	d_id integer	b_b_id integer
1	1	1	2	1	true	2018-07-16 00:00:00	2	A+	2018-12-25	No	1002	1
2	3	2	2	1	true	2018-07-22 00:00:00	2	A+	2018-12-25	No	1002	1
3	4	3	5	1	true	2018-07-25 00:00:00	5	A+	2018-09-30	yes	1002	2
4	5	4	5	1	true	2018-08-02 00:00:00	5	A+	2018-09-30	yes	1002	2
5	6	4	5	1	false	2018-08-04 00:00:00	5	A+	2018-09-30	yes	1002	2

5) Patients in particular hospital.

Ans)select * from doctors join hospital on doctors.h_id = hospital.h_idwhere hospital.h_name='Lilavati';

Data Output | Explain | Messages | Query History

	p_id integer	p_name character varying (30)	p_dob date	p_blood_grp character varying (10)	p_address character varying (30)	p_city character varying (30)	p_state character varying (30)	p_pin integer	p_contact bigint	e_id integer
1	18	KSI	1976-0...	AB+	14,Ashray Apps	Wadhwan	Gujarat	395111	7874358901	[null]
2	20	Erika Paul	1979-0...	O+	8,Kamal Soc.	Surat	Gujarat	395008	9852353438	[null]
3	30	Harsh Beniwal	2003-0...	O+	8,Kamal Soc.	Surat	Gujarat	395008	9852353438	[null]
4	1	raj mehta	1995-0...	O+	25,Ram nagar	Surat	Gujarat	395004	7874353438	101
5	10	zeel modi	1999-0...	O+	8,Kamal Soc.	Surat	Gujarat	395008	9852353438	[null]

6) Doctors in particular hospital.

Ans)select count(*) from doctors join hospital on doctors.h_id = hospital.h_id where hospital.h_name=’Lilavati’;

Data Output | Explain | Messages | Query History

	dc_id integer	dc_name character varying (30)	dc_dob date	bloc char	dc_address character varying (30)	dc_city character varying (30)	dc_state character varying (30)	dc_pin integer	dc_contact bigint	dc_email_id character varying (30)	h_id integer	h_id integer	h_n cha
1	1001	Sudhir Mehta	1995-05-...	O+	Indroda Circle	Gandhinagar	Gujarat	382007	9427660443	yash_85@gmail.com	1	1	Lila
2	1007	Denish Mehta	1975-05-...	B+	Amleshwar	Bharuch	Gujarat	491111	8978546521	deep@gmail.com	1	1	Lila
3	1020	malav Bhavsar	1988-05-...	O+	Vyara	Surat	Gujarat	394650	8980753155	jyu@gmail.com	1	1	Lila

7) Total number of times donor has donated blood.

Ans) select donors.d_id,donors.d_name,count(*) from donors join donates_to on donors.d_id=donates_to.d_id group by donors.d_id order by donors.d_id;

	d_id integer	d_name character var	count bigint
1	1001	Yash Mehta	6
2	1002	Gautam M...	4
3	1003	Nidhi Singh	4
4	1004	Sejal Shap...	4
5	1005	Tejas Mehta	4
6	1006	Hasmukh ...	4
7	1007	Deep Mehta	4
8	1008	Dhwani Ks...	4
9	1009	Deven Me...	4
10	1010	Jayesh Val...	4

8) Donations more than average number of donations done.

Ans)SELECT * FROM donors WHERE d_id IN
(
SELECT d_id FROM donates_to GROUP BY d_id HAVING COUNT(d_id) >
(
SELECT avg(d_id_cnt) AS d_id_cnt_avg FROM
(
SELECT COUNT(d_id) AS d_id_cnt FROM donates_to GROUP BY d_id
) AS r1
)
);

Data Output | Explain | Messages | Query History

	d_id integer	d_name character var	d_dob date	d_address character vary	d_city character varying (20	d_pin integer	d_state character va	bloc char	d_contact bigint	d_email_ characte	e_id inte
1	1001	Yash Mehta	1998-05-21	Indroda Circ...	Gandhinagar	382007	Gujarat	O+	9427660443	yash_...	null]

9) Employee who is Donor And has donated Blood

Ans) select * from employee join donors on employee.e_id=donors.e_id;

Data Output | Explain | Messages | Query History

	e_id integer	e_name character varying (30)	e_dob date	blood_grp character varying (10)	e_address character varying (30)	e_contact bigint	e_city character varying (30)	e_state character varying (30)	e_email_id character varying (30)
1	123	Sejal Shaparia	1977-0...	A+	Ghatkoper(e)	7788999654	Mumbai	Maharastra	sejal@gmail.com
2	115	Deep Mehta	1998-0...	A+	Amleshwar	89785465210	Bharuch	Gujarat	deep@gmail.com
3	123	Sejal Shaparia	1977-0...	A+	Ghatkoper(e)	7788999654	Mumbai	Maharastra	sejal@gmail.com

10) Employee who is manager and donor.

Ans)select * from employee join donors on employee.e_id=donors.e_id where employee.manager is null;

Data Output | Explain | Messages | Notifications | Query History

	e_id integer	e_name character varying (30)	e_dob date	blood_grp character varying (10)	e_address character varying (30)	e_contact bigint	e_city character varying (30)	e_state character varying (30)	e_email_id character varying (30)
1	123	Sejal Shaparia	1977-0...	A+	Ghatkoper(e)	7788999654	Mumbai	Maharastra	sejal@gmail.com

11) Camp Details which is occurred atleast twice.

Ans)

```
select name,add,state,pincode,contact,cnt from
( selectc_name as name,c_address as add,c_city as city,c_state as state ,c_pin as
pincode,c_contact as contact,count(*) as cnt from camp_details join organized_by on
camp_details.c_id = organized_by.c_id group by  camp_details.c_id
) A  wherecnt> 1;
```

Data Output | Explain | Messages | Query History

	name character varying (30)	add character varying (30)	state character varying (30)	pincode integer	contact numeric (10)	cnt bigint
1	Blue camp	Sector 10	Delhi	382001	8658912458	2

12) Donor Who has donated blood atleast5 times.

Ans)select d_name,cnt from

```
( selectd_name,count(*) as cnt from donors join donates_to on donors.d_id = donates_to.d_id
group by donors.d_id
) A  wherecnt>5;
```

Data Output | Explain | Messages

	d_name character var	cnt bigint
1	Yash Mehta	6

13) Employee and is manager who has donated blood atleast twice.

Ans)select name,cnt from

```
(select e_name as name ,count(*) as cnt from employee join donors on
employee.e_id=donors.e_id where employee.manager is null group by name )
A where cnt>1;
```

Data Output | Explain | Messages | Query History

	name character varying (30)	cnt bigint
1	Sejal Shaparia	2

14) Pathologist at each blood bank.

Ans)select e_name,b_name from employee as em join blood_bank as bb on(em.B_B_id=bb.B_B_id) join ROLE as rr on(em.role=rr.role_id) where rr.role='Pathologist' order by bb.B_B_id;

Data Output | Explain | Messages | Query History

	e_name character varying (30)	b_name character varying (30)
1	Bansi Kanani	Sunshine Blood Bank
2	Taher Mandapwala	Rotary Blood Bank
3	Vishal Tanwani	Indian Red Cross Society
4	Vivek Shamnani	Indian Red Cross Society
5	Disha Sharma	Indian Red Cross Society
6	Brij Singhala	Parishad Hospital Blood ...
7	Tehmina Shaikh	Daman Raktadan Kendra
8	Dhaval Mehta	Lions Club Blood Bank
9	Parita Mehta	Lions Club Blood Bank
10	Priya Sharma	Lions Club Blood Bank
11	Abram Sharma	Rakt Suvidha Kendra

15) Blood stock from which blood_bank and from which donor.

Ans) select blood_id,blood_group,dd.d_id,dd.d_name,bb.b_b_id,bb.b_name from blood_stock as sk join donors as dd on(sk.D_id=dd.D_id) join blood_bank as bb on(sk.B_B_Id=bb.B_B_Id);

Data Output | Explain | Messages | Query History

	blood_id integer	blood_group character varying (10)	exp_date date	tested character varying (6)	d_id integer	b_b_id integer
36	36	B+	2018-10-25	yes	1033	10
37	37	B+	2018-11-25	yes	1023	5
38	38	B+	2018-09-30	yes	1022	2
39	39	B+	2018-07-26	yes	1020	1
40	40	AB+	2018-09-25	yes	1019	2
41	41	A+	2018-09-10	yes	1018	5
42	42	B+	2018-09-12	yes	1017	6
43	43	A+	2018-09-14	yes	1018	4
44	44	B+	2018-09-16	yes	1025	3

16)Which blood group is tested by which employee.

Ans)select * from blood_stock as bs join blood_medication as bm on(bs.blood_id=bm.blood_id) join employee as em on(bm.tested_by=em.e_id) join blood_bank as bb on(em.b_b_id=bb.b_b_id);

Data Output | Explain | Messages | Query History

	blood_id integer	blood_group character varying (10)	e_name character varying (30)
1	1	O+	Vishal Tanwani
2	2	A+	Bansi Kanani
3	3	AB+	Rajesh Sharma
4	4	B+	Salman Khan
5	5	A+	Parita Mehta
6	6	O+	Parita Mehta
7	7	O+	Sejal Shaparia
8	8	AB+	Rajesh Sharma
9	9	AB+	Rishit Mehta

17) Patient who is also employee.

Ans)select * from patient as pp join employee as em on(pp.e_id=em.e_id);

Data Output | Explain | Messages | Query History

	p_id integer	p_name character varying (30)	p_dob date	p_blood_grp character varying (10)	p_address character varying (30)	p_city character varying (30)	p_state character varying (30)	p_pin integer	p_contact bigint	e_id integer
1	1	raj mehta	1995-0...	O+	25,Ram nagar	Surat	Gujarat	395004	7874353438	101
2	2	vrushti shah	1985-0...	B+	10,Mahavir Flats	Ahmedabad	Gujarat	380007	7874353789	102
3	3	laleet avaiya	1975-0...	AB+	2,Nirant Flats	Surat	Gujarat	380006	7877777438	103
4	4	yash mehta	1999-0...	A+	5,Suman Apps	Surat	Rajkot	395104	9999353438	104
5	5	vishal tanwani	1988-0...	O+	10,Devansh Flats	Junagadh	Gujarat	395224	7875678438	105
6	6	jayswee shah	1975-0...	B+	3,Dev Apps	Dhandhuka	Gujarat	395067	8901353438	106
7	11	carry minati	1985-0...	O+	25,Ram nagar	Surat	Gujarat	395004	7874353438	101

18) Donor who has denoted blood maximum times.

Ans)select donors.d_id,donors.d_name,count(*) from donors join donates_to on donors.d_id=donates_to.d_id group by donors.d_id order by donors.d_id limit 1;

Data Output | Explain | Messages | Query History

	d_id integer	d_name character varying (30)	count bigint
1	1001	Yash Mehta	6

19) Number of camps organized by one blood_bank.

Ans) select camp_details.c_id,camp_details.c_name,blood_bank.b_b_id,blood_bank.b_name,count(*) from camp_details join organized_by on camp_details.c_id=organized_by.c_id join blood_bank on organized_by.b_b_id=blood_bank.b_b_id group by camp_details.c_id,blood_bank.b_b_id order by camp_details.c_id;

Data Output | Explain | Messages | Query History

	c_id integer	c_name character varying (30)	b_b_id integer	b_name character varying (30)	count bigint
1	1	Red camp	2	Rotary Blood Bank	1
2	2	Gree camp	1	Sunshine Blood Bank	1
3	3	Blue camp	4	Parishad Hospital Blood ...	2
4	4	Read heart camp	3	Indian Red Cross Society	1
5	5	Red Cross camp	6	Daman Raktadan Kendra	1
6	6	lions club	10	Rakt Suvidha Kendra	1
7	7	Jan kalyan camp	1	Sunshine Blood Bank	1
8	8	Daiict camp	5	Holy Family Blood Bank	1
9	9	Laxmi camp	7	Lions Club Blood Bank	1

20) Maximum Camps times a particular camp occurred and blood bank hosting that camp.

Ans) select camp_details.c_id,camp_details.c_name,blood_bank.b_b_id,blood_bank.b_name,count(*) from camp_details join organized_by on camp_details.c_id=organized_by.c_id join blood_bank on organized_by.b_b_id=blood_bank.b_b_id group by camp_details.c_id,blood_bank.b_b_id order by count(*) desc limit 1;

Data Output | Explain | Messages | Query History

	c_id integer	c_name character varying (30)	b_b_id integer	b_name character varying (30)	count bigint
1	3	Blue camp	4	Parishad Hospital Blood ...	2

21) Which blood bank has not done a any camp

```
select * from blood_bank as bb join
(select b_b_id from blood_bank except select b_b_id from organized_by) as bb1 on
bb.b_b_id=bb1.b_b_id;
```

Data Output | Explain | Messages | Query History

	b_b_id integer	b_name character varying (30)	b_address character varying (50)	b_city character varying (20)	b_pin integer	b_state character varying (20)	b_contact bigint	b_email_id character varying (30)	b_b_id integer
1	9	Lions Club Blood Bank	Ghatkoper	Mumbai	400086	Maharashtra	6464647474	lions_ghatkoper@gmail.c...	9

22) All patient with their respective hospital who not request for blood

```
select bb.p_id,bb.p_name,hh.h_id,hh.h_name from patient as bb join hospital as hh on
bb.h_id=hh.h_id join
(select p_id from patient except select requested_by from reqeust_table) as bb1 on
bb.p_id=bb1.p_id;
```

Data Output | Explain | Messages | Query History

	p_id integer	p_name character varying (30)	h_id integer	h_name character varying (30)
1	22	Lana Tanwani	2	Hinduja
2	11	carry minati	5	Mother Care
3	15	parajakta kohli	2	Hinduja
4	26	Diplo	3	Prannath
5	19	Jake Paul	4	Kiran Hospital
6	30	Harsh Beniwal	1	Lilavati
7	21	Lana the Plug	6	Apollo
8	17	Logan Paul	6	Apollo
9	28	louis fonsi	4	Kiran Hospital
10	29	Daddy Yanky	4	Kiran Hospital
11	10	zeel modi	1	Lilavati
12	14	Bhuvan Bam	4	Kiran Hospital
13	13	Amit Badhana	3	Prannath
14	16	neon man	6	Apollo
15	12	Ashish Chanchlani	5	Mother Care

23) a particular donors who donate blood at which blood bank

```
select bb.* from blood_bank as bb join donates_to as dt on bb.b_b_id=dt.b_b_id join donors as
dd on dd.d_id=dt.d_id where dd.d_name='Yash Mehta';
```

Data Output | Explain | Messages | Query History

	b_b_id integer	b_name character varying (30)	b_address character varying (50)	b_city character varying (20)	b_pin integer	b_state character varying (20)	b_contact bigint	b_email_id character varying (30)
1	1	Sunshine Blood Bank	Navrangpura	Ahmedabad	380009	Gujarat	6353234123	sun_shine@gmail.com
2	10	Rakt Suvidha Kendra	Chittor	Udaipur	313001	Rajasthan	7436045684	suvidha_rakt@gmail.com

24) no of donors available in one particular blood_bank

```
select dd.d_id,dd.d_name,bb.b_b_id,bb.b_name from donors as dd join donates_to as dt on
dd.d_id=dt.d_id join blood_bank as bb on dt.b_b_id=bb.b_b_id where bb.b_name='Rakt
Suvidha Kendra';
```

Data Output | Explain | Messages | Query History

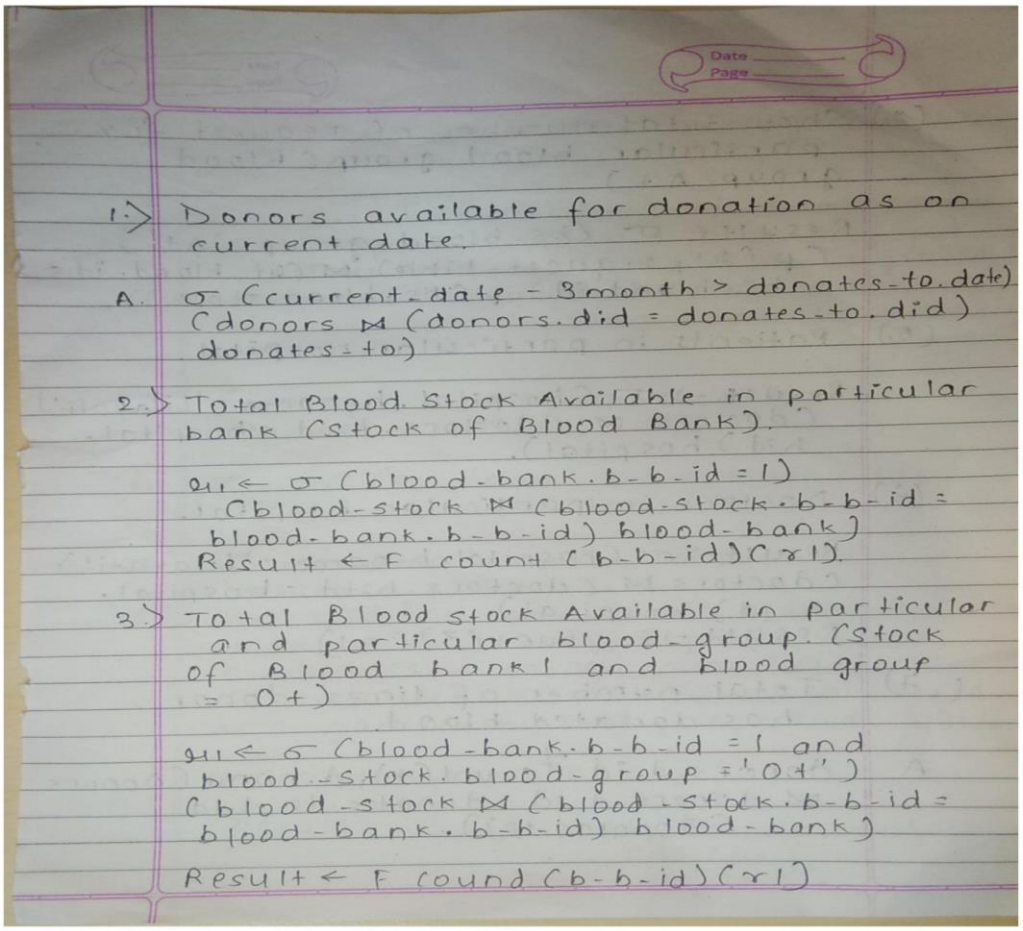
	d_id integer	d_name character varying (30)	b_b_id integer	b_name character varying (30)
1	1009	Deven Mehta	10	Rakt Suvidha Kendra
2	1019	Ronak Singh	10	Rakt Suvidha Kendra
3	1029	Kaushal Soni	10	Rakt Suvidha Kendra
4	1039	Parth Soni	10	Rakt Suvidha Kendra
5	1001	Yash Mehta	10	Rakt Suvidha Kendra
6	1010	Jayesh Valbhani	10	Rakt Suvidha Kendra
7	1020	Aagam Jain	10	Rakt Suvidha Kendra
8	1030	Parth Magnukiya	10	Rakt Suvidha Kendra
9	1040	Jaishil Bhavsar	10	Rakt Suvidha Kendra
10	1009	Deven Mehta	10	Rakt Suvidha Kendra
11	1019	Ronak Singh	10	Rakt Suvidha Kendra
12	1029	Kaushal Soni	10	Rakt Suvidha Kendra
13	1039	Parth Soni	10	Rakt Suvidha Kendra
14	1001	Yash Mehta	10	Rakt Suvidha Kendra

25) FIND BLOOD BANK ID WHO ORGANIZED ALL THE CAMP AT LEAST ONCE.

Ans)
```
select * from bms.blood_bank where b_b_id in(
select b_b_id from bms.organized_by
except
(
	select b_b_id from
	(
		select c.c_id,d.b_b_id  from bms.organized_by as d cross join bms.camp_details as
c
		except
		select d.c_id,d.b_b_id  from bms.organized_by as d
	) as r2
)
)
```

	b_b_id integer	b_name character varying (30)	b_address character varying (50)	b_city character varying (20)	b_pin integer	b_state character varying (20)	b_contact bigint	b_email_id character varying (30)
1	1	Sunshine Blood Bank	Navrangpura	Ahmedabad	380009	Gujarat	6353234123	sun_shine@gmail.com

Relational Algebra



1.> Donors available for donation as on current date.

A. σ (current_date - 3month > donates_to.date) (donors $\bowtie$ (donors.did = donates_to.did) donates_to)

2.> Total Blood Stock Available in particular bank (stock of Blood Bank).

r1 ← σ (blood_bank.b_b_id = 1) (blood_stock $\bowtie$ (blood_stock.b_b_id = blood_bank.b_b_id) blood_bank)
Result ← F count (b_b_id) (r1).

3.> Total Blood stock Available in particular and particular blood_group. (stock of Blood bank 1 and blood grouf = O+)

r1 ← σ (blood_bank.b_b_id = 1 and blood_stock.blood_group = 'O+') (blood_stock $\bowtie$ (blood_stock.b_b_id = blood_bank.b_b_id) blood_bank)

Result ← F (ound (b_b_id) (r1)

(4) Show total number of request for particular blood group (Blood group A+)

Result ← σ (bs.blood-group = 'A+') (p (rel, request-table) ⋈ (rel.blood-id = bs.blood-id) p (bs, blood-stock)).

(5) Patients in particular hospital.

Result → σ (hospital.h-name = 'Litavati' (doctors ⋈ (doctors.h-id = hospital.hid) hospital).

(6) Doctors in particular hospital.

Result → σ (hospital.h-name = 'Litavati' (doctors ⋈ (doctors.h-id = hospital.h-id) hospital)
Result → F count (*) (R1)

(7) Total number of times donor has donated blood.

A donors.d-id F count (*), d-name (Donors ⋈ donors.d-id = donates-to.d-id (donates-to)).

(8) Donations more than average number of donations done.

A. u1 ← d-id F count (d-id) → d-id cnt (donates-to)
u2 ← F avg (d-id-cnt) → d-id-cnt-avg (R1)
u3 ← σ R1.d2 id-cnt → R2.d-id-cnt-avg (R1 x R2)
Result ← Π * (Donors ⋈ donors.d-id = R3.d-id R3)

(9) Employee who is Donor and has donated Blood.

A. Π * (σ (employee) ⋈ employee.e-id = donors.e-id (donors))

(10) Camp details which occurred atleast twice.

A. i ← c-id F c-name → name, c-address → add, c-city → city, c-pin → pincode, c-contact → contact, count (*) → cnt (camp-details) ⋈ camp-details.c-id = organized-by.c-id (organized-by)).

u2 → σ cnt ≥ 1 (A)

Result ← Π name, add, city, pin, contact, cnt (R2).

(11) Donor who has donated blood atleast 5 times.

A. $A \leftarrow donors.d\text{-}id\ \mathcal{F}\ count(*) \rightarrow cnt(donors) \bowtie donors.d\text{-}id = donates\text{-}to.d\text{-}id(donates\text{-}to)$

$B \leftarrow \sigma_{cnt \geq 5}(A)$

$result \leftarrow \Pi_{d\text{-}name, cnt}(B)$.

(12) Employee e is manager who has donated blood atleast twice.

A. $A \leftarrow name\ \mathcal{F}\ count(*) \rightarrow cnt(\sigma_{employee.manager.is\ null}(employee) \bowtie employee.e\text{-}id = donors.e\text{-}id(donors))$

$B \leftarrow \sigma_{cnt > 1}(A)$

$result \leftarrow \Pi_{name, cnt}(B)$.

(13) Pathologist at each blood bank.

A. $blood\text{-}bank.b\text{-}b\text{-}id\ \mathcal{F}\ (\Pi_{e.name, b.name}(\sigma_{e1.e1.role = 'Pathologist'}(employee \rightarrow e1) \bowtie e1.role = e1e1.role\text{-}id\ (role \rightarrow e1e1)) \bowtie (e1.B\text{-}B\text{-}id = bb.B\text{-}B\text{-}id)(Blood\text{-}bank\ as\ bb)$.

(14) Blood stock from which blood bank and from which donor.

A. result ← Π (blood_id, blood_group, dd.d_id, dd.d_name, bb.b_b_id, bb.b_name) ((ρ (sk, blood_stock) ⋈ (sk.D_id = dd.D_id) ρ (dd, donors)) ⋈ (sk.B_B_id = bb.B_B_id) ρ (bb, blood_bank))

(15) which blood group is tested by which employee

result ← Π (*) (((ρ (bs, blood_stock) ⋈ (bs.blood_id = bm.blood_id) ρ (bm, blood_medication)) ⋈ (bm.tested_by = em.e_id) ρ (em, employee)) ⋈ (em.b_id = bb.b_b_id) ρ (bb, blood_bank)).

(16) patient who is also employee.

result ← Π (*) (ρ (pp, patient) ⋈ (pp.e_id = em.e_id) ρ (em, employee)).

(17) Donor who has donated blood maximum times.

P.T.O.

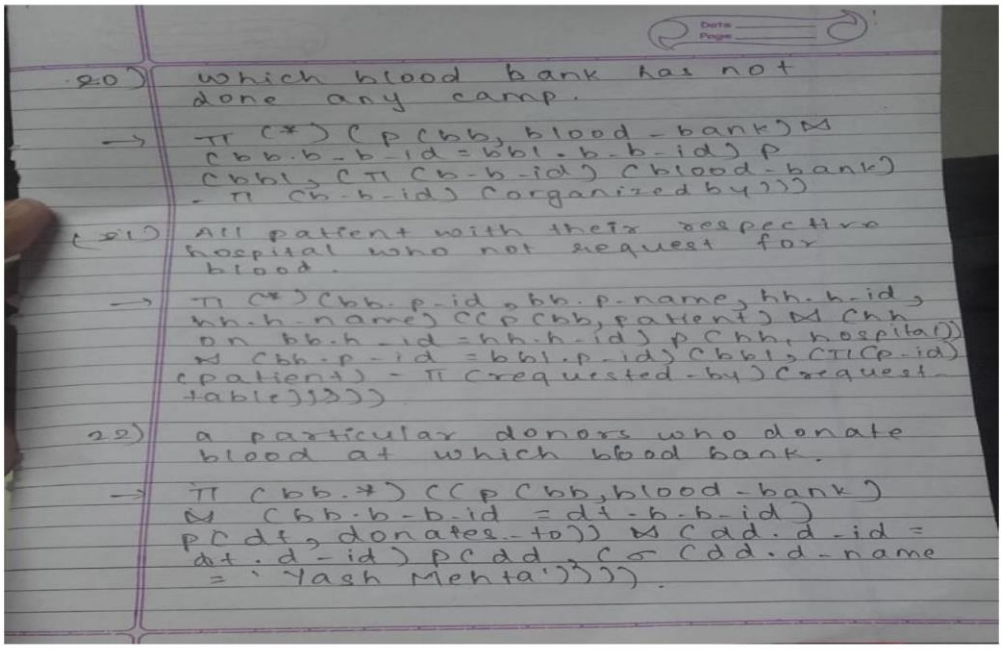
result ← (donors.d_id, donors.d_name) ℱ (count(*)) (donors ⋈ (donors.d_id = donates_to.d_id) donates_to).

(18) Number of camps organized by one blood_bank

result ← (camp_details.c_id, camp_details.c_name, blood_bank.b_b_id, blood_bank.b_name) ℱ (count(*)) ((camp_details ⋈ (camp_details.c_id = organized_by.c_id) organized_by) ⋈ (organized_by.b_b_id = blood_bank.b_id) blood_bank)

(19) Maximum times a particular camp occured and blood bank hosting that camp.

result ← (camp_details.c_id, camp_details.c_name, blood_bank.b_b_id, blood_bank.b_name) ℱ (count(*)) ((camp_details ⋈ (camp_details.c_id = organized_by.c_id) organized_by) ⋈ (organized_by.b_b_id = blood_bank.b_b_id) blood_bank)



20) which blood bank has not done any camp.

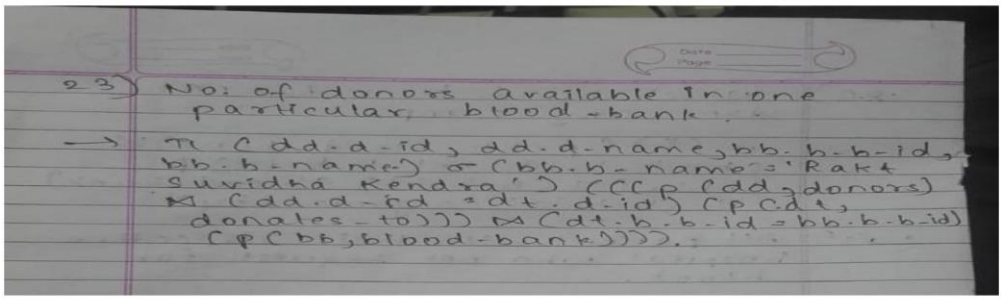
→ $\Pi(*)(\rho(bb, blood\text{-}bank) \bowtie (bb.b\text{-}b\text{-}id = bbl.b\text{-}b\text{-}id)\ \rho(bbl, (\Pi(b\text{-}b\text{-}id)(blood\text{-}bank) - \Pi(b\text{-}b\text{-}id)(organized\ by))))$

21) All patient with their respective hospital who not request for blood.

→ $\Pi(*)(bb.p\text{-}id, bb.p\text{-}name, hh.h\text{-}id, hh.h\text{-}name)((\rho(bb, patient) \bowtie (hh\ on\ bb.h\text{-}id = hh.h\text{-}id))\ \rho(hh, hospital)) \bowtie (bb.p\text{-}id = bbl.p\text{-}id)(bbl, (\Pi(p\text{-}id)(patient) - \Pi(requested\text{-}by)(request\text{-}table))))$

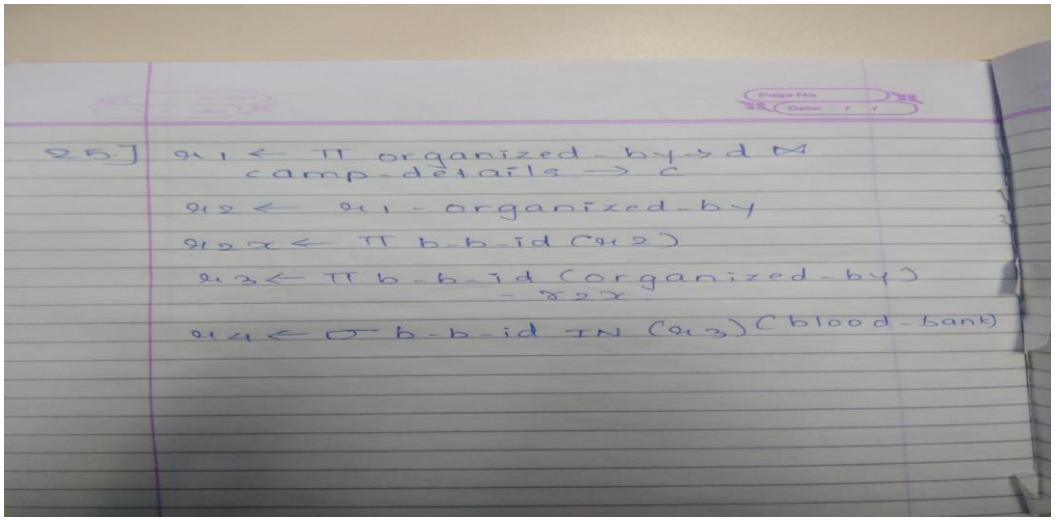
22) a particular donors who donate blood at which blood bank.

→ $\Pi(bb.*)((\rho(bb, blood\text{-}bank) \bowtie (bb.b\text{-}b\text{-}id = dt.b\text{-}b\text{-}id)\ \rho(dt, donates\text{-}to)) \bowtie (dd.d\text{-}id = dt.d\text{-}id)\ \rho(dd, (\sigma(dd.d\text{-}name = 'Yash\ Mehta'))))$.



23) No: of donors available in one particular blood-bank.

→ Π (dd.d-id, dd.d-name, bb.b-b-id, bb.b-name) σ (bb.b-name = 'Rakt Suvidha Kendra') (((ρ (dd, donors) $\bowtie$ (dd.d-id = dt.d-id) (ρ (dt, donates-to))) $\bowtie$ (dt.b-b-id = bb.b-b-id) (ρ (bb, blood-bank))))).



25] $r_1 \leftarrow \Pi$ organized-by→d $\bowtie$ camp-details → c

$r_2 \leftarrow r_1$ - organized-by

$r_2x \leftarrow \Pi$ b-b-id (r_2)

$r_3 \leftarrow \Pi$ b-b-id (organized-by) - r_2x

$r_4 \leftarrow \sigma$ b-b-id IN (r_3) (blood-bank)

Functional Dependancies of Blood Management System:

1) Table :blood_bank(Normal Form : BCNF)
   1) b_b_id->b_name
   2) b_b_id->b_address
   3) b_b_id->b_city
   4)b_b_id->b_pin
   5) b_b_id->b_state
   6)b_b_id->b_contact
   7)b_b_id->b_email_id

2) Table :blood_medication(Normal Form: BCNF)
   1)b_m_id->b_reports
   2)b_m_id->b_m_reports
   3)b_m_id->blood_id
   4)b_m_id->tested_by

3) Table :blood_stock(Normal Form: BCNF)
   1) blood_id->blood_group
   2) blood_id->exp_date
   3)blood_id->tested
   4) blood_id->d_id
   5)b_id->b_b_id

4) Table: camp_details(Normal Form: BCNF)
   1)c_id->c_name
   2)c_id->c_address
   3)c_id->c_city
   4)c_id->c_state
   5)c_id->c_pin
   6)c_id->c_contact

5)Table : doctors(Normal Form: BCNF)
   1)dc_id->dc_name
   2)dc_id->dc_dob
   3)dc_id->blood_group
   4) dc_id->dc_address
   5)dc_id->dc_city
   6)dc_id->dc_state
   7)dc_id->dc_pin
   8)dc_id->dc_contact
   9)dc_id->dc_email_id
   10)dc_id->h_id

6) Table :donates_to(Normal Form: 3NF)
   1){d_id,b_b_id}->date

7) Table: donors(Normal Form: BCNF)
   1)d_id->d_name
   2)d_id->d_dob

3)d_id->d_address
4)d_id->d_city
5)d_id->d_pin
6)d_id->d_state
7)d_id->blood_grp
8)d_id->d_contact
9)d_id->d_email_id
10)d_id->e_id

8) Table: employee(Normal Form: BCNF)

1)e_id->e_name
2)e_id->e_dob
3)e_id->blood_grp
4)e_id->e_address
5)e_id->e_contact
6)e_id->e_email_id
7)e_id->e_manager
8)e_id->e_b_b_id

9)Table : hospital(Normal Form: BCNF)

1. h_id ->h_name
2. h_id ->h_address
3. h_id ->h_city
4. h_id ->h_state
5. h_id ->h_pin
6. h_id ->h_contact
7. h_id ->h_email_id

10) Table :organized_by(Normal Form: 3NF)

{c_id,b_b_id}->date

11) Table :Table : patient(Normal Form: BCNF)

1. p_id ->p_name
2. p_id ->p_dob
3. p_id ->p_blood_group
4. p_id ->p_address
5. p_id ->p_city
6. p_id ->p_state
7. p_id ->p_pin
8. p_id ->p_contact
9. p_id ->p_e_id
10. p_id ->p_h_id

12) Table: request_table(Normal Form: 3NF)

1. {r_id,requested_by}->blood_id
2. {r_id,requested_by}->completed_by
3. {r_id,requested_by}->completed
4. {r_id,requested_by}->time

13) Table : roles(Normal Form: BCNF)

1. role_id->role