

Blood Donation Database Management System

Presented By :-

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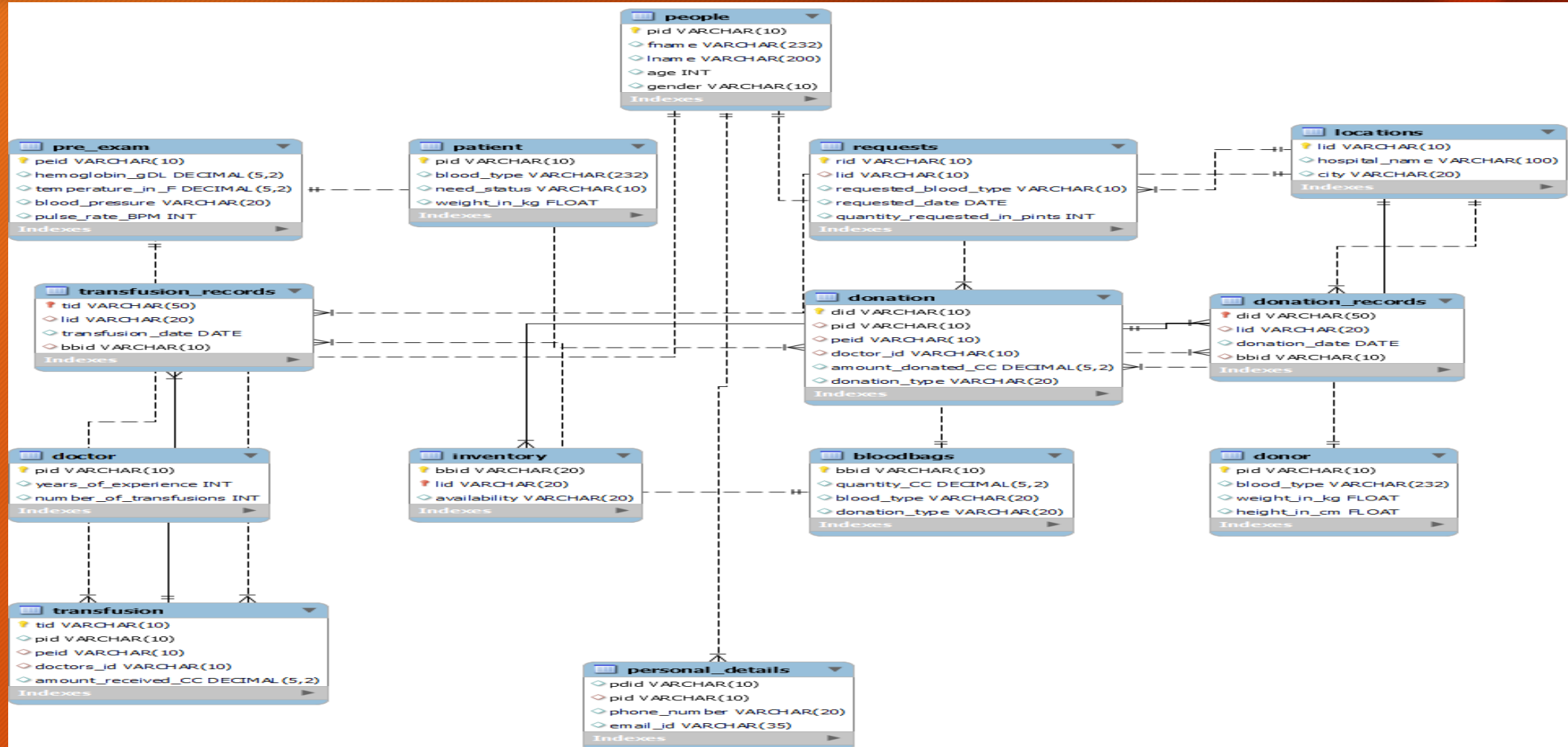
Introduction :

- This document outlines the design of a database to hold all the data for Rotary Blood Bank in regards to their blood donation division.
- This database holds all the information required for each transfusion/donation, including the required pre-exam, a global inventory to show inventory stocks at all locations, which can also be queried to narrow down to the specific location.
- The data implemented into this database is fictional.

Tables Used :

- People
- Personal_details
- Donor
- Patient
- Doctor
- Pre_exam
- Donation
- Transfusion
- Bloodbags
- Locations
- Inventory
- Requests
- Donation_records
- Transfusion_records

Entity Relationship Diagram :



Creating blooddonation database and people table and inserting values :

-The people table contains all the details of people and their common attributes.

```
CREATE DATABASE blooddonation;
USE blooddonation;
CREATE TABLE people(pid VARCHAR(10),fname VARCHAR(232),lname VARCHAR(200),age INT,gender VARCHAR(10),PRIMARY KEY(pid));
INSERT INTO people(pid,fname,lname,age,gender) VALUES("p1","tom","scott",25,"M"),
("p2","derek","muller",25,"M"),
("p3","michael","stevens",20,"M"),
("p4","alex","mccolgan",29,"M"),
("p5","hank","green",35,"M"),
("p6","nice","peter",45,"M"),
("p7","epic","lloyd",55,"M"),
("p8","kyle","hill",50,"M"),
("p9","steve","mould",45,"M"),
("p10","arvin","ash",23,"M"),
("p11","jared","owen",24,"M"),
("p12","steve","taylor",36,"M"),
("p13","james","orgill",65,"M"),
("p14","grady","hillhouse",47,"M"),
("p15","diana","cower",38,"F");
ALTER TABLE people ADD CHECK (age>18 AND age<75);
SELECT * FROM people;
```

Creating personal_details table and inserting values :

- Contains personal details of all the people like email and phone number.

```
CREATE TABLE personal_details(pdid VARCHAR(10),pid VARCHAR(10),FOREIGN KEY(pid) REFERENCES
people(pid),phone_number VARCHAR(20),email_id VARCHAR(35));
INSERT INTO personal_details(pdid,pid,phone_number,email_id) VALUES("pd1","p1","9182000000","m@gmail.com"),
("pd2","p2","9182000000","m@gmail.com"),
("pd3","p3","9182000000","m@gmail.com"),
("pd4","p4","9182000000","m@gmail.com"),
("pd5","p5","9182000000","m@gmail.com"),
("pd6","p6","9182000000","m@gmail.com"),
("pd7","p7","9182000000","m@gmail.com"),
("pd8","p8","9182000000","m@gmail.com"),
("pd9","p9","9182000000","m@gmail.com"),
("pd10","p10","9182000000","m@gmail.com"),
("pd11","p11","9182000000","m@gmail.com"),
("pd12","p12","9182000000","m@gmail.com"),
("pd13","p13","9182000000","m@gmail.com"),
("pd14","p14","9182000000","m@gmail.com"),
("pd15","p15","9182000000","m@gmail.com");
SELECT * FROM personal_details;
```

Creating donor table and inserting values :

- Contains information required to be a donor

```
CREATE TABLE donor(pid VARCHAR(10),blood_type VARCHAR(232),weight_in_kg FLOAT,height_in_cm FLOAT,PRIMARY KEY(pid));
INSERT INTO donor(pid,blood_type,weight_in_kg,height_in_cm) VALUES("p1","O+",65,175),
("p2","O-",55,170),
("p4","A+",75,171),
("p6","B+",85,172),
("p8","AB+",95,173),
("p10","AB-",58,174),
("p14","B-",68,176),
("p12","A-",78,177);
SELECT * FROM donor;
```


Creating patient table and inserting values :

- Contains all patients and their details before transfusion.

```
CREATE TABLE patient(pid VARCHAR(10),blood_type VARCHAR(232),need_status VARCHAR(10),weight_in_kg FLOAT,PRIMARY KEY(pid));
INSERT INTO patient(pid,blood_type,need_status,weight_in_kg) VALUES("p3","O+","low",60),
("p5","O-","high",70),
("p7","A+","low",80),
("p9","B+","low",90),
("p11","AB+","low",100);
SELECT * FROM patient;
```


Creating doctor table and inserting values :

- Contains details of doctors and years of experience they have.

```
CREATE TABLE doctor(pid VARCHAR(10),years_of_experience INT, number_of_transfusions INT,PRIMARY KEY(pid));  
INSERT INTO doctor(pid,years_of_experience,number_of_transfusions) VALUES("p13",5,5000),("p15",2,1500);  
SELECT * FROM doctor;
```

Creating pre_exam table and inserting values:

- Contains information about both donors and patients before and after donation and transfusion.

```
CREATE TABLE pre_exam(peid VARCHAR(10),hemoglobin_gDL DECIMAL(5,2),temperature_in_F DECIMAL(5,2),blood_pressure VARCHAR(20),pulse_rate_BPM INT,PRIMARY KEY(peid));
INSERT INTO pre_exam(peid,hemoglobin_gDL,temperature_in_F,blood_pressure,pulse_rate_BPM) VALUES("pe1",15.2,98.6,"120/80",70),
("pe2",15.2,98.6,"120/90",71),
("pe3",15.1,98.1,"120/90",72),
("pe4",15.2,98.2,"120/90",73),
("pe5",15.3,98.3,"120/90",74),
("pe6",15.4,98.4,"120/90",75),
("pe7",15.5,98.5,"120/90",76),
("pe8",15.6,98.6,"120/80",77),
("pe9",15.6,98.7,"120/80",78),
("pe10",15.2,98.8,"160/80",79),
("pe11",15.7,98.9,"150/80",80),
("pe12",15.8,99,"140/80",81),
("pe13",15.9,98.6,"130/80",82),
("pe14",15.0,98.6,"130/80",83),
("pe15",15.9,98.6,"130/80",84);
SELECT * FROM pre_exam;
```

Creating donation table and inserting values:

- Contains the basic attributes about a blood donation.

```
CREATE TABLE donation(did VARCHAR(10),pid VARCHAR(10),FOREIGN KEY(pid) REFERENCES donor(pid),peid VARCHAR(10),
FOREIGN KEY(peid) REFERENCES pre_exam(peid),doctor_id VARCHAR(10),FOREIGN KEY(doctor_id) REFERENCES people(pid),
amount_donated_CC DECIMAL(5,2),donation_type VARCHAR(20),PRIMARY KEY(did));
INSERT INTO donation(did,pid,peid,doctor_id,amount_donated_CC,donation_type) VALUES("d1","p4","pe1","p13",946,"plasma"),
("d2","p1","pe2","p13",473,"blood"),
("d3","p2","pe3","p13",473,"blood"),
("d4","p4","pe4","p15",946,"plasma"),
("d5","p6","pe5","p13",946,"platelets"),
("d6","p8","pe6","p13",473,"platelets"),
("d7","p10","pe7","p15",946,"blood"),
("d8","p12","pe8","p15",473,"plasma"),
("d9","p14","pe9","p15",946,"platelets"),
("d10","p10","pe10","p15",473,"blood");
SELECT * FROM donation;
```


Creating transfusion table and inserting values:

- Contains basic attributes about a blood transfusion.

```
CREATE TABLE transfusion(tid VARCHAR(10),pid VARCHAR(10) REFERENCES donor(pid),peid VARCHAR(10),
FOREIGN KEY(peid) REFERENCES pre_exam(peid),doctors_id VARCHAR(10),FOREIGN KEY(doctors_id) REFERENCES people(pid),amount_received_CC DECIMAL(5,2),PRIMARY KEY(tid));
INSERT INTO transfusion(tid,pid,peid,doctors_id,amount_received_CC) VALUES("t1","p3","pe11","p13",946),
("t2","p5","pe12","p15",946),
("t3","p7","pe13","p13",946),
("t4","p9","pe14","p15",946),
("t5","p11","pe15","p13",946);
SELECT * FROM transfusion;
DROP TABLE transfusion;
```

Creating bloodbags table and inserting values:

- Contains basic attributes about each blood bag.

```
CREATE TABLE bloodbags(bbid VARCHAR(10),quantity_CC DECIMAL(5,2),blood_type VARCHAR(20),donation_type VARCHAR(20),PRIMARY KEY(bbid));
INSERT INTO bloodbags(bbid,quantity_CC,blood_type,donation_type) VALUES("bb1",473,"O+","blood"),
("bb2",473,"O+","blood"),
("bb3",473,"O-","plasma"),
("bb4",473,"O-","blood"),
("bb5",473,"A+","blood"),
("bb6",473,"A+","platelets"),
("bb7",473,"A+","blood"),
("bb8",473,"O+","platelets"),
("bb9",473,"A-","blood"),
("bb10",473,"B+","plasma"),
("bb11",473,"B+","plasma"),
("bb12",473,"B-","blood"),
("bb13",473,"AB+","blood"),
("bb14",473,"AB+","plasma"),
("bb15",473,"AB-","platelets");
SELECT * FROM bloodbags;
```

Creating locations table and inserting values:

- Contains all the hospital names with their locations.

```
CREATE TABLE locations(lid VARCHAR(10),hospital_name VARCHAR(100),city VARCHAR(20),PRIMARY KEY(lid));  
INSERT INTO locations(lid,hospital_name,city) VALUES("L1","manipal hospitals","bengaluru"),  
("L2","aiims hospital","delhi");  
SELECT * FROM locations;
```


Creating inventory table and inserting values:

- Contains the global inventory of all the blood bags with the location in which they are stored.

```
CREATE TABLE inventory(bbid VARCHAR(20) REFERENCES bloodbags(bbid),lid VARCHAR(20),FOREIGN KEY(lid) REFERENCES locations(lid),availability VARCHAR(20),PRIMARY KEY(bbid,lid));
INSERT INTO inventory(bbid,lid,availability) VALUES("bb1","L1","true"),
("bb2","L1","true"),
("bb3","L1","false"),
("bb4","L1","false"),
("bb5","L1","false"),
("bb6","L2","true"),
("bb7","L2","true"),
("bb8","L2","true"),
("bb9","L2","true"),
("bb10","L2","false");
SELECT * FROM inventory;
```

Creating requests table and inserting values:

- Contains attributes describing a request from a location.

```
CREATE TABLE requests(rid VARCHAR(10),lid VARCHAR(10),FOREIGN KEY(lid) REFERENCES locations(lid),
requested_blood_type VARCHAR(10),requested_date DATE,quantity_requested_in_pints INT,PRIMARY KEY(rid));
INSERT INTO requests(rid,lid,requested_blood_type,requested_date,quantity_requested_in_pints)
VALUES("r1","L1","A+","2020-03-23",1),
("r2","L1","O+","2020-03-23",1),
("r3","L1","AB+","2020-03-23",2),
("r4","L2","A-","2020-03-23",3),
("r5","L2","AB-","2020-03-23",1),
("r6","L2","B-","2020-03-23",1);
SELECT * FROM requests;
```

Creating donation_records table and inserting values:

- Provides more detailed records of all donations.

```
CREATE TABLE donation_records(did VARCHAR(50),FOREIGN KEY(did) REFERENCES donation(did),lid VARCHAR(20),  
FOREIGN KEY(lid) REFERENCES locations(lid),donation_date DATE,bbid VARCHAR(10),FOREIGN KEY(bbid) REFERENCES bloodbags(bbid),PRIMARY KEY(did));  
INSERT INTO donation_records(did,lid,donation_date,bbid) VALUES("d1","L1","2020-03-20","bb3"),  
("d2","L1","2020-03-20","bb1"),  
("d3","L1","2020-03-20","bb2"),  
("d4","L1","2020-03-20","bb4"),  
("d5","L1","2020-03-20","bb5"),  
("d6","L2","2020-03-20","bb6"),  
("d7","L2","2020-03-20","bb7"),  
("d8","L2","2020-03-20","bb8"),  
("d9","L2","2020-03-20","bb8"),  
("d10","L2","2020-03-20","bb9");  
SELECT * FROM donation_records;
```


Creating transfusion_records table and inserting values:

- Provides more detailed records of all transfusions.

```
CREATE TABLE transfusion_records(tid VARCHAR(50),FOREIGN KEY(tid) REFERENCES transfusion(tid),lid VARCHAR(20),  
FOREIGN KEY(lid) REFERENCES locations(lid),transfusion_date DATE,bbid VARCHAR(10),FOREIGN KEY(bbid) REFERENCES bloodbags(bbid),PRIMARY KEY(tid));  
INSERT INTO transfusion_records(tid,lid,transfusion_date,bbid) VALUES("t1","L1","2020-04-23","bb1"),  
("t2","L2","2020-04-23","bb7"),  
("t3","L2","2020-04-23","bb8"),  
("t4","L1","2020-04-23","bb5"),  
("t5","L1","2020-04-23","bb4");  
SELECT * FROM transfusion_records;
```

Q) Display the details of all donors ?

- `SELECT CONCAT(fname," ",lname) AS donor_name,age,blood_type,height_in_cm,weight_in_kg,gender FROM people JOIN donor ON people.pid = donor.pid;`

	donor_name	age	blood_type	height_in_cm	weight_in_kg	gender
▶	tom scott	25	O+	175	65	M
	arvin ash	23	AB-	174	58	M
	steve taylor	36	A-	177	78	M
	grady hillhouse	47	B-	176	68	M
	derek muller	25	O-	170	55	M
	alex mccolgan	29	A+	171	75	M
	nice peter	45	B+	172	85	M
	kyle hill	50	AB+	173	95	M

Q) Display the details of all patients ?

- `SELECT CONCAT(fname," ",lname) AS patient_name,age,blood_type,weight_in_kg,gender FROM people JOIN patient ON people.pid = patient.pid;`

	patient_name	age	blood_type	weight_in_kg	gender
▶	jared owen	24	AB+	100	M
	michael stevens	20	O+	60	M
	hank green	35	O-	70	M
	epic lloyd	55	A+	80	M
	steve mould	45	B+	90	M

Q) Display the details of all doctors ?

- `SELECT CONCAT(fname, " ", lname) AS doctor_name, age, years_of_experience, number_of_transfusions, gender FROM people JOIN doctor ON people.pid = doctor.pid;`

	doctor_name	age	years_of_experience	number_of_transfusions	gender
▶	james orgill	65	5	5000	M
	diana cowerm	38	2	1500	F

Q) Display the details of patients who need blood immediately ?

- `SELECT CONCAT(fname," ",lname) AS patient_name,age,blood_type,weight_in_kg,gender FROM people JOIN patient ON people.pid = patient.pid WHERE need_status = "high";`

	patient_name	age	blood_type	weight_in_kg	gender
▶	hank green	35	O-	70	M

Q) Display the details of donors required before donation i.e pre_exam results?

- `SELECT CONCAT(fname, " ", lname) AS donor_name, hemoglobin_gDL, temperature_in_F, blood_pressure, pulse_rate_BPM FROM donation JOIN pre_exam ON donation.peid = pre_exam.peid JOIN people ON people.pid=donation.pid;`

	donor_name	hemoglobin_gDL	temperature_in_F	blood_pressure	pulse_rate_BPM
▶	alex mccolgan	15.20	98.60	120/80	70
	arvin ash	15.20	98.80	160/80	79
	tom scott	15.20	98.60	120/90	71
	derek muller	15.10	98.10	120/90	72
	alex mccolgan	15.20	98.20	120/90	73
	nice peter	15.30	98.30	120/90	74
	kyle hill	15.40	98.40	120/90	75
	arvin ash	15.50	98.50	120/90	76
	steve taylor	15.60	98.60	120/80	77
	grady hillhouse	15.60	98.70	120/80	78

Q) Display the details of patients required before transfusion i.e pre_exam results?

- `SELECT CONCAT(fname, " ", lname) AS receipient_name, hemoglobin_gDL, temperature_in_F, blood_pressure, pulse_rate_BPM FROM transfusion JOIN pre_exam ON transfusion.peid = pre_exam.peid JOIN people ON people.pid=transfusion.pid;`

	receipient_name	hemoglobin_gDL	temperature_in_F	blood_pressure	pulse_rate_BPM
▶	michael stevens	15.70	98.90	150/80	on
	hank green	15.80	99.00	140/80	150/80
	epic lloyd	15.90	98.60	130/80	82
	steve mould	15.00	98.60	130/80	83
	jared owen	15.90	98.60	130/80	84

Q) Display the full name of donors along with their blood group, amount donated, donation type and name of doctor who extracted blood ?

- `SELECT CONCAT(people.fname, " ", people.lname) AS donor_name, amount_donated_CC, donation_type, blood_type, CONCAT(p.fname, " ", p.lname) AS doctor_name FROM donation JOIN people ON people.pid = donation.pid JOIN donor ON donor.pid=people.pid JOIN people AS p ON p.pid=donation.doctor_id;`

	donor_name	amount_donated_CC	donation_type	blood_type	doctor_name
▶	tom scott	473.00	blood	O+	james orgill
	arvin ash	473.00	blood	AB-	diana cownern
	arvin ash	946.00	blood	AB-	diana cownern
	steve taylor	473.00	plasma	A-	diana cownern
	grady hillhouse	946.00	platelets	B-	diana cownern
	derek muller	473.00	blood	O-	james orgill
	alex mccolgan	946.00	plasma	A+	james orgill
	alex mccolgan	946.00	plasma	A+	diana cownern
	nice peter	946.00	platelets	B+	james orgill
	kyle hill	473.00	platelets	AB+	james orgill

Q) Display the full name of recipients along with their blood type, amount received and name of doctor who did the transfusion ?

- `SELECT CONCAT(people.fname, " ", people.lname) AS recipient_name, amount_received_CC, blood_type, CONCAT(p.fname, " ", p.lname) AS doctor_name FROM transfusion JOIN people ON people.pid = transfusion.pid JOIN patient ON patient.pid=people.pid JOIN people AS p ON p.pid=transfusion.doctors_id;`

	recipient_name	amount_received_CC	blood_type	doctor_name
▶	michael stevens	946.00	O+	james orgill
	epic lloyd	946.00	A+	james orgill
	jared owen	946.00	AB+	james orgill
	hank green	946.00	O-	diana cower
	steve mould	946.00	B+	diana cower

Q) if availability is true then how much blood of a specific type is available at a particular location ?

- `SELECT blood_type, quantity_CC * COUNT(blood_type) AS total_quantity_available, hospital_name, city, availability FROM inventory JOIN locations ON inventory.lid=locations.lid JOIN bloodbags ON bloodbags.bbid=inventory.bbid WHERE availability="true" GROUP BY blood_type;`

	blood_type	total_quantity_available	hospital_name	city	availability
▶	O+	1419.00	manipal hospitals	bengaluru	true
	A+	946.00	aiims hospital	delhi	true
	A-	473.00	aiims hospital	delhi	true

Q) display who requested a specific blood type along with the requested quantity and date ?

- `SELECT`
`rid,requested_blood_type,requested_date,quantity_requested_in_pints,hospital_name AS requested_by,city FROM requests JOIN locations ON requests.lid=locations.lid;`

	rid	requested_blood_type	requested_date	quantity_requested_in_pints	requested_by	city
►	r1	A+	2020-03-23	1	manipal hospitals	bengaluru
	r2	O+	2020-03-23	1	manipal hospitals	bengaluru
	r3	AB+	2020-03-23	2	manipal hospitals	bengaluru
	r4	A-	2020-03-23	3	aiims hospital	delhi
	r5	AB-	2020-03-23	1	aiims hospital	delhi
	r6	B-	2020-03-23	1	aiims hospital	delhi

Q) display the details of donors with recent donation dates and next safe date for donation ?

- `SELECT CONCAT(fname," ",lname) AS donor_name,donation_date,DATE_ADD(donation_date, INTERVAL + 4 MONTH) AS next_safe_date FROM donation JOIN donation_records ON donation.did = donation_records.did JOIN people ON people.pid=donation.pid;`

	donor_name	donation_date	next_safe_date
▶	tom scott	2020-03-20	2020-07-20
	arvin ash	2020-03-20	2020-07-20
	arvin ash	2020-03-20	2020-07-20
	steve taylor	2020-03-20	2020-07-20
	grady hillhouse	2020-03-20	2020-07-20
	derek muller	2020-03-20	2020-07-20
	alex mccolgan	2020-03-20	2020-07-20
	alex mccolgan	2020-03-20	2020-07-20
	nice peter	2020-03-20	2020-07-20
	kyle hill	2020-03-20	2020-07-20

Q) display total times a donor has donated and the total amount in CC order by the total amount in descending order ?

- `SELECT p.pid,p.fname,p.lname,COUNT(d.pid) AS times_donated,SUM(d.amount_donated_CC) AS totalAmount FROM people p JOIN donation d ON p.pid=d.pid GROUP BY p.pid ORDER BY totalAmount DESC;`

	pid	fname	lname	times_donated	totalAmount
►	p4	alex	mccolgan	2	1892.00
	p10	arvin	ash	2	1419.00
	p6	nice	peter	1	946.00
	p14	grady	hillhouse	1	946.00
	p1	tom	scott	1	473.00
	p2	derek	muller	1	473.00
	p8	kyle	hill	1	473.00
	p12	steve	taylor	1	473.00

Q) display details of all donations and where they donated ?

- `SELECT CONCAT(fname," ",lname) AS donor_name,amount_donated_CC,donation_date,hospital_name,city,blood_type FROM donation JOIN donation_records ON donation_records.did=donation.did JOIN people ON people.pid=donation.pid JOIN locations ON locations.lid=donation_records.lid JOIN bloodbags ON donation_records.bbid=bloodbags.bbid;`

	donor_name	amount_donated_CC	donation_date	hospital_name	city	blood_type
▶	alex mccolgan	946.00	2020-03-20	manipal hospitals	bengaluru	O-
	arvin ash	473.00	2020-03-20	aiims hospital	delhi	A-
	tom scott	473.00	2020-03-20	manipal hospitals	bengaluru	O+
	derek muller	473.00	2020-03-20	manipal hospitals	bengaluru	O+
	alex mccolgan	946.00	2020-03-20	manipal hospitals	bengaluru	O-
	nice peter	946.00	2020-03-20	manipal hospitals	bengaluru	A+
	kyle hill	473.00	2020-03-20	aiims hospital	delhi	A+
	arvin ash	946.00	2020-03-20	aiims hospital	delhi	A+
	steve taylor	473.00	2020-03-20	aiims hospital	delhi	O+
	grady hillhouse	946.00	2020-03-20	aiims hospital	delhi	O+

Q) display details of all transfusions and where they received ?

- `SELECT CONCAT(fname, " ", lname) AS
recepient_name, amount_received_CC, transfusion_date, hospital_n
ame, city, blood_type FROM transfusion JOIN transfusion_records
ON transfusion_records.tid=transfusion.tid JOIN people ON
people.pid=transfusion.pid JOIN locations ON
locations.lid=transfusion_records.lid JOIN bloodbags ON
transfusion_records.bbid=bloodbags.bbid;`

	recepient_name	amount_received_CC	transfusion_date	hospital_name	city	blood_type
▶	michael stevens	946.00	2020-04-23	manipal hospitals	bengaluru	O+
	jared owen	946.00	2020-04-23	manipal hospitals	bengaluru	O-
	steve mould	946.00	2020-04-23	manipal hospitals	bengaluru	A+
	hank green	946.00	2020-04-23	aiims hospital	delhi	A+
	epic lloyd	946.00	2020-04-23	aiims hospital	delhi	O+



Thank You

A green rectangular sign with a white border, tilted at an angle. The words "Thank You" are written in a large, white, sans-serif font. The sign is supported by two metal poles. The background is a clear blue sky with a few wispy white clouds and a bright sun in the upper right corner.