

INTRODUCTION:

A **Blood Bank Management System** is a software solution designed to streamline and automate the various operations and activities performed within a blood bank.

It encompasses a range of functionalities, including donor registration, blood inventory management, blood grouping and compatibility testing, blood issuing, and tracking of blood transfusions.

The primary objective of a BBMS is to enhance the overall efficiency, accuracy, and traceability of blood bank operations. By digitizing and automating manual processes, a BBMS helps to minimize errors, improve decision-making, and ensure the safety and availability of blood products when needed.

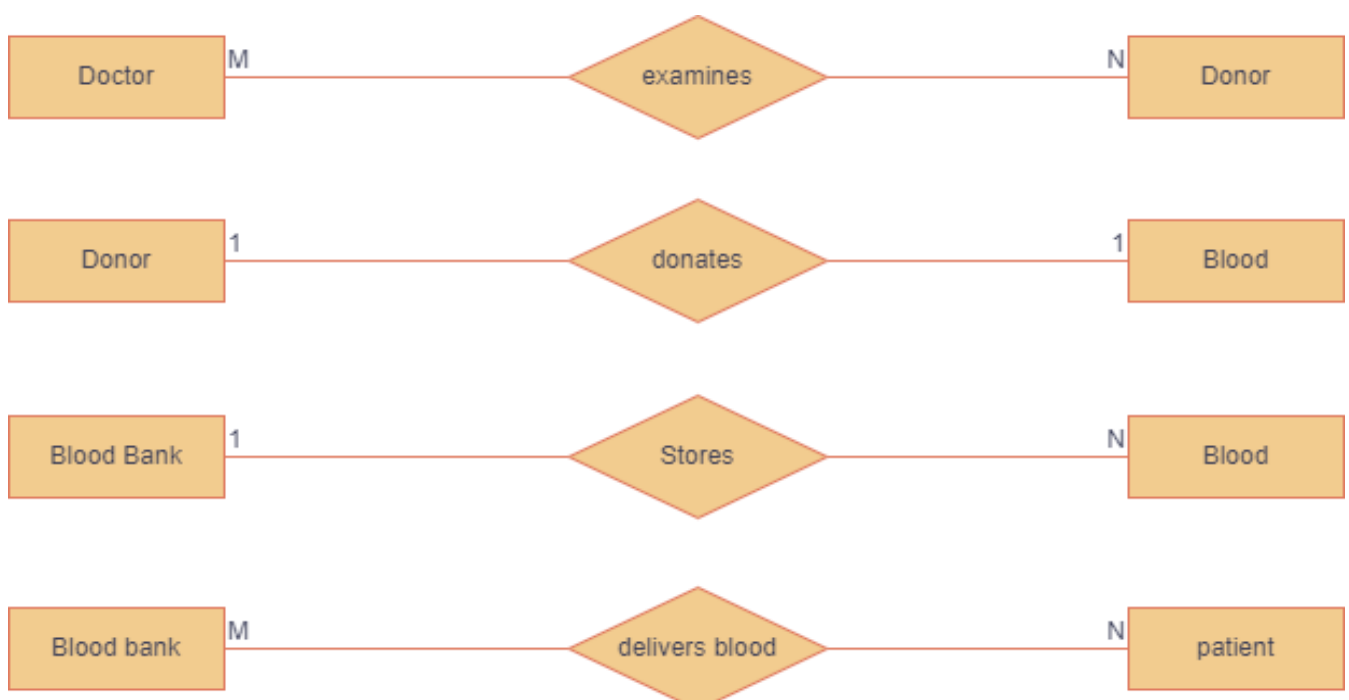
DATABASE IN A GLANCE

- Separate tables are maintained for the doctors, donors and patient along with information like dob, gender, blood group and more.
- Information about the blood is stored separately.
- The blood bank is responsible for storing the blood and deliver blood to patient.

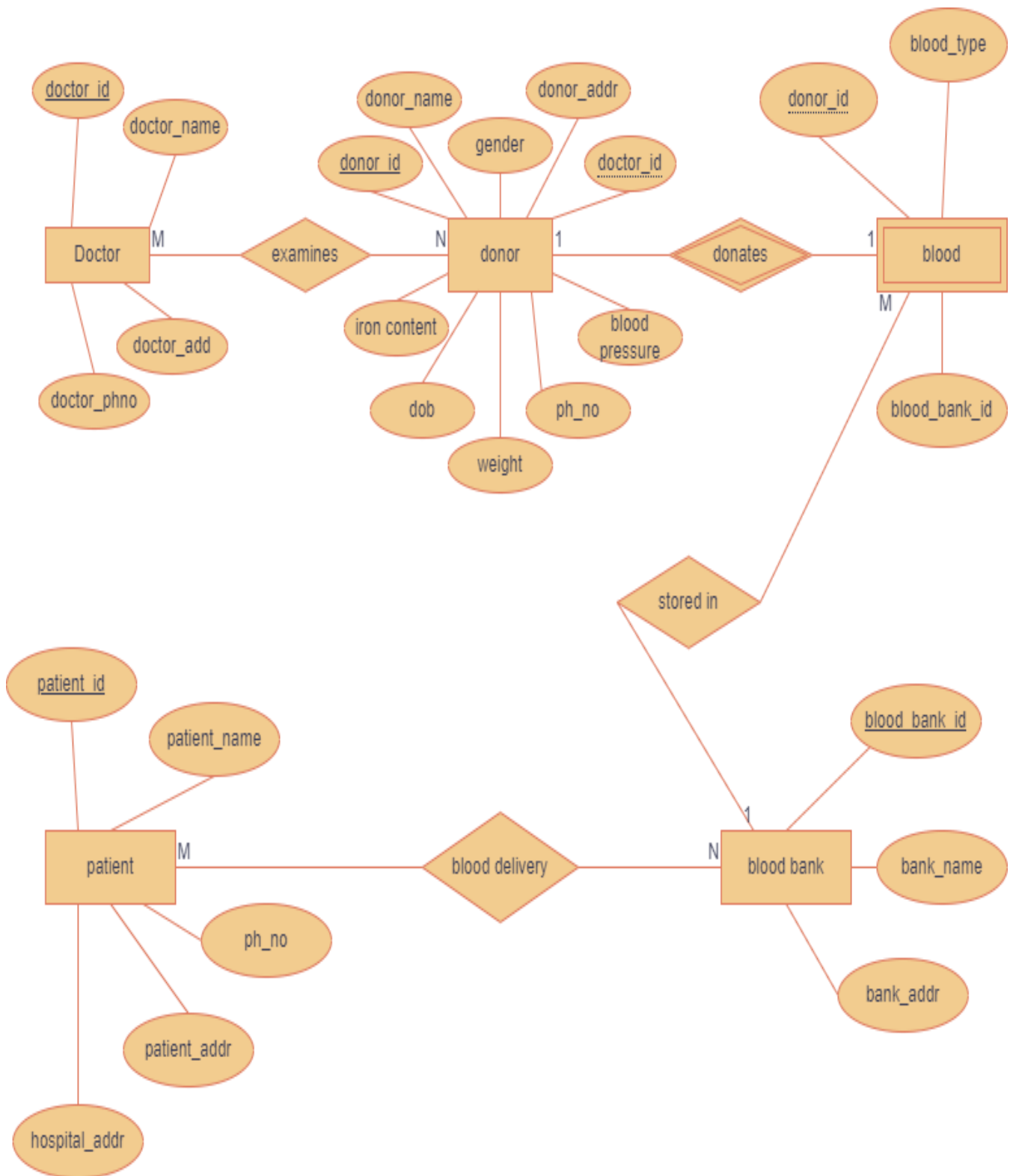
IDENTIFYING THE ENTITIES

1. Doctor
2. Donor
3. Patient
4. Blood Bank
5. Blood

IDENTIFYING THE RELATIONS



ENTITY-RELATIONSHIP DIAGRAM



SCHEMA DIAGRAM

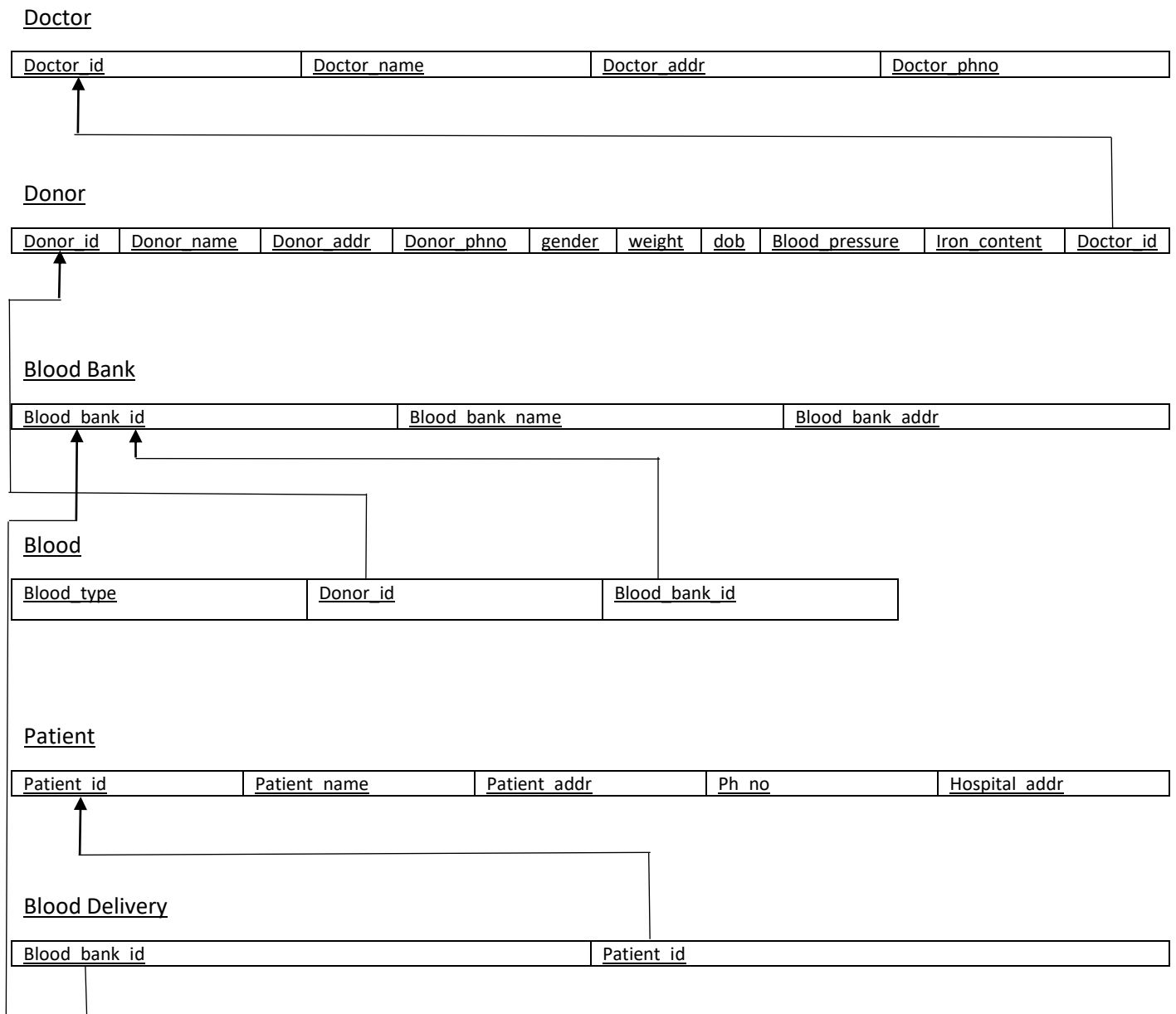


TABLE STRUCTURE

```
CREATE TABLE doctor (  
  doctor_id int not null identity,  
  doctor_name varchar(20),  
  doctor_addr varchar(50),  
  doctor_phno bigint,  
  constraint pk1 primary key (doctor_id)  
);
```

```

CREATE TABLE donor (
    donor_id int not null identity,
    donor_name varchar(20),
    donor_addr varchar(50),
    donor_phno bigint,
    dob date,
    weight int,
    gender varchar(1),
    blood_pressure int,
    iron_content int,
    doctor_id int,
    constraint pk2 primary key (donor_id),
    constraint fk1 foreign key (doctor_id) references doctor(doctor_id)
);

CREATE TABLE blood_bank
(
    blood_bank_id int not null identity,
    blood_bank_name varchar(20),
    blood_bank_addr varchar(50),
    constraint pk3 primary key (blood_bank_id)
);

CREATE TABLE patient (
    patient_id int not null identity,
    patient_name varchar(20),
    patient_phno bigint,
    patient_addr varchar(50),
    hospital_addr varchar(50),
    CONSTRAINT pk4 PRIMARY KEY (patient_id)
);

CREATE TABLE blood
(
    blood_id int not null identity,
    blood_type varchar(20),
    donor_id int,
    blood_bank_id int,
    constraint pk5 primary key(blood_id),
    constraint fk5 foreign key (donor_id) references donor(donor_id),
    constraint fk3 foreign key (blood_bank_id) references blood_bank (blood_bank_id)
);

CREATE TABLE blood_delivery
(
    blood_bank_id INT,
    patient_id INT,
    CONSTRAINT pk6 PRIMARY KEY (blood_bank_id, patient_id),
    CONSTRAINT fk3 FOREIGN KEY (blood_bank_id) REFERENCES blood_bank (blood_bank_id),
    CONSTRAINT fk4 FOREIGN KEY (patient_id) REFERENCES patient (patient_id)
);

```

INSERTING DATA

```
INSERT INTO doctor (doctor_name, doctor_addr, doctor_phno)
VALUES
```

```
  ('Dr. Smith', '123 Main Street', 1234567890),
  ('Dr. Johnson', '456 Elm Avenue', 9876543210),
  ('Dr. Williams', '789 Oak Drive', 5555555555),
  ('Dr. Davis', '321 Pine Street', 1111111111),
  ('Dr. Anderson', '567 Maple Lane', 9999999999);
```

```
INSERT INTO donor (donor_name, donor_addr, donor_phno, dob, weight, gender, blood_pressure,
iron_content, doctor_id)
```

```
VALUES
```

```
  ('Mouli Dutta', '456 Elm Street', 9876543210, '1999-02-21', 70, 'F', 120, 12, 1),
  ('Bob Smith', '789 Oak Avenue', 8765432109, '1985-08-15', 85, 'M', 130, 11, 2),
  ('Carol Davis', '321 Pine Road', 7654321098, '1992-02-20', 60, 'F', 115, 14, 3),
  ('David Wilson', '234 Maple Lane', 6543210987, '1988-11-25', 75, 'M', 125, 10, 1),
  ('Eve Anderson', '567 Cedar Court', 5432109876, '1995-04-05', 55, 'F', 110, 13, 2);
```

```
INSERT INTO blood_bank (blood_bank_name, blood_bank_addr)
```

```
VALUES
```

```
  ('Blood Bank A', '123 Main Street'),
  ('Blood Bank B', '456 Elm Street'),
  ('Blood Bank C', '789 Oak Street'),
  ('Blood Bank D', '10 Pine Street'),
  ('Blood Bank E', '25 Maple Avenue');
```

```
INSERT INTO patient (patient_name, patient_phno, patient_addr, hospital_addr)
```

```
VALUES
```

```
  ('John Doe', 1234567890, '123 Main Street', 'ABC Hospital'),
  ('Jane Smith', 9876543210, '456 Elm Street', 'XYZ Hospital'),
  ('Michael Johnson', 5555555555, '789 Oak Street', 'PQR Hospital'),
  ('Sarah Williams', 1111111111, '321 Maple Street', 'MNO Hospital'),
  ('Robert Brown', 9999999999, '654 Pine Street', 'DEF Hospital');
```

```
INSERT INTO blood (blood_type, donor_id, blood_bank_id)
```

```
VALUES
```

```
  ('A-positive', 1, 1),
  ('B-positive', 2, 2),
  ('O-positive', 3, 1),
  ('AB-positive', 4, 3),
  ('A-negative', 5, 2);
```

```
INSERT INTO blood_delivery (blood_bank_id, patient_id)
```

```
VALUES
```

```
  (1, 101),
  (1, 102),
  (2, 103),
  (3, 104),
  (3, 105);
```

QUERIES

1. Find all blood banks where blood group O-negative is not present.

```
SELECT bb.blood_bank_name
FROM blood_bank bb
LEFT JOIN blood b ON bb.blood_bank_id = b.blood_bank_id AND b.blood_type = 'O-negative'
WHERE b.blood_type IS NULL;
```

```
+-----+
| blood_bank_name |
+-----+
| Blood Bank A    |
| Blood Bank B    |
| Blood Bank C    |
| Blood Bank D    |
| Blood Bank E    |
+-----+
```

2. Find names of all the donors whose blood has been donated to some patient.

```
SELECT DISTINCT d.donor_name
FROM donor d
INNER JOIN blood b ON d.donor_id = b.donor_id
INNER JOIN blood_delivery bd ON b.blood_bank_id = bd.blood_bank_id
```

```
+-----+
| donor_name |
+-----+
| Mouli Dutta |
| Bob Smith   |
| Eve Anderson |
+-----+
```

3. List the name of all donors whose age is between 18-28 years.

```
SELECT donor_name
FROM donor
WHERE DATEDIFF(YEAR, dob, GETDATE()) BETWEEN 18 AND 28;
```

```
+-----+
| donor_name |
+-----+
| Mouli Dutta |
| Carol Davis  |
| Eve Anderson |
+-----+
```