**🩸 Blood Donation Management System – MySQL Program**

**Create database**

CREATE DATABASE BloodDonationDB;

USE BloodDonationDB;

Create Tables

-- Donors Table

CREATE TABLE Donors (

DonorID INT AUTO\_INCREMENT PRIMARY KEY,

Name VARCHAR(100),

Age INT,

BloodGroup VARCHAR(5),

Contact VARCHAR(15),

LastDonationDate DATE

);

-- Recipients Table

CREATE TABLE Recipients (

RecipientID INT AUTO\_INCREMENT PRIMARY KEY,

Name VARCHAR(100),

Age INT,

BloodGroup VARCHAR(5),

Contact VARCHAR(15),

BloodRequired INT

);

-- Donations Table

CREATE TABLE Donations (

DonationID INT AUTO\_INCREMENT PRIMARY KEY,

DonorID INT,

BloodGroup VARCHAR(5),

DonationDate DATE,

FOREIGN KEY (DonorID) REFERENCES Donors(DonorID)

);

-- Requests Table

CREATE TABLE BloodRequests (

RequestID INT AUTO\_INCREMENT PRIMARY KEY,

RecipientID INT,

BloodGroup VARCHAR(5),

UnitsRequested INT,

RequestDate DATE,

Status ENUM('Pending', 'Approved', 'Rejected'),

FOREIGN KEY (RecipientID) REFERENCES Recipients(RecipientID)

);

-- Blood Inventory Table

CREATE TABLE BloodInventory (

BloodGroup VARCHAR(5) PRIMARY KEY,

UnitsAvailable INT DEFAULT 0

);

**Initialize Blood Inventory with Common Blood Groups**

INSERT INTO BloodInventory (BloodGroup, UnitsAvailable)

VALUES

('A+', 0), ('A-', 0),

('B+', 0), ('B-', 0),

('AB+', 0), ('AB-', 0),

('O+', 0), ('O-', 0);

**Trigger: Auto-Update Inventory on Donation**

DELIMITER //

CREATE TRIGGER AfterDonation

AFTER INSERT ON Donations

FOR EACH ROW

BEGIN

UPDATE BloodInventory

SET UnitsAvailable = UnitsAvailable + 1

WHERE BloodGroup = NEW.BloodGroup;

END;

//

DELIMITER ;

**Procedure: Process Blood Request**

DELIMITER //

CREATE PROCEDURE ProcessBloodRequest(

IN recipient\_id INT,

IN blood\_group VARCHAR(5),

IN units INT

)

BEGIN

DECLARE available\_units INT;

SELECT UnitsAvailable INTO available\_units

FROM BloodInventory

WHERE BloodGroup = blood\_group;

IF available\_units >= units THEN

INSERT INTO BloodRequests (RecipientID, BloodGroup, UnitsRequested, RequestDate, Status)

VALUES (recipient\_id, blood\_group, units, CURDATE(), 'Approved');

UPDATE BloodInventory

SET UnitsAvailable = UnitsAvailable - units

WHERE BloodGroup = blood\_group;

ELSE

INSERT INTO BloodRequests (RecipientID, BloodGroup, UnitsRequested, RequestDate, Status)

VALUES (recipient\_id, blood\_group, units, CURDATE(), 'Rejected');

END IF;

END;

//

DELIMITER ;

Sample SQL Queries

**➤ Register a Donor**

INSERT INTO Donors (Name, Age, BloodGroup, Contact, LastDonationDate)

VALUES ('Rahul Sharma', 28, 'O+', '9876543210', '2025-03-01');

**➤ Register a Recipient**

INSERT INTO Recipients (Name, Age, BloodGroup, Contact, BloodRequired)

VALUES ('Aditi Verma', 35, 'O+', '9898989898', 2);

**➤ Add a Donation**

INSERT INTO Donations (DonorID, BloodGroup, DonationDate)

VALUES (1, 'O+', '2025-03-20');

🩸 Trigger will automatically increase O+ stock by 1.

**➤ Check Blood Inventory**

SELECT \* FROM BloodInventory;

**➤ Process a Blood Request**

CALL ProcessBloodRequest(1, 'O+', 2);

**Reporting Queries**

**➤ Total Units Donated by Blood Group**

SELECT BloodGroup, COUNT(\*) AS UnitsDonated

FROM Donations

GROUP BY BloodGroup;

**➤ Approved vs Rejected Requests**

SELECT Status, COUNT(\*) AS Total

FROM BloodRequests

GROUP BY Status;

**➤ Current Blood Stock**

SELECT \* FROM BloodInventory ORDER BY BloodGroup;

**➤ Most Active Donors (by donation count)**

SELECT d.Name, COUNT(\*) AS DonationsMade

FROM Donors d

JOIN Donations dn ON d.DonorID = dn.DonorID

GROUP BY d.DonorID

ORDER BY DonationsMade DESC;