BLOOD DONATION AND REQUEST PORTAL

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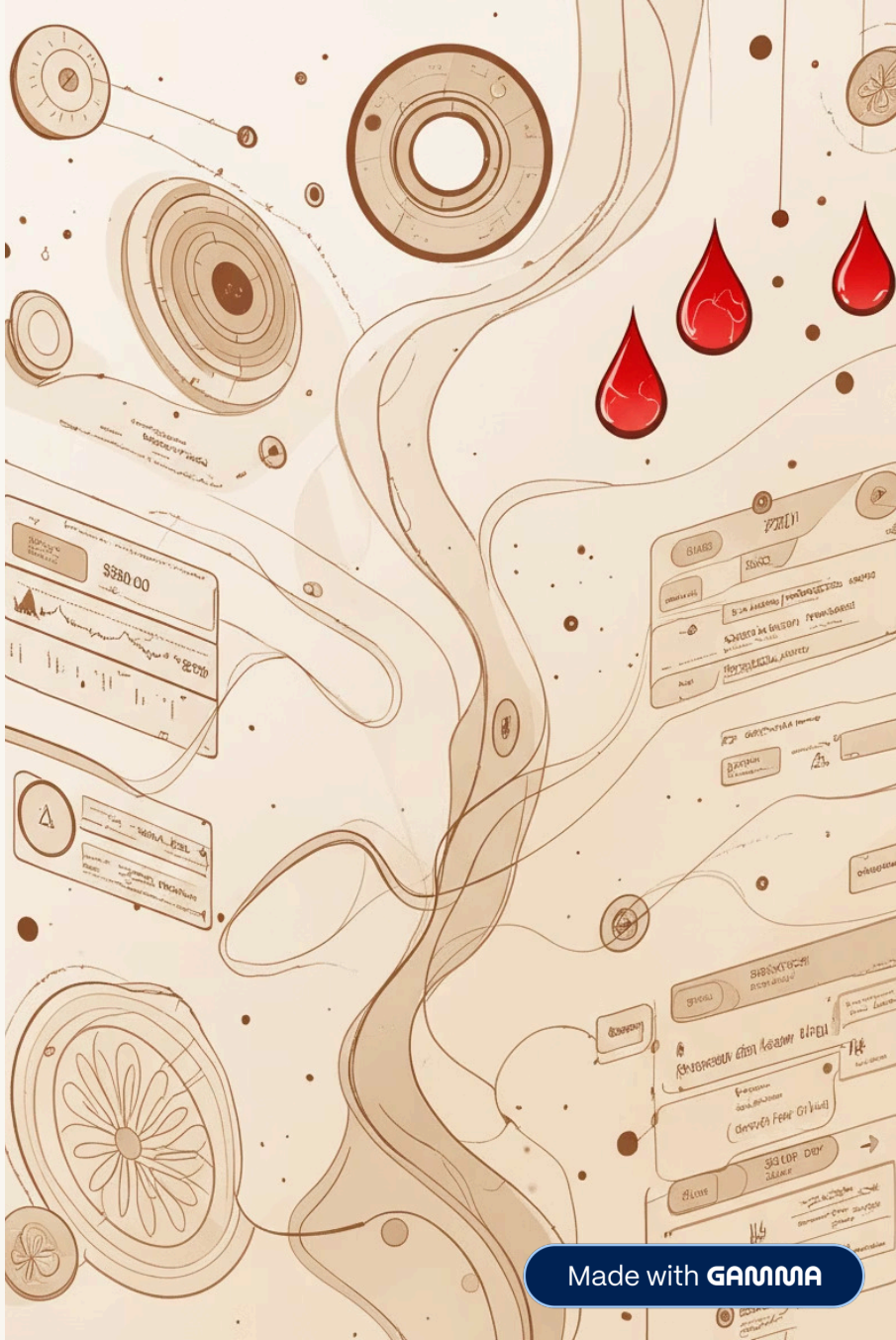
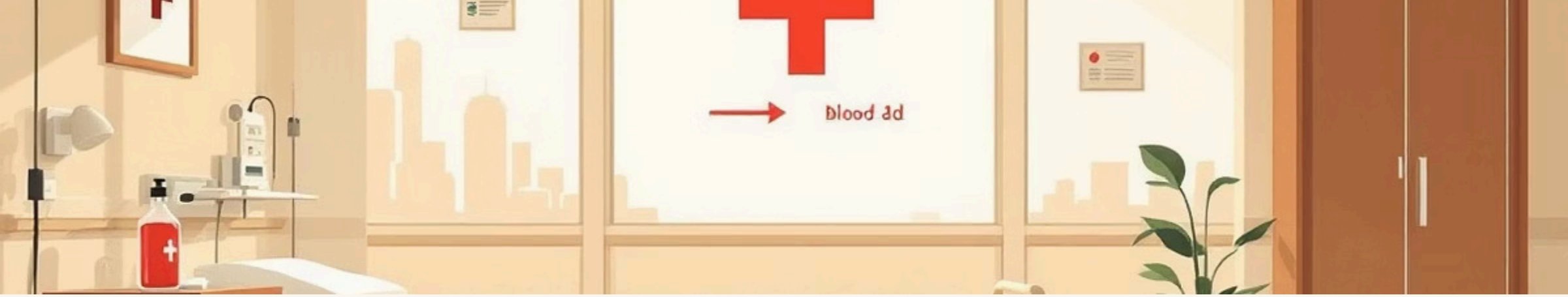




The Challenge: Bridging the Gap in Emergency Blood Needs

Finding blood donors during emergencies is often slow and challenging due to the lack of a centralized platform. Without an efficient way to track donor availability or manage blood requests, patients and hospitals struggle to get timely responses, leading to critical delays.

Managing donor history and notifications manually is cumbersome and error-prone, resulting in unnecessary risks and potentially endangering lives.

Our Objective: A Unified, Life-Saving Solution

1

Centralized Online Platform

To create a unified online platform efficiently connecting blood donors and patients.

2

Rapid Blood Matching

To enable quick and accurate matching of blood groups, particularly crucial during emergencies.

3

Accurate Record Management

To maintain precise and reliable records of donors, donations, and requests.

4

Real-Time Notifications

To provide instant notifications for urgent blood requirements, ensuring prompt action.

5

Streamlined Management

To simplify blood donation management for hospitals and individuals, ensuring timely and life-saving responses.

Key Features of the Portal

User Management

Secure registration/login for Donors, Patients, and Admins with role-based access and profile updates.

Donor Features

Donors can update availability, receive urgent requests, and track their donation history.

Patient Features

Patients can create blood requests, view status updates, and receive alerts when matched with donors.

Request Matching

Automatic matching of requests with available donors by blood group and location, with status updates.

Donation Tracking

Records which donor donated to which patient, tracking completed and pending donations for history.

Notifications

In-app alerts for new requests, matched donors, donation confirmations, and status changes.

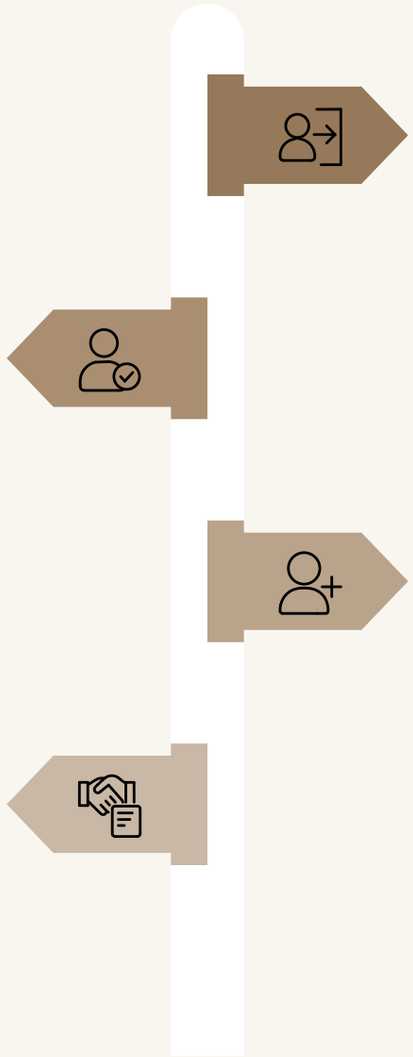
Admin Panel

Administrators can manage users, monitor requests and donations, and manage associated blood banks/hospitals.

Blood Bank Management

Stores details of partner hospitals/blood banks, tracking availability and contact info for emergencies.

Project Workflow: Connecting Lives



User Login

Authenticate and enter the system.

Donor Actions

Update availability and receive notifications.

Patient Actions

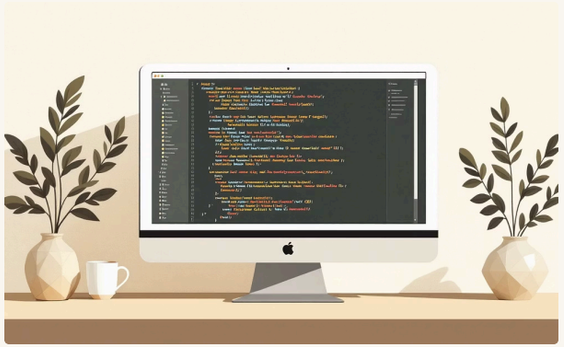
Create request and save to database.

Match & Notify

Match request, notify donors, complete donation.

This diagram illustrates the streamlined process from user login to successful blood donation, emphasizing the interconnected roles and automated notifications.

Architecting the Solution: Technology Stack



Frontend

HTML/CSS for a responsive and intuitive user interface.

Backend

Python with the Django framework

Database

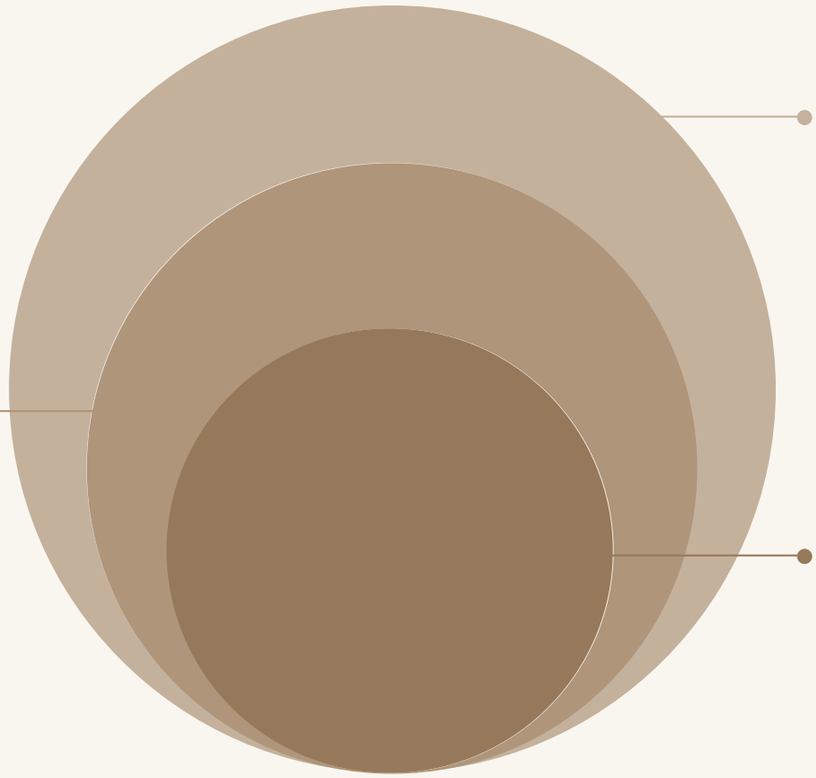
MySQL to ensure reliable and scalable data storage for all portal information.

Notifications

Email-based notification system for urgent alerts and critical updates.

ER Diagram: The Blueprint of Our Data

This Entity-Relationship Diagram outlines the core structure of our database, illustrating how different entities are connected and organized. It serves as a fundamental roadmap for our system, ensuring data integrity, preventing redundancy, and facilitating efficient information retrieval. By clearly defining relationships between key components like donors, patients, blood requests, and blood banks, the ER diagram guarantees a robust and scalable foundation for our entire blood donation portal, enabling seamless tracking and management of all operations.



Support & Alerts

Notifications, status updates

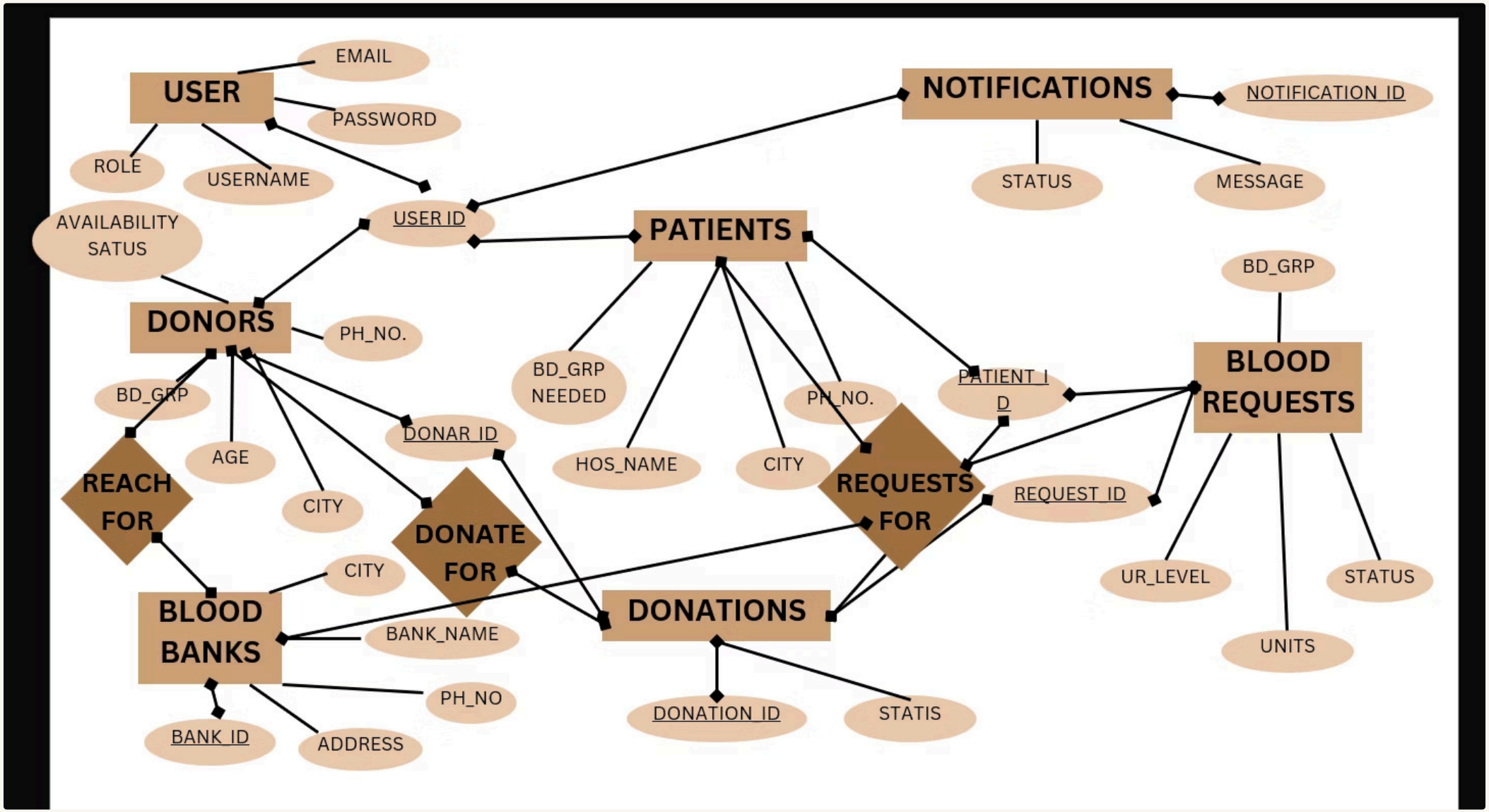
Relationships

Donations, Blood_Requests, Blood_Banks

Core Entities

Users, Donors, Patients

ER DIAGRAM



Key Entities and Their Attributes

Users

- user_id (PK)
- username, email, password
- role (donor/patient/admin)

Donors

- donor_id (PK)
- user_id (FK)
- blood_group, age, gender
- city, state, contact_number
- availability_status

Patients

- patient_id (PK)
- user_id (FK)
- blood_group_needed
- hospital_name, city, state, contact_number

Blood Banks

- bank_id (PK)
- bank_name
- address, city, state
- contact_number, email

Blood Requests

- request_id (PK)
- patient_id (FK)
- blood_group, units_required
- urgency_level, status

Donations

- donation_id (PK)
- donor_id (FK)
- patient_id (FK)
- request_id (FK)
- status

Notifications

- notification_id (PK)
- user_id (FK)
- message, status

Relationship Overview: Connecting the Dots

Users to Donors/Patients

One-to-One: A user can be either a donor or a patient.

Patients to Blood Requests

One-to-Many: Each patient can make multiple blood requests.

Donors to Donations

One-to-Many: A donor can participate in multiple donations.

Blood Requests to Donations

One-to-One/Many: Each request can be fulfilled by one or more donations.

Users to Notifications

One-to-Many: Users can receive various notifications regarding their activities.

Database Schema: Core User Management and Donor Profile Tables

These foundational tables manage user identities, authentication, and specific donor profiles.

1. USERS Table

Central table for all system users, handling authentication and roles.

Column Name	Data Type	Constraints / Details
user_id	INT	Primary Key (PK), AUTO_INCREMENT
username	VARCHAR(100)	NOT NULL
email	VARCHAR(100)	UNIQUE, NOT NULL
password	VARCHAR(100)	NOT NULL
role	ENUM	NOT NULL, ('donor','patient','admin')

2. DONORS Table

Contains specific profile information for users registered as blood donors.

Column Name	Data Type	Constraints / Details
donor_id	INT	Primary Key (PK), AUTO_INCREMENT
user_id	INT	Foreign Key (FK) to USERS(user_id), NOT NULL
blood_group	VARCHAR(5)	NOT NULL
age	INT	Optional
gender	VARCHAR(10)	Optional
city	VARCHAR(50)	Optional
state	VARCHAR(50)	Optional
contact_number	VARCHAR(15)	Optional
availability_status	ENUM	DEFAULT 'Available' ('Available','Not Available')

3. PATIENTS Table

Stores profile information for users registered as patients who may require blood.

Column Name	Data Type	Constraints / Details
patient_id	INT	Primary Key (PK), AUTO_INCREMENT
user_id	INT	Foreign Key (FK) to USERS(user_id), NOT NULL
blood_group_needed	VARCHAR(5)	NOT NULL
hospital_name	VARCHAR(100)	Optional
city	VARCHAR(50)	Optional
state	VARCHAR(50)	Optional
contact_number	VARCHAR(15)	Optional

4. BLOOD_REQUESTS Table

Tracks specific blood donation requests made by patients.

Column Name	Data Type	Constraints / Details
request_id	INT	Primary Key (PK), AUTO_INCREMENT
patient_id	INT	Foreign Key (FK) to PATIENTS(patient_id), NOT NULL
blood_group	VARCHAR(5)	NOT NULL
units_required	INT	Optional
urgency_level	ENUM	DEFAULT 'Normal' ('Normal','Emergency')
status	ENUM	DEFAULT 'Pending' ('Pending','Matched','Complete','Cancelled')

5. BLOOD_BANKS Table

Stores information about registered blood banks and collection centers.

Column Name	Data Type	Constraints / Details
bank_id	INT	Primary Key (PK), AUTO_INCREMENT
bank_name	VARCHAR(100)	NOT NULL
address	VARCHAR(150)	Optional
city	VARCHAR(50)	Optional
state	VARCHAR(50)	Optional
contact_number	VARCHAR(15)	Optional
email	VARCHAR(100)	Optional

6. NOTIFICATIONS Table

Manages user notifications related to requests, matches, or general updates.

Column Name	Data Type	Constraints / Details
notification_id	INT	Primary Key (PK), AUTO_INCREMENT
user_id	INT	Foreign Key (FK) to USERS(user_id), NOT NULL
message	VARCHAR(255)	Optional
status	ENUM	DEFAULT 'Unread' ('Unread','Read')

7. DONATIONS Table

Links specific donations from donors to blood requests for patients, tracking the status of the donation process.

Column Name	Data Type	Constraints / Details
donation_id	INT	Primary Key (PK), AUTO_INCREMENT
donor_id	INT	Foreign Key (FK) to DONORS(donor_id), NOT NULL
patient_id	INT	Foreign Key (FK) to PATIENTS(patient_id), NOT NULL
request_id	INT	Foreign Key (FK) to BLOOD_REQUESTS(request_id), NOT NULL
status	ENUM	DEFAULT 'Pending' ('Pending','Complete')

Impact: Saving Lives, One Connection at a Time

Our Blood Donation and Request Portal aims to revolutionize emergency blood management by providing a seamless, efficient, and reliable platform. By leveraging technology, we can ensure that every blood request meets a timely response, ultimately saving countless lives.

This project stands as a testament to the power of technology in creating meaningful social impact.