Blood Bank Management System: Draft Report

Purpose of this Project

The primary purpose of the Blood Bank Management System (BBMS) is to streamline the processes involved in blood donation and transfusion, ensuring efficient management of blood stocks, donor and recipient information, and administrative tasks. The system aims to enhance the operational efficiency of blood banks, provide a user-friendly interface for donors, recipients, and administrators, and ensure the safety and reliability of blood transfusions.

Description and Actions in this Project

The Blood Bank Management System will automate various functions within a blood bank, including donor registration, blood collection, blood stock management, compatibility testing, and blood transfusion tracking. The system will also include modules for inventory management, report generation, and communication between different stakeholders (donors, recipients, and administrators). The project will involve designing and developing a web-based application that users can access through a browser.

User Classes and Their Characteristics

1. **Administrator**
    - **Characteristics**: Typically a staff member of the blood bank with comprehensive access rights. Responsible for managing the overall operations of the blood bank.
    - **Actions**: Manage blood inventory, approve donor registrations, oversee compatibility testing, generate reports, and manage user accounts.
2. **Donor**
    - **Characteristics**: An individual willing to donate blood. Registered users with access to their donation history and eligibility status.
    - **Actions**: Register and schedule donation appointments, update personal information, view donation history, and receive notifications about donation drives.
3. **Recipient**
    - **Characteristics**: An individual or hospital in need of blood. Registered users with access to request blood.
    - **Actions**: Request specific blood types, track request status, and receive notifications about blood availability.
4. **Lab Technician**
    - **Characteristics**: A staff member responsible for conducting tests on donated blood to determine its suitability for transfusion.
    - **Actions**: Perform blood tests, update test results in the system, and manage testing equipment and records.

5. **Inventory Manager**
    - **Characteristics**: A staff member responsible for managing blood stocks.
    - **Actions**: Monitor blood levels, update stock information, and ensure proper storage conditions.
6. **Hospital/Clinic Representative**
    - **Characteristics**: Representatives from medical institutions requiring blood for patients.
    - **Actions**: Request blood supplies, track request statuses, and manage communications with the blood bank.

Features to be Included

Admin Panel

- **User Management**: Add, remove, and update user roles and permissions.
- **Inventory Management**: Track blood stock levels, update blood availability, and manage storage details.
- **Report Generation**: Generate and view reports on donations, inventory, and blood usage.
- **Notifications**: Send notifications to donors and recipients about upcoming events, donation drives, and blood request statuses.

Donor Panel

- **Registration and Profile Management**: Register as a donor, update personal information, and view eligibility status.
- **Appointment Scheduling**: Schedule and manage donation appointments.
- **Donation History**: View past donation records and health check results.
- **Notifications**: Receive reminders for upcoming donations and eligibility updates.

Recipient Panel

- **Blood Request**: Submit requests for specific blood types and track request status.
- **Profile Management**: Update personal or hospital information.
- **Notifications**: Receive updates on blood availability and request status.

Lab Technician Panel

- **Testing Management**: Record and update blood test results.
- **Equipment Management**: Track and manage testing equipment and supplies.
- **Report Generation**: Generate reports on blood test outcomes.

Inventory Manager Panel

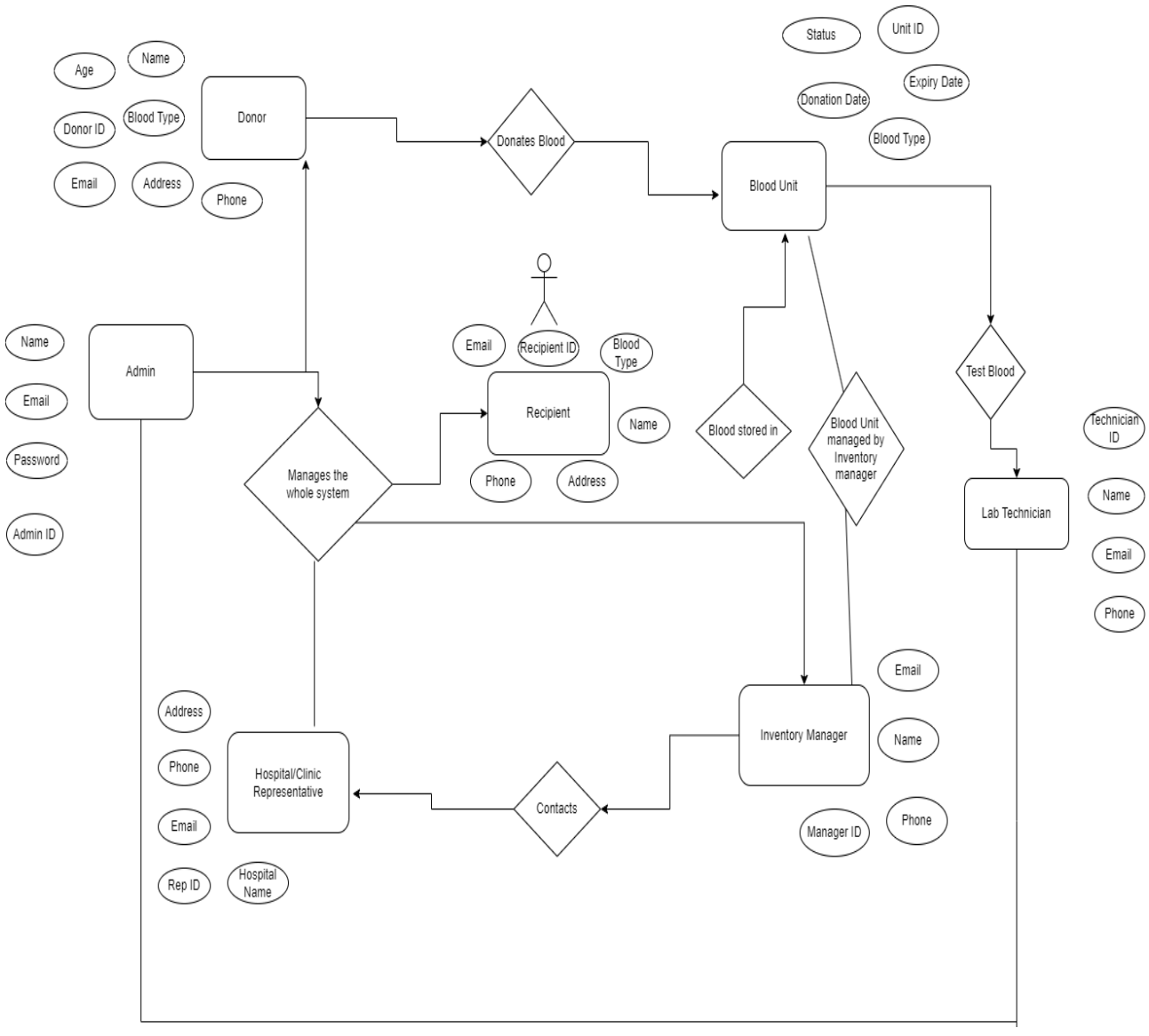
- **Stock Monitoring**: Track and update blood inventory levels.
- **Storage Management**: Ensure proper storage and management of blood units.
- **Expiry Management**: Monitor expiry dates and manage disposal of expired blood.

Hospital/Clinic Representative Panel

- **Blood Request**: Submit and track blood requests.
- **Communication**: Communicate with the blood bank regarding blood needs and statuses.
- **Notifications**: Receive updates on blood availability and request status.

ER Diagram

Below is the draft ER diagram for the Blood Bank Management System, illustrating the relationships between different entities:



1. **Entities**:
    - Admin
    - Donor
    - Recipient
    - Lab Technician
    - Inventory Manager
    - Blood Unit
    - Hospital/Clinic Representative
2. **Relationships**:
    - **1-M**: One Admin manages many Donors.
    - **M-M**: Donors can donate multiple Blood Units, and each Blood Unit can be donated by multiple Donors.
    - **Unary Relationship**: Lab Technicians perform tests on Blood Units.
    - **Ternary Relationship**: Blood Units are requested by Recipients from the Inventory managed by Inventory Managers.

Entities and Attributes:

1. **Admin**: AdminID, Name, Email, Password
2. **Donor**: DonorID, Name, Age, BloodType, Email, Phone, Address
3. **Recipient**: RecipientID, Name, BloodType, Email, Phone, Address
4. **Lab Technician**: TechnicianID, Name, Email, Phone
5. **Inventory Manager**: ManagerID, Name, Email, Phone
6. **Blood Unit**: UnitID, BloodType, DonationDate, ExpiryDate, Status
7. **Hospital/Clinic Representative**: RepID, HospitalName, Email, Phone, Address

Relationships:

- **Manages**: Admin (1) to Donor (M)
- **Donates**: Donor (M) to Blood Unit (M)
- **Requests**: Recipient (M) to Blood Unit (M)
- **Tests**: Lab Technician (M) to Blood Unit (M)
- **Monitors**: Inventory Manager (1) to Blood Unit (M)
- **Requests**: Hospital/Clinic Representative (M) to Blood Unit (M)

The diagram and the report outline the foundational structure and functionality of the Blood Bank Management System, ensuring clarity and direction for further development.