



BANGLADESH UNIVERSITY OF PROFESSIONALS (BUP)

UML Use Case Diagram + Extended Use Case + UI

Project Title: Blood Donation Portal

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7.	Course code:	3206

Project Name: Blood Donation Portal

Use case Diagram:

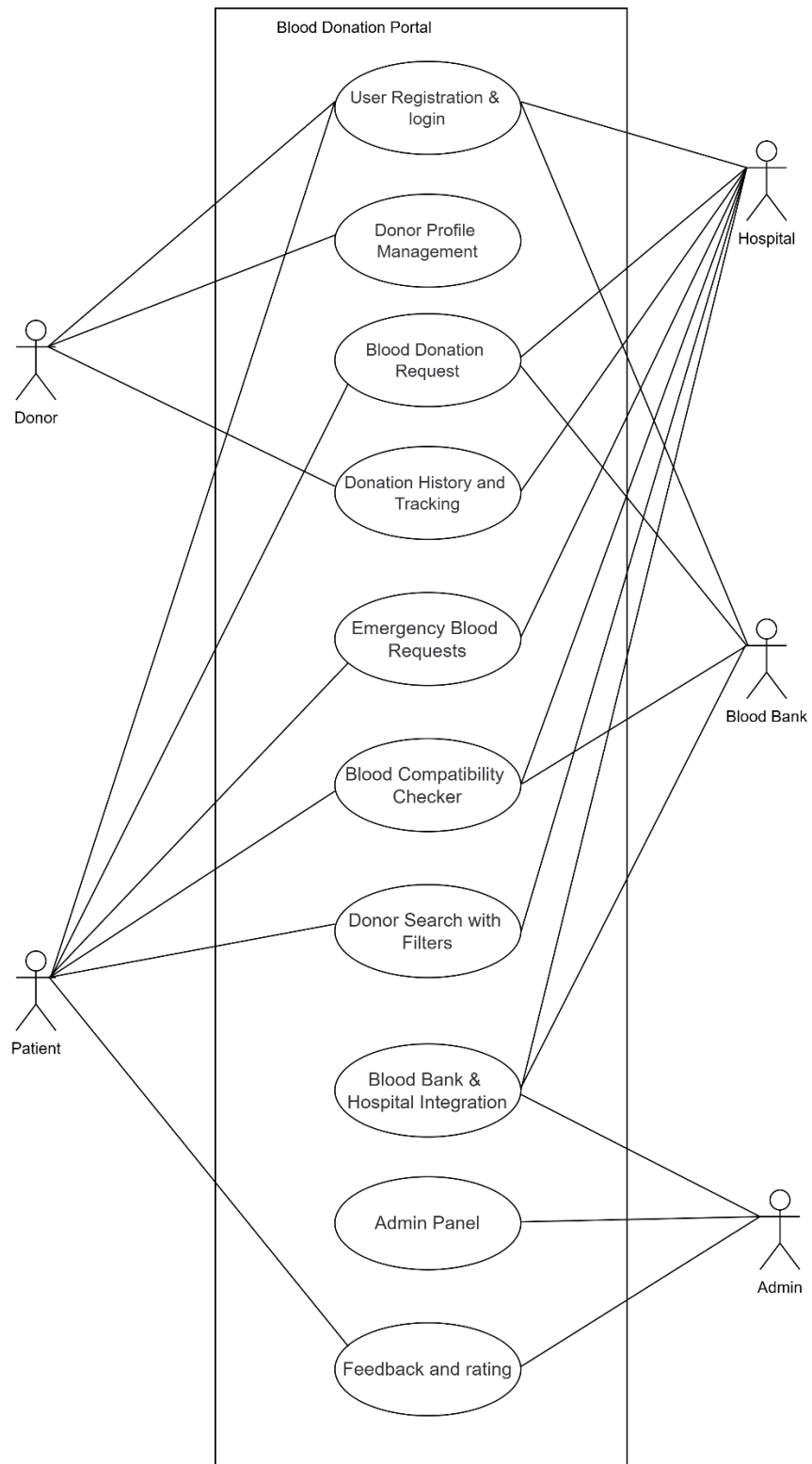


Fig. 1. Use case Diagram

Extended Use Case Diagram:

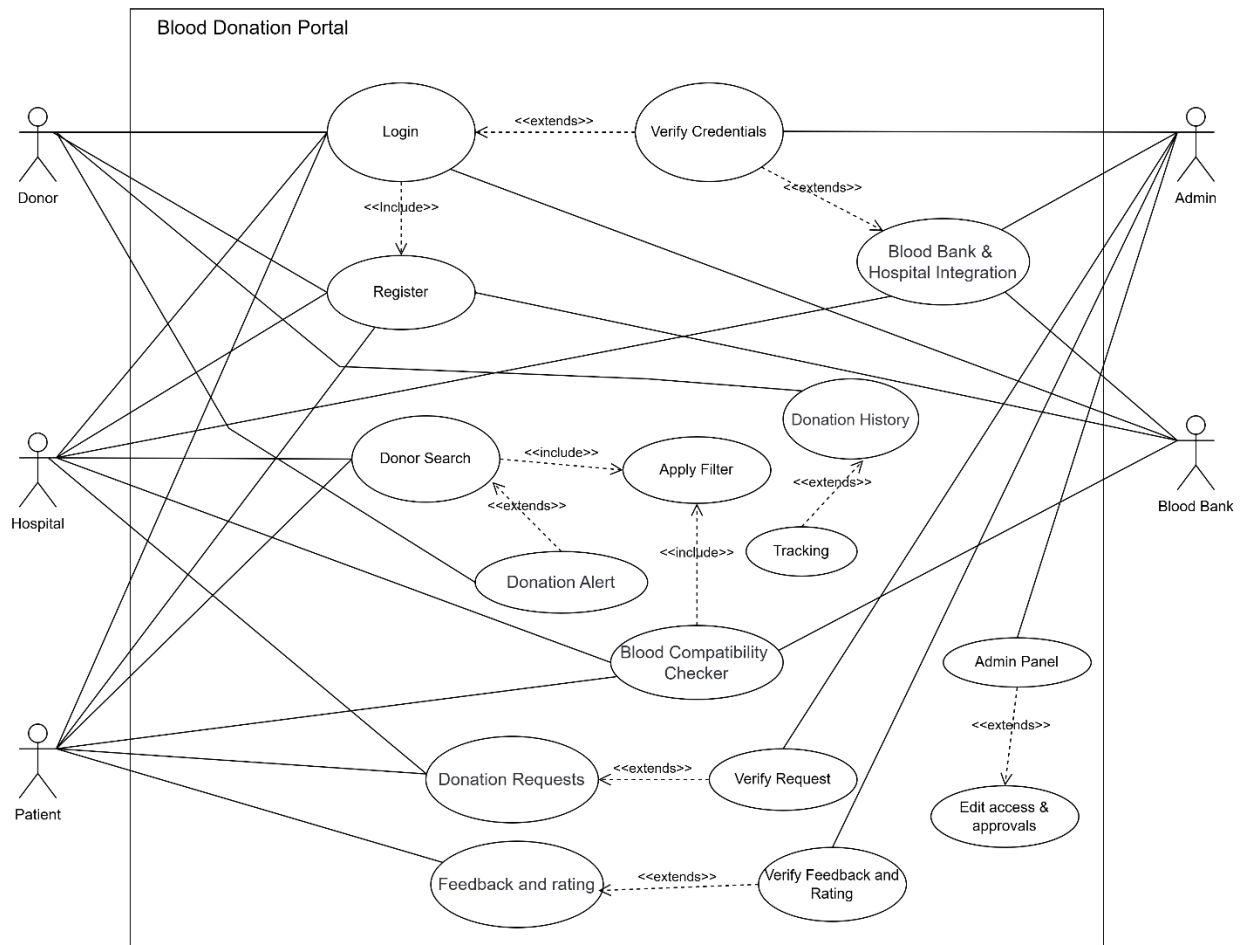


Fig. 2. Extended Use Case Diagram

The use cases are described below:

1. User Registration & login

Use case Name: User Register and Login

Actor: User (Patient, Donor, Hospital, Blood Bank)

Scenario / Description:

1. User accesses the registration or login page.
2. For registration, input name, email, password, and other personal details.
3. For login: inputs email and password.
4. The system validates credentials or registers a new user.
5. Creates a session or shows confirmation.

Exception:

1. Invalid or existing email during registration.
2. Wrong password or email during login.
3. No database connection.

Precondition:

1. URL of login or registration page.

Post Condition:

1. **Successful** – User is logged in or registered.
2. **Unsuccessful** – Stay on same page, show error (e.g., invalid credentials).
3. **Exception** – Stay on the same page with an error message if the issue occurs.

2. Donor Profile Management

Use case Name: Donor Profile Management

Actor: Donor

Scenario / Description:

1. Donor logs in to their account.
2. Donor updates personal info (e.g., address, phone, blood group, availability).
3. System verifies and stores updated data.
4. Option to update last donation date, health status, etc.

Exception:

1. Profile update fails.
2. No database connection.
3. Unauthorized access.

Precondition:

1. Donor is logged in.

Post Condition:

1. **Successful** – Profile updated and saved.
2. **Unsuccessful** – Remain on page with error messages.
3. **Exception** – Stay on page if possible and indicate system error.

3. Blood Donation Request

Use case Name: Blood Donation Request

Actor: User (Patient/Hospital)

Scenario / Description:

1. User accesses the blood request form.
2. Inputs patient info, required blood type, urgency, hospital details.
3. System validates and records the request.
4. Notification sent to compatible and nearby donors.

Exception:

1. Form submission fails.
2. Invalid or incomplete fields.
3. Database or server error.

Precondition:

1. The form page is accessible.

2. Donors are registered in the system.

Post Condition:

1. **Successful** – Blood request submitted and broadcast.
2. **Unsuccessful** – Show error message with correction suggestions.
3. **Exception** – Remain on the same page and indicate internal error.

4. Donation History and Tracking

Use case Name: Donation History and Tracking

Actor: User (Donor/Hospital/Blood Bank)

Scenario / Description:

1. User logs in to the system.
2. User clicks on “Donation History” from the dashboard.
3. The system fetches past donation records from the database.
4. Display donation records with date, amount, organization, and status (e.g., delivered/processing).
5. Option to download records as a PDF.

Exception:

1. Required page not found.
2. No database connection.
3. The donation record is not available or corrupted.

Precondition:

1. The user must be logged in.
2. Donation records exist in the system.

Post Condition:

1. **Successful** – Show complete donation history and current status.
2. **Unsuccessful** – Stay on same page with error message (e.g., “No records found”).
3. **Exception** – Stay on the same page, if possible, with a message indicating an error.

5. Emergency Blood Requests

Use case Name: Emergency Blood Request

Actor: User (Hospital / Patient)

Scenario / Description:

1. User navigates to the “Emergency Blood Request” form.
2. Inputs required fields: blood group, location, number of units, urgency level, and contact information.
3. The system validates input.
4. The system submits a request and notifies nearby registered donors via app notification or SMS.

Exception:

1. Required page not found.
2. No database or messaging service connection.
3. Invalid or incomplete form input.

Precondition:

1. The user must access the Emergency Blood Request page.
2. The blood request form is available.

Post Condition:

1. **Successful** – Request submitted and notifications sent.
2. **Unsuccessful** – Stay on the same page, show form validation errors or submission failure.
3. **Exception** – Stay on the same page, if possible, indicate internal issue.

6. Blood Compatibility Checker

Use case Name: Blood Compatibility Checker

Actor: User (Patient, Hospital, Blood Bank)

Scenario / Description:

1. User accesses the “Blood Compatibility Checker” tool.
2. The user selects or inputs their blood group.
3. The system runs compatibility logic based on medical standards.
4. Compatible donor and recipient groups are shown.
5. Option to view detailed explanation.

Exception:

1. Invalid blood group input.
2. Compatibility engine failure or logic error.
3. Required page not found.

Precondition:

1. The user can access the compatibility tool.
2. The tool is properly configured with logic rules.

Post Condition:

1. **Successful** – Compatibility result displayed with eligible donor/recipient groups.
2. **Unsuccessful** – Show error message like “Invalid input” or “Try again later.”
3. **Exception** – Stay on the same page and show an appropriate error message.

7. Donor Search with Filters

Use case Name: Donor Search with Filters

Actor: User (Patient, Hospital)

Scenario / Description:

1. User accesses the “Donor Search” page.
2. User selects filters such as blood group, location, last donation date, availability status.

3. System processes filter criteria.
4. System displays matching donor profiles.
5. User views profile or initiates contact request.

Exception:

1. No donors match the selected filters.
2. Required page not found.
3. No database connection.

Precondition:

1. User must have access to search functionality.
2. Donor data must be available in the database.

Post Condition:

1. **Successful** – Matching donors are displayed based on filters.
2. **Unsuccessful** – Stay in same page with message “No donors found with selected criteria.”
3. **Exception** – Stay in same page and show appropriate error if system fails.

8. Blood Bank & Hospital Integration

Use case Name: Integrate Blood Banks and Hospitals

Actor: Hospital Admin / Blood Bank Official / Admin

Scenario / Description:

1. Admin logs into the system.
2. Inputs or updates blood inventory data.
3. Views or manages hospital affiliations.
4. System syncs records for public or internal use.

Exception:

1. Inventory update fails.
2. Server or network downtime.
3. Data mismatch.

Precondition:

1. Verified admin account.
2. The system supports integration modules.

Post Condition:

1. **Successful** – Integration updated; real-time inventory synced.
2. **Unsuccessful** – Display failure message, retry options.
3. **Exception** – Stay on page, if possible, log error.

9. Admin Panel

Use case Name: Admin Panel

Actor: Admin

Scenario / Description:

1. Admin logs into backend system.
2. Views user activities, requests, feedback, statistics.
3. Manages users, blood banks, system settings.
4. Generates reports or insights.

Exception:

1. Unauthorized access.
2. Server or database error.
3. UI component fails to load.

Precondition:

1. Admin credentials are valid.

Post Condition:

1. **Successful** – Admin accesses all authorized functionalities.
2. **Unsuccessful** – Denied access with error messages.
3. **Exception** – Stay on the same page and report the error.

10. Feedback and rating

Use case Name: Feedback and Rating

Actor: Patient

Scenario / Description:

1. Patient accesses the feedback section.
2. Submits a rating and comment on the donation experience, hospital, or app.
3. System records feedback and stores ratings.
4. Admin can review analytics.

Exception:

1. Feedback submission fails.
2. Incomplete input.
3. No connection to the database.

Precondition:

1. The patient must be logged in.

Post Condition:

1. **Successful** – Feedback is recorded.
2. **Unsuccessful** – Stay on the same page with errors like “Comment cannot be empty.”
3. **Exception** – Indicate failure and suggest retry.

UI Design:

1. Home Page:

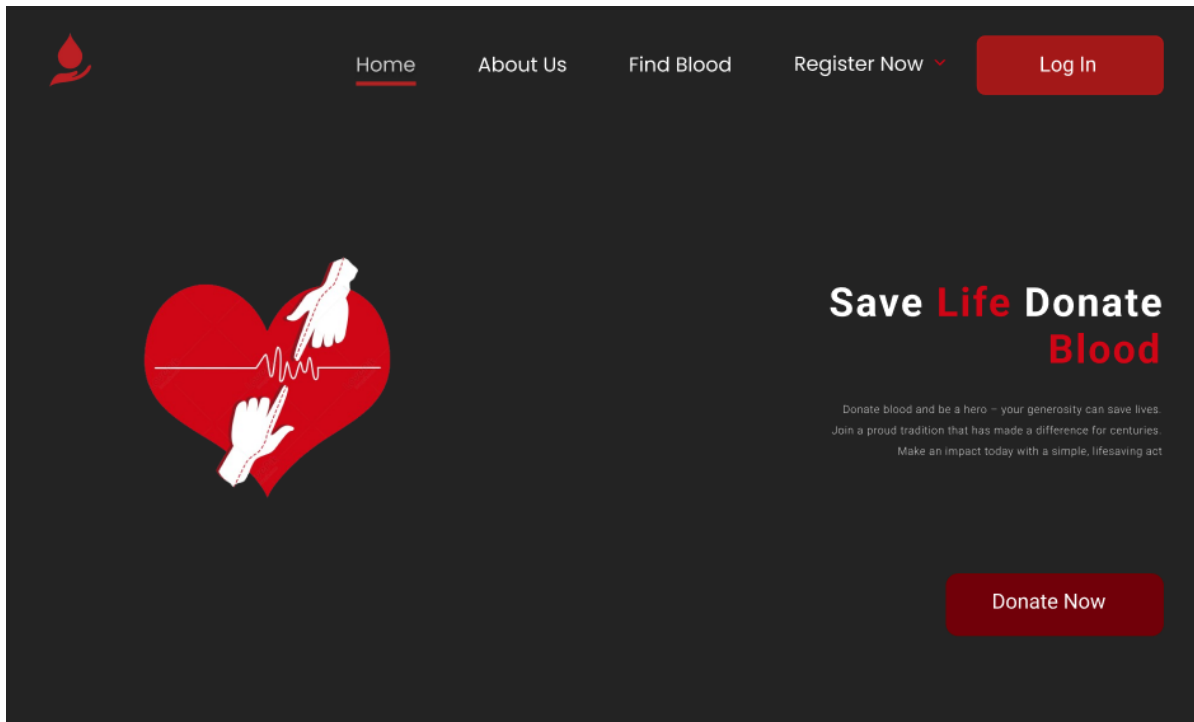


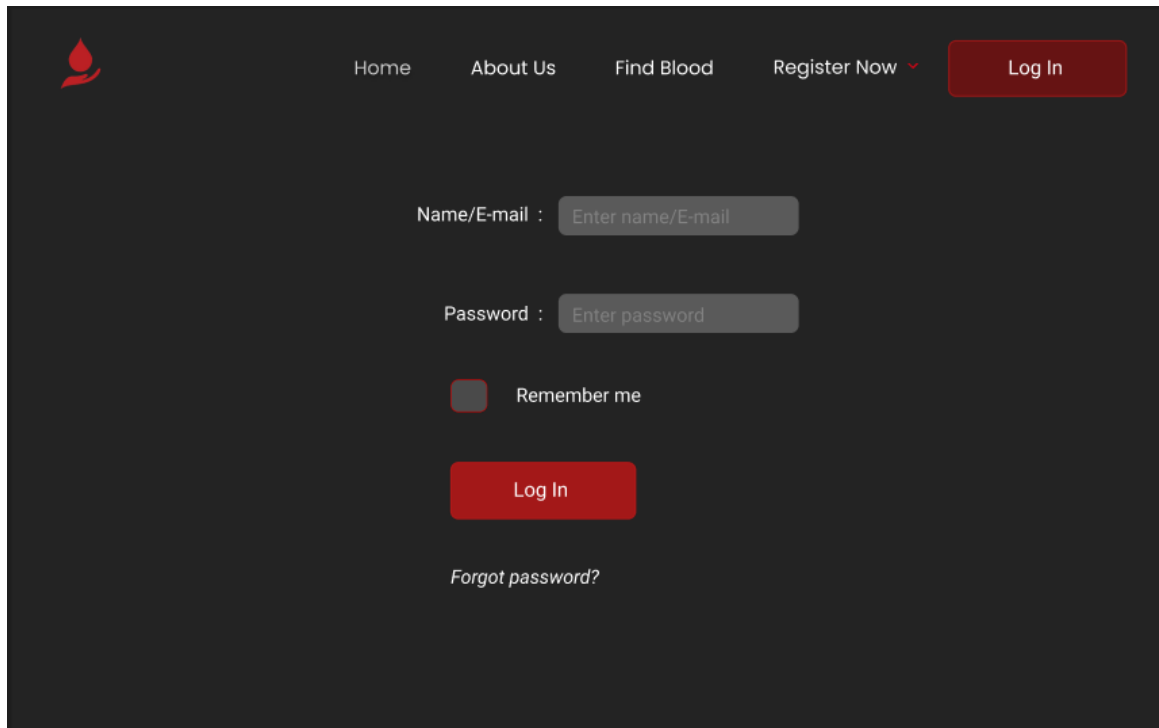
Fig. 3. Home page

2. Registration:

The registration page has a dark grey background. The navigation bar is identical to the home page, but 'Register Now' is underlined. The form fields are arranged vertically: 'Name : Enter name', 'E-mail : Enter e-mail', 'Role :' followed by four radio button options ('Patient', 'Hospital', 'Donor', 'Blood Bank'), 'Password : Enter password', and 'Confirm Password : Re-enter password'. A red 'Register' button is positioned at the bottom right.

Fig. 4. Registration page

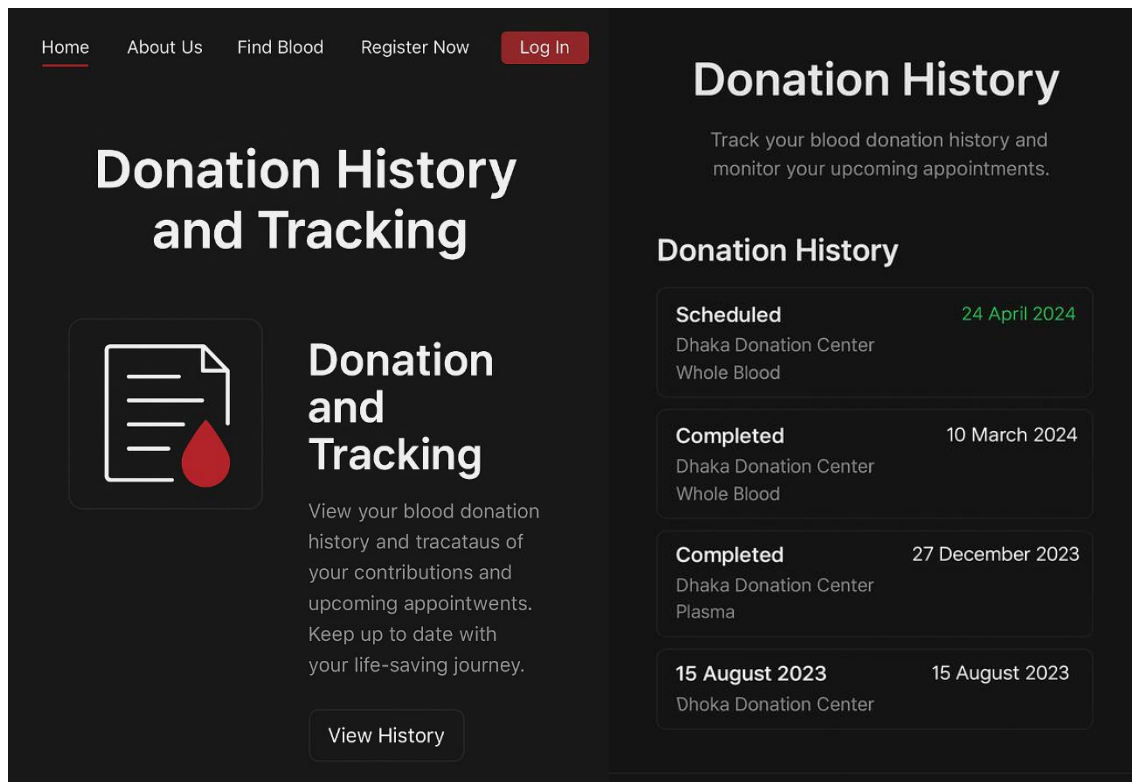
3. Log In:



The screenshot shows a dark-themed login page. At the top left is a red flame logo. The navigation bar includes links for Home, About Us, Find Blood, Register Now (with a dropdown arrow), and a red Log In button. The main form area contains input fields for Name/E-mail and Password, both with placeholder text. Below these is a checkbox for Remember me. A red Log In button is positioned below the checkbox. At the bottom of the form is a link for Forgot password?

Fig. 5. Log In page

4. Donation History and Tracking:



The screenshot displays a dark-themed page for Donation History and Tracking. The navigation bar at the top includes links for Home, About Us, Find Blood, Register Now, and a red Log In button. The main content area is divided into two columns. The left column features a large heading 'Donation History and Tracking' and an icon of a document with a red blood drop. Below this is a sub-heading 'Donation and Tracking' and a paragraph: 'View your blood donation history and track your contributions and upcoming appointments. Keep up to date with your life-saving journey.' A 'View History' button is at the bottom of this section. The right column has a heading 'Donation History' and a sub-heading 'Donation History'. It contains a list of donation records, each with a status, location, and date.

Status	Location	Date
Scheduled	Dhaka Donation Center Whole Blood	24 April 2024
Completed	Dhaka Donation Center Whole Blood	10 March 2024
Completed	Dhaka Donation Center Plasma	27 December 2023
15 August 2023	Dhaka Donation Center	15 August 2023

Fig. 6. Donation History and Tracking page

5. Donor Search:

Donor Search

Search for blood donors using filters to find a match.

Filters

Blood Type

Location ▾

Availability ▾

Search

Rahim Ahmed

Dhaka

Available now

B+

Aisha Begum

Chattogram

Available now

O-

Imran Hossain

Khulna

Available now

AB+

Fig. 7. Donor Search with filter page

6. Admin Panel:

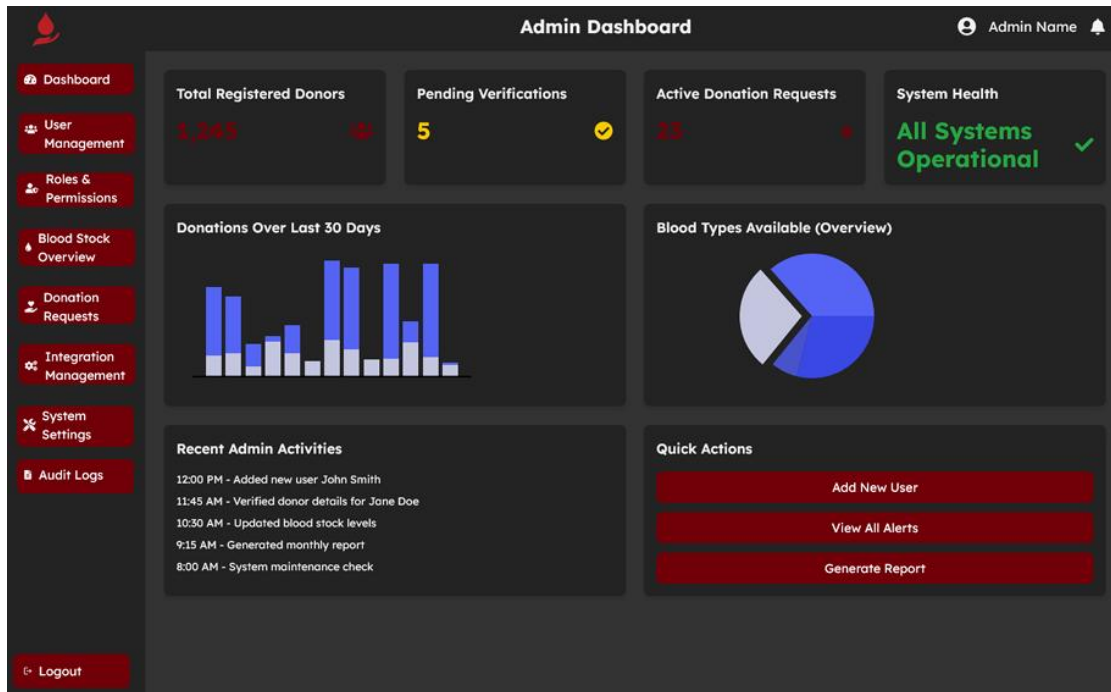


Fig. 8. Admin Panel

7. Blood Donation Request:

The Blood Donation Request form is titled "Donate Blood ?" and includes a navigation bar with links: Home, About Us, Find Blood, Register Now, and a Log In button. The form is divided into several sections:

- Patient Information:**
 - Patient's Full Name *
 - Patient's Age *
 - Gender * (Select Gender)
- Hospital & Contact Details:**
 - Hospital Name *
 - Hospital Location/City *
 - Hospital Ward/Room No.
 - Primary Contact Person Name * (e.g., attendant, family member)
 - Primary Contact Mobile Number * (+1 (000) 123-4567) (Please fill out this field)
 - Alternative Contact Number (+1 (000) 123-4567)
- Blood Requirement:**
 - Required Blood Group * (Select Blood Group)
 - Required Blood Component * (Select Component)
 - Number of Units Required * (Specify 1-4 units)
 - Date Blood Needed By * (mm/dd/yyyy)
- Additional Information:**
 - Reason for Request * (e.g., Surgery, Accident, Dengue, Thalassemia. Please be brief.)
 - Doctor's Name
 - Attach Doctor's Prescription/Hospital Letter (Upload Document)
 - Urgency Level *
 - ☐ Critical (Within 6 hours)
 - ☐ Urgent (Within 24 hours)
 - ☐ Standard (Within 2-3 days)

A large "Donate Now" button is located at the bottom right of the form.

Fig. 9. Blood Donation Request Page