Blood Bond - Use Case Scenarios

Project: Blood Bond

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Purpose: This document outlines comprehensive use case scenarios for the Blood Bond web platform

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System Overview

Blood Bond is a web-based blood donation management platform that connects blood donors with recipients in need. The system facilitates:

- Donor registration and profile management
- Blood request creation and management
- Real-time matching between donors and recipients
- Campaign organization for blood drives
- Eligibility verification for donations

User Personas

Persona 1: Sarah Ahmed - Regular Blood Donor

Age: 28

Occupation: Software Engineer

Location: Dhaka, Bangladesh

Blood Type: O+

Tech Savvy: High

Motivation: Wants to help save lives and regularly donates blood

Persona 2: Dr. Kamal Hassan - Hospital Staff

Age: 45

Occupation: Emergency Room Doctor

Location: Chittagong Medical College Hospital

Tech Savvy: Medium

Motivation: Needs quick access to blood donors for emergency patients

Persona 3: Fatima Begum - Patient's Family Member

Age: 35

Occupation: Teacher

Location: Sylhet

Blood Type: Need B+ for husband

Tech Savvy: Low to Medium

Motivation: Urgently needs blood for her husband's surgery

Use Case Scenarios

Use Case 1: New Donor Registration and Profile Setup

Actor: Sarah Ahmed (First-time User)

Goal: Register as a blood donor and complete eligibility profile

Preconditions: None

Postconditions: User has active account with complete eligibility information

Main Success Scenario:

1. Sarah visits Blood Bond homepage
2. She clicks "Sign Up" button
3. She enters her credentials:
   - Full name: Sarah Ahmed
   - Email: sarah.ahmed@email.com
   - Phone: +8801711234567
   - Password: ********
   - Role: Donor
4. System validates information and creates account
5. Sarah is redirected to login page
6. She logs in with credentials
7. Sarah navigates to Profile page
8. She sees "Donor Eligibility" form with incomplete status message
9. Sarah fills in eligibility information:
   - NID Number: 1234567890123
   - Blood Group: O+
   - Age: 28
   - Address: House 45, Road 12, Dhanmondi, Dhaka

10 She clicks "Save Changes"

11 System displays: "Eligibility complete: you can donate/request without extra form"

12 Sarah's profile is now complete

Alternative Flows:

- **A1:** Email already exists - System shows error: "Email already registered"
- **A2:** Invalid NID format - System validates and prompts for correction

Use Case 2: Eligible Donor Making Quick Donation

Actor: Sarah Ahmed (Registered, Eligible Donor)

Goal: Offer blood donation to recipient in need

Preconditions: Sarah is logged in with complete eligibility

Postconditions: Donation request recorded in system

Main Success Scenario:

1. Sarah logs into Blood Bond
2. She navigates to Home page
3. She clicks "View as Donor" button
4. System displays list of recipients needing blood
5. Sarah sees "Patient: Karim - B+ Blood needed at Sylhet General"
6. She clicks "Donate" button on the card
7. **System checks eligibility (complete) - Modal bypassed ✓**
8. System automatically submits donation with Sarah's profile data
9. Alert displays: "Submitted successfully"
10. Entry saved to `bb_donations` localStorage

Alternative Flows:

- **A1:** Sarah's eligibility incomplete - System opens modal form for manual entry

Use Case 3: Emergency Blood Request by Patient Family

Actor: Fatima Begum (Recipient)

Goal: Create urgent blood request for hospitalized family member

Preconditions: Fatima has Blood Bond account

Postconditions: Blood request visible to eligible donors

Main Success Scenario:

1. Fatima logs into Blood Bond
2. She navigates to "Requests" page
3. She clicks "My Sent Requests" tab
4. System displays "Create Request" card
5. She clicks "Create Request" button
6. Modal form opens with required fields
7. She fills all information:
   - Full name: Mahmud Begum
   - Phone: +8801855123456
   - Address: Sylhet General Hospital, Room 302
   - Blood group: B
   - RH factor: Positive (+)
   - Gender: Male
   - Date needed: 2025-12-01
8. She clicks "Submit Request"
9. System validates all fields
10. Request saved with unique ID
11. Success message: "Request created"
12. Request appears in "My Sent Requests" list

13 Request visible to all donors

Use Case 4: Hospital Staff Reviewing Incoming Requests

Actor: Dr. Kamal Hassan (Hospital Staff)

Goal: Review and respond to blood donation offers

Preconditions: Dr. Kamal logged in as Hospital role

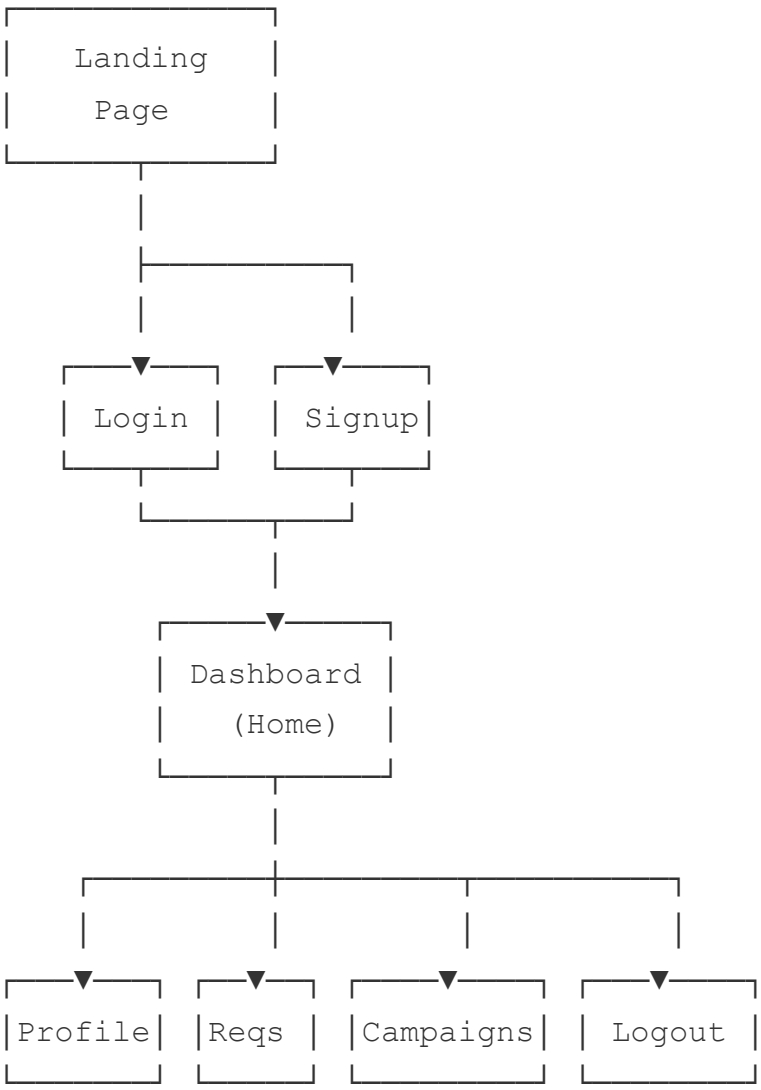
Postconditions: Donation requests accepted or rejected

Main Success Scenario:

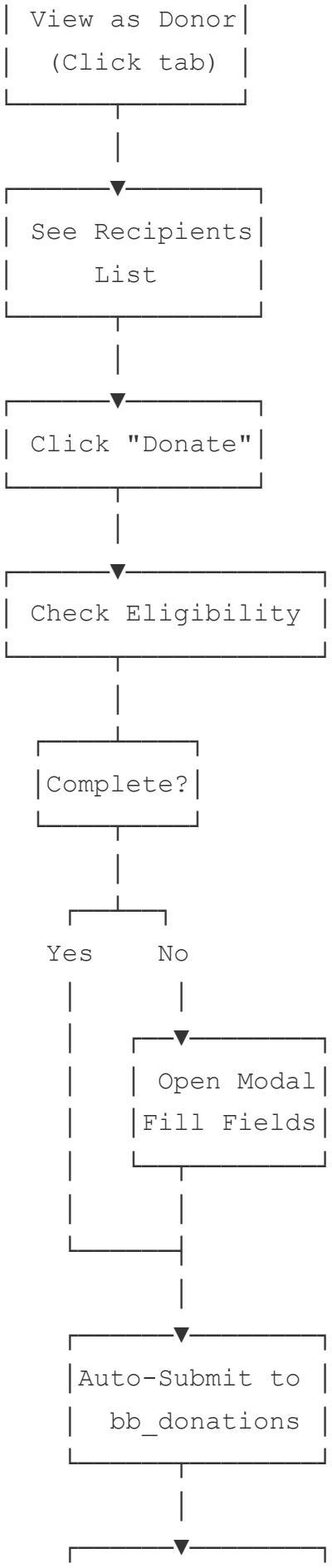
1. Dr. Kamal logs into Blood Bond
2. He navigates to "Requests" page
3. Default view shows "Incoming Requests"
4. System displays pending donation offers
5. Dr. Kamal reviews first request (Anita D.)
6. He verifies blood type matches patient need (B+)
7. He clicks "Accept" button
8. System records acceptance
9. Alert displays: "Request accepted! ID: 1"
10. Request status updated to "Accepted"

Workflow Diagrams

Overall User Flow



Donation Flow (Eligible Donor)


View as Donor
(Click tab)
See Recipients List
Click "Donate"
Check Eligibility
Complete?
Yes
No
Open Modal
Fill Fields
Auto-Submit to
bb_donations

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|Success Alert  |
└_______________┘
```

Edge Cases & Recommendations

Edge Case 1: Incomplete Eligibility Attempting Quick Donate

Scenario: Donor without complete profile clicks "Donate"

Expected: System opens modal form for manual entry

Edge Case 2: Donor Below Legal Age (< 18)

Scenario: User registers with age 16

Current: System accepts but should validate donation rules

Recommendation:

Add age validation and warnings for users below 18 years old

Edge Case 3: Duplicate NID Registration

Scenario: Two users attempt to register with same NID

Current: No validation

Recommendation:

Add NID uniqueness check during registration

Edge Case 4: Expired Blood Request

Scenario: Request date has passed

Current: Still visible in list

Recommendation:

Filter or mark expired requests with visual indicators

Data Storage Schema

Key	Purpose	Structure
`bb_session`	Current user session	{userId, role, identifier}
`bb_users`	All registered users	[{id, name, email, phone, nid, blood_group, age, address, picture}]
`bb_requests`	Blood requests	[{id, name, phone, address, blood_group, rh, gender, need_date, createdBy}]
`bb_donations`	Donation records	[{id, actionType, fullname, phone, email, address, blood_group, nid}]
`bb_campaigns`	Available campaigns	[{id, title, location, date}]

User Acceptance Criteria

For Donors:

- ✓ Can register and create profile
- ✓ Can complete eligibility information
- ✓ Can make quick donations when eligible
- ✓ Can view recipients needing blood
- ✓ Can register for campaigns
- ✓ Can update profile and picture
- ✓ Can toggle willingness to donate

For Recipients/Hospitals:

- ✓ Can create blood requests with full details
- ✓ Can view incoming donation offers
- ✓ Can accept/reject donation requests
- ✓ Can view own sent requests
- ✓ Can search for specific blood types

For System:

- ✓ Validates required fields before submission
- ✓ Persists data in localStorage
- ✓ Manages user sessions
- ✓ Provides clear feedback messages
- ✓ Responsive design for mobile/desktop
- ✓ Accessible navigation and controls

Future Enhancements

- **Real-time Notifications:** Email/SMS when donation accepted, push notifications for urgent requests
- **Backend Integration:** Replace localStorage with database, API for data persistence
- **Advanced Matching:** Location-based donor matching, blood compatibility checking
- **Verification System:** NID verification via national database, hospital verification
- **Donation History:** Track past donations, frequency tracking, health eligibility reminders
- **Analytics Dashboard:** Donation statistics, blood type availability charts
- **Multi-language Support:** Bengali and other regional languages

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Conclusion

Blood Bond provides a streamlined platform for connecting blood donors with recipients in need. The system prioritizes user experience by simplifying the donation process for eligible donors, enabling quick request creation for urgent needs, and maintaining comprehensive user profiles.

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