American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

Blood Donation Organization

A Software Quality and Testing Project Submitted By:

Semester: Spring_24_25				**Section:**	**Group No:**
SL	**SN**	**Student Name**	**Student ID**	Individual Contribution (in %)	Total Marks: 50 Earned Marks:
A	1	A.B.M Mahmudul Hasan	22-47108-1	25% (Test Plan Architecture, Led test cases, introduction, revisions)	
B	2	Sabbir Ahmed	22-46486-1	25% (Figma Design, Testing Strategy, testing approach, revision)	
C	3	Saif Mahmud Shihab	22-46830-1	**25%** (Requirement specs, staffing/schedule, revisions)	
D	4	Shahriar Hossen	22-46525-1	**25%** (Pass/fail criteria, risk management, revision)	

The project will be Evaluated for the following Course Outcomes

EVALUATION CRITERIA	**Total Marks (50)**	
Revision History, Test Plan Identifier, Reference Materials, Problem Background, Solutions	[10 Marks]	
Requirements Specification (System feature, Quality Attributes, System Interface, Project Requirements)	[10 Marks]	
Item Not to be tested, Testing approach (Testing levels, tools, meetings), Test cases	[10 Marks]	
Item pass/fail criteria, Test deliverables, Staffing and Training, Responsibilities, Scheduling, Risk	[10 Marks]	
Approval, Format, Submission, and Defense	[10 Marks]	

Software Test Plan
for
<Hatibandha Blood Donation Organization (HBDO)>

Version 1.0 approved

Prepared by <>

<American International University-Bangladesh>

<19/6/2025>

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Revision History

Revision	Date	Updated by	Update Comments
0.1	2025.05.30	A.B.M Mahmudul Hasan & Saif Mahmud Shihab	Initial draft of Test Plan (Sections 1–3: Identifier, References, Introduction).
0.2	2025.06.01	Sabbir Ahmed	Added **Requirement Specifications** (System Features, Quality Attributes).
0.3	2025.06.03	Saif Mahmud Shihab	Updated **Testing Approach** (Levels, Tools, Meetings) and **Features Not Tested**.
0.4	2025.06.04	A.B.M Mahmudul Hasan	Finalized **Test Cases** (20 functional + 5 non-functional).
0.5	2025.06.05	Shahriar Hossen	Added **Pass/Fail Criteria**, **Test Deliverables**, and **Risk Management**.
0.6	2025.06.06	Sabbir Ahmed & Shahriar Hossen	Completed **Staffing**, **Schedule**, and **Approval** sections.

TEST PLAN IDENTIFIER: STC-TC-TP-01

 STC: Hatibandha Blood Donation Organization (HBDO)

 TC: Test Case

 TP: Test Plan

 01: First test cycle

REFERENCE MATERIALS

- Software Requirement Specification (SRS) Document
- Software Requirement documentation
- Software Quality and Testing Course PowerPoint Slides

INTRODUCTION

3.1 Background to the Problem

In the realm of public healthcare and community welfare, blood donation remains one of the most critical and life-saving activities. Despite its importance, many local blood donation initiatives struggle due to the absence of centralized systems for donor registration, request coordination, and data management.

This challenge is especially pronounced in rural and semi-urban areas, where people in urgent need of blood often face delays, misinformation, and difficulty locating matching donors in time. Additionally, manual record-keeping and fragmented communication between donors and recipients increase the risk of mismanagement and donor fatigue.

The Hatibandha Blood Donation Organization (HBDO) portal has been launched to solve the urgent requirement of an optimized process for blood donation. The online system provides all the aspects under one roof where the users can:

- Register as blood donors
- Request blood with detailed criteria
- Find the donors by blood type and location
- Maintain their own records of donations
- Submit reviews and provide community feedback

It simplifies the entire donation and request process, especially for students, local volunteers, and healthcare helpers, ensuring that blood reaches those in need with speed, transparency, and accountability.

The need for HBDO stems from the following key challenges faced by local donation efforts:

1. Lack of a Centralized Donor Management System. Many areas rely on Facebook posts, personal contact lists, or word-of-mouth to find blood donors. This is inefficient, slow, and unreliable during emergencies.
2. Ineffective Communication between Donors and Recipients. There is no structured platform to bridge the gap between blood seekers and potential donors. Manual communication often results in missed opportunities or duplication of effort.
3. Limited Access to Real-Time Donation Data. Without automated systems, there's no way to track how many donations have occurred, who has donated recently, or how many bags of blood are available. This creates transparency issues and limits planning for donation drives.
4. Low Engagement and Motivation for Donors. Donors often don't receive feedback or see their impact. Features like review submissions, donation history, and achievements are missing in manual systems, reducing motivation.

3.2 . To find the critical shortcomings in the administration of blood donation systems, the Hatibandha Blood Donation Organization (HBDO) project proposes a centralized, web-based blood donation platform designed specifically to support local communities, especially in under-resourced or semi-urban regions.

This system functions as a digital bridge between blood donors and recipients, offering features that streamline the end-to-end donation process, from registration to review submission. Through automated workflows, dynamic filtering, and real-time data tracking, HBDO ensures timely access to blood, enhances community trust, and improves donor engagement.

The system provides an intuitive interface where users can:

1. Register and manage donor profiles with essential data such as blood group, location, and contact details
2. Search for available donors filtered by blood group, division, district, and upazila
3. Request blood through a structured form including urgency, number of bags, and hospital details
4. Add personal donation history with proof (e.g., photo uploads, date of donation)
5. View all past donations, improving transparency and tracking
6. Edit personal profiles to maintain updated contact/location info
7. Change passwords securely and submit reviews to strengthen community feedback

4. REQUEIREMNT SPECIFICATION

4.1. System Feature:

- User Dashboard

1. System Login Functional Requirement.

Description: The application will enable registered users (donors) to access their accounts by logging in with their email and password.

If the provided credentials are invalid, an error message will be shown, and access will be denied.

Optional feature: To enhance security, the system may temporarily lock the account after five unsuccessful login attempts to prevent misuse.
Priority Level: High
Precondition: User must have a registered and verified email/password.
Cross Reference: Login Page UI, TC_FR_AUTH_003 (Login), TC_FR_AUTH_004 (Failed Attempts).

2. User Registration Functional Requirement
Description: The function shall allow new users to register by entering their full name, email, phone number, address, blood group, and password.
The registration is successful only if the email/phone is not already in use and the blood group is selected from a predefined list.
Priority Level: High
Precondition: Valid email and all required form fields completed.
Cross Reference: Registration Page UI, TC_FR_AUTH_001 (Registration), TC_FR_AUTH_002 (Duplicate Check).

3. Password Change Functional Requirement
Description: Logged-in users can securely change their account password by providing the old password and entering a new one.
A success message confirms the change.
Priority Level: Medium
Precondition: The user must be verified, and the current password must be verified as correct.
Cross Reference: Profile Settings → Change Password Page, TC_FR_CMN_005.

4. Blood Search Functional Requirement
Description: The system shall allow users to search for donors based on selected blood group, division, district, and upazila.
Search results are displayed in a table, showing donor name, contact info, and location.
Priority Level: High
Precondition: User is logged in.
Cross Reference: Search Blood Page, TC_FR_CMN_001

5. Blood Request Functional Requirement

Description: Users can fill out a form to request blood by specifying patient name, hospital, required blood group, date, number of bags, and location details.
The system stores this request and marks it for donor visibility.
Priority Level: High
Precondition: Logged-in user with all form fields filled correctly.
Cross Reference: Request Blood Page, TC_FR_CMN_002

6. Donation Submission Functional Requirement

Description: Users can log their blood donation by submitting date, location, number of bags, and optionally uploading a picture of the donation receipt.
Priority Level: Medium
Precondition: Logged-in user
Cross Reference: Add Donation Page, TC_FR_CMN_003

7. Profile Update Functional Requirement

Description: Users may update their profile information like as mobile number, address, or blood group via the Edit Profile page.
The system confirms changes with a success message.
Priority Level: Medium
Precondition: User must be logged in
Cross Reference: Edit Profile Page, TC_FR_CMN_004

8. Donation History Functional Requirement

Description: The system displays a user's previous donations including date, place, number of bags, and uploaded proof (if any).
History is shown in a chronological, readable table format.
Priority Level: Medium
Precondition: Logged-in user with at least one recorded donation.
Cross Reference: Donation History Page, TC_FR_CMN_006

9. Review Submission Functional Requirement

Description: Users may submit a star rating (1 to 5) along with a comment or feedback about the platform after using its services.
Submitted reviews are visible on the homepage or dashboard for other users.

Priority Level: Low
Precondition: Logged-in user
Cross Reference: Review Page, TC_FR_USER_001

- Admin Dashboard

The admin dashboard includes the following features that function identically to the user version:

- Blood Search
- Blood Request
- Edit Profile
- Change Password
- Add Donation
- Donation History

Unique features:

1. Pending Blood Request Management Functional Requirement

Description: The system shall display all pending blood requests with complete details including requester information, blood type needed, quantity, location, and status. Admin can approve, reject, or modify requests.
Priority Level: High
Precondition: Admin must be logged in
Cross Reference: Pending Blood Request Page, TC_FR_ADMIN_003

2. Latest Donations Monitoring Functional Requirement

Description: The system shall display all recent donations in chronological order with donor details, blood type, quantity, and location. Admin can verify and flag donations if needed.
Priority Level: High
Precondition: Admin must be logged in
Cross Reference: Latest Donations Page, TC_FR_ADMIN_004

3. Member Management Functional Requirement

Description: The system will allow admins to add new members with complete profile information including personal details, contact information, blood type, and geographic location. All fields must pass validation checks.
Priority Level: High

Precondition: Admin must be logged in
Cross Reference: Add Member Page, TC_FR_ADMIN_001

4. User Search Functional Requirement

Description: The system should provide search functionality to find users by email, name, or phone number. Admin can perform account management actions including deletion and role promotion with appropriate confirmation dialogs.
Priority Level: High
Precondition: Admin must be logged in
Cross Reference: Search Member Page, TC_FR_ADMIN_005

5. Monthly Reporting Functional Requirement

Description: The system will generate monthly reports showing user activity and donation points earned. Reports should be filterable by date range and exportable.
Priority Level: Medium
Precondition: Admin must be logged in
Cross Reference: Monthly Reports Page, TC_FR_ADMIN_006

6. Notification System Functional Requirement

Description: The system will allow admins to create notifications with title, message, and optional image attachment. Submitted notifications shall immediately appear on the noticeboard. After 24 hours of publication, the system shall automatically move the notification to the archive section while preserving all content.

Priority Level: Medium
Precondition: Admin must be logged in
Cross Reference: Send Notice Page, TC_FR_ADMIN_002

4.2. **System Quality Attributes**

QA1 – Usability

Description:
The system will maintain intuitive navigation with task completion (registration, blood search, requests) achievable within 3 minutes by first-time users. Mobile interfaces shall comply with responsive design standards.

Priority Level: High
Precondition: Accessible via desktop/mobile browsers
Test Reference:

- TC_NFR_USAB_001 (Mobile Responsiveness)
  Cross Reference: QA3, QA6

QA2 – Performance

Description:
Key pages will load ≤2s; form submissions complete ≤3s under normal conditions. Sustains 500 concurrent users without degradation.

Priority Level: High
Precondition: Optimized server/database
Test Reference:

- TC_NFR_PERF_001 (500 Concurrent Users)
  Cross Reference: QA5, QA7

QA3 – Reliability

Description:
Ensures 99.5% monthly uptime with ≤15m outages per incident. Automated recovery mechanisms for critical failures.

Priority Level: High
Precondition: Active hosting platform
Test Reference:

- TC_NFR_REL_001 (System Recovery)
  Cross Reference: QA1, QA4

QA4 – Maintainability

Description:
Modular codebase enables isolated updates (e.g., profile editor) without system-wide impact.

Priority Level: Medium
Precondition: Clean code architecture
Cross Reference: QA3, QA6

QA5 – Security

Description:
Prevents injection attacks via input sanitization. Enforces crypt hashing + HTTPS. Role-based access controls.

Priority Level: High
Precondition: SSL installed, server validation
Test Reference:

- TC_NFR_SEC_001 (Role-Based Access)
- TC_NFR_SEC_002 (Password Encryption)
  Cross Reference: QA2, QA7

QA6 – Scalability

Description:
Handles 500+ concurrent users. Design supports seamless server upgrades.

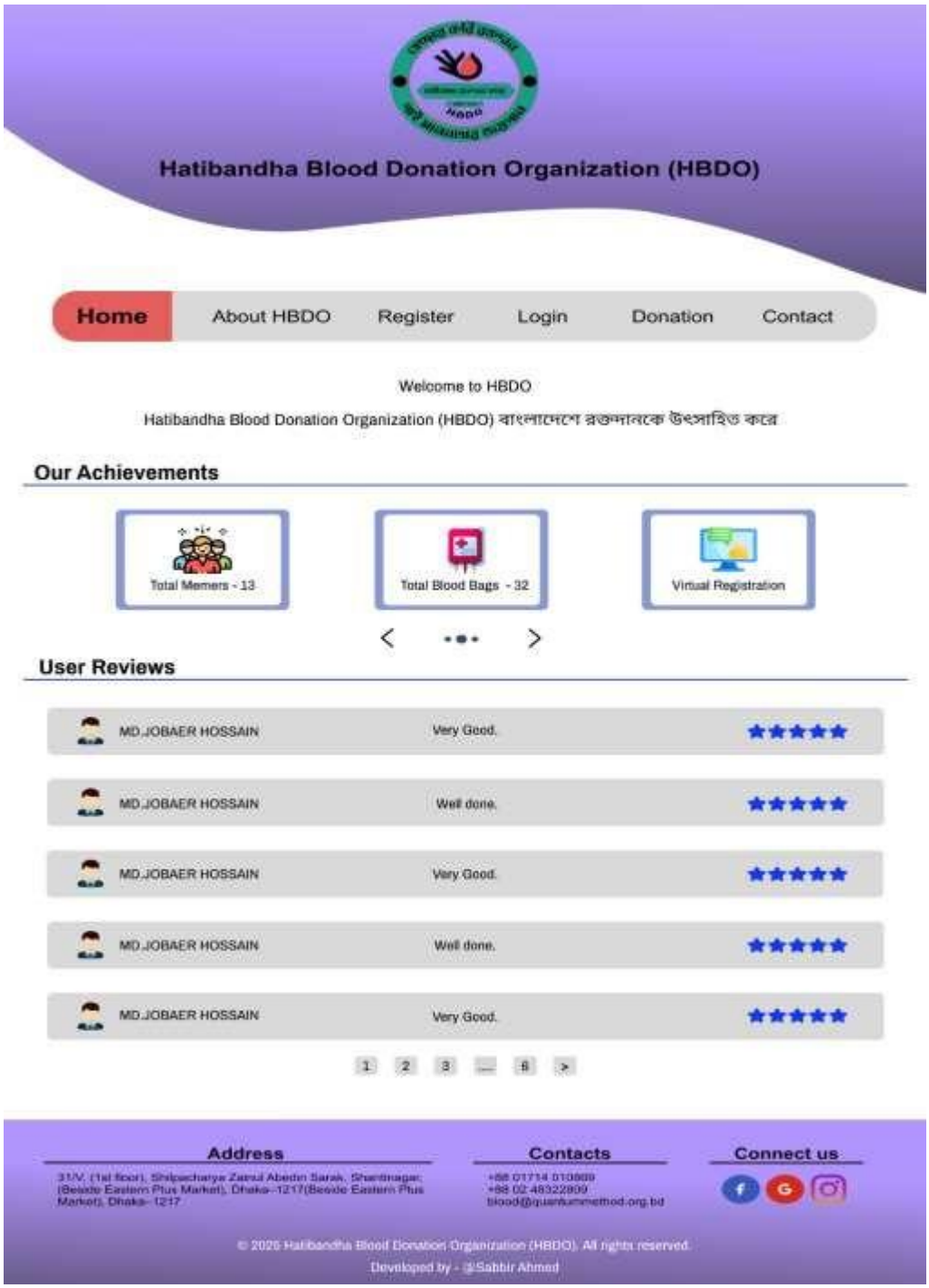
Priority Level: Medium
Precondition: Scalable frontend/backend
Cross Reference: QA1, QA4

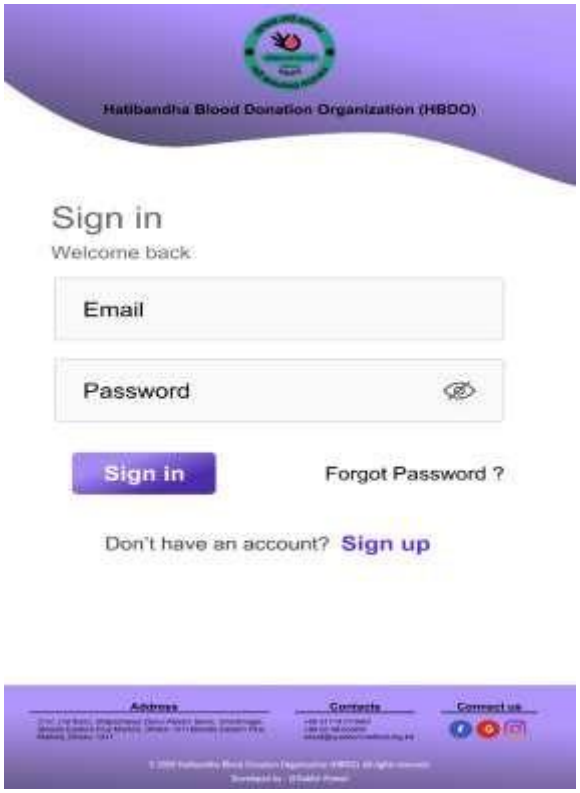
QA7 – Accuracy

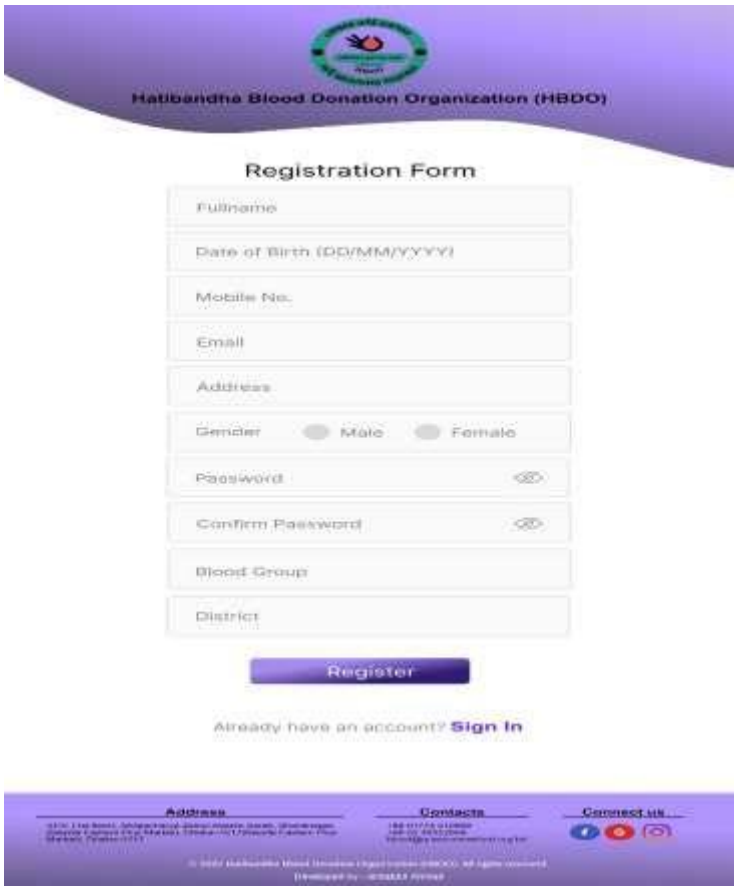
Description:
Guarantees precise data recording with validation-triggered error messaging for invalid inputs.

Priority Level: High
Precondition: Client/server validation
Cross Reference: QA2, QA5

4.3. System Interface:




Hatibandha Blood Donation Organization (HBDO)
Sign in
Welcome back
Email
Password
Sign in
Forgot Password ?
Don't have an account? Sign up
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Registration Form
Fullname
Date of Birth (DD/MM/YYYY)
Mobile No.
Email
Address
Gender
Male
Female
Password
Confirm Password
Blood Group
District
Register
Already have an account? Sign In
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Contact Us
Website: www.hbdo.org
Phone: +8801717242062
Email: hbdoofficial.bd@gmail.com
Facebook Group: Join Our Facebook Group
Facebook Page: Visit our Facebook Page
Facebook ID: Visit our Facebook ID

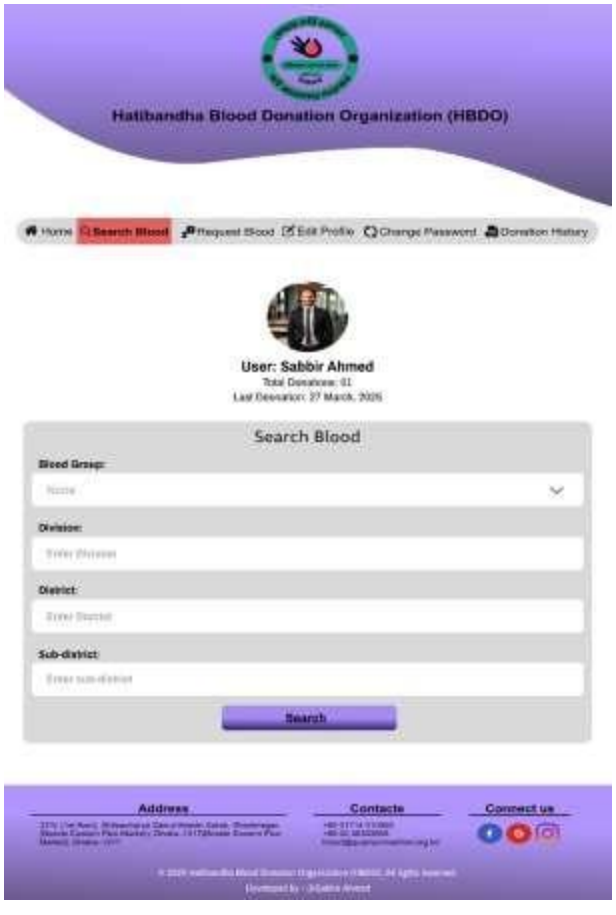

Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Forgot Password
Email
Send Reset Link


Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Forgot Password
New Password
Retype New Password
Confirm


Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Home
Search Blood
Request Blood
Edit Profile
Change Password
Donation History
User: Sabbir Ahmed
Search Blood
Blood Group:
Division:
District:
Sub-district:
Search
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Home
Search Blood
Request Blood
Edit Profile
Change Password
Donation History
User: Sabbir Ahmed
Request Blood
Blood Group Needed:
Number Of Bags Needed:
Location and Hospital (Where Blood is Needed):
Date (When Blood is Needed):
Request Blood
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Home
Search Blood
Request Blood
Edit Profile
Change Password
Donation History
Edit Profile
Name:
Phone:
Division:
District:
Sub-district:
Profile Picture:
Choose File
Confirm Update
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Home
Search Blood
Request Blood
Edit Profile
Change Password
Donation History
User: Sabbir Ahmed
Change Password
Change Password
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Home
Search Blood
Request Blood
Edit Profile
Change Password
Donation History
Donation History
Donation Picture
Date
Blood Taken
Location
27 March, 2025
1 bag full
Dhaka
Address
Contacts
Connect us

Monthly Admin Reports

Name	Phone	Points Earned
Anika Tahsin	01884663885	0
MD Leon	01627687476	0
Utchash	01924482246	0
Soumik	01717242062	0
Soumik Hasan	01627687476	0
Tahsin Islam Molla	01717242062	0

Monthly Donation Reports

Total Bags for the Current Month:0

Blood Group	Blood Group	Blood Group

Search Admin and User by Email, Name and Phone

Important: For deletion and promotion of users to admin, please handle responsibly

Search...

Search


Hatibandha Blood Donation Organization (HBDO)
Add New Member
Name:
Email:
Phone:
Password:
Gender:
Blood Group:
Division:
District:
Sub-District:
Role:
Profile Picture:
Choose File
No file chosen
Confirm Update
Address
Contacts
Connect us


Hatibandha Blood Donation Organization (HBDO)
Latest Donations
Donor Name | Blood Group | Number of Bags | Location | Donation Date
Kazi | AB+ | 1 | Dhaka | 27 March, 2025
Nabs | A+ | 1 | Dhaka | 27 April, 2025
Sabbir | AB+ | 2 | Dhaka | 27 June, 2025
Rony | O+ | 1 | Dhaka | 27 March, 2025
Fahim | A+ | 1 | Dhaka | 27 May, 2025
Tanvir | B+ | 3 | Dhaka | 27 March, 2025
Kazi | A+ | 1 | Dhaka | 27 January, 2025
Rony | AB+ | 2 | Dhaka | 27 February, 2025
Address
Contacts
Connect us

4.4. Project Requirements:

Time Estimation Table:

Day	Phase	Tasks	Team	Tools Used	Deliverables
Day 1	Preparation	- Finalize test cases - Setup InfinityFree test environment	QA Lead (1)	Google Docs, GitHub	Approved test plan
Day 2	Test Data Prep	- Create 20 mock profiles - Prepare blood request samples	QA Lead (1)	Excel, JSON generator	Test datasets (CSV)
Day 3	Unit Testing	- Auth module (login/reg) - Form validations	QA Lead + Volunteer (2)	Chrome DevTools	Unit test logs
Day 4	Integration Testing	- Donor search + request flow - Profile updates	QA Lead + Dev (2)	Postman, GitHub Issues	Integration test report
Day 5	System Testing	- Full donor-request cycle - Mobile responsiveness	Full Team (3)	Mobile emulators	System test summary
Day 6	UAT	- 3 volunteers test core features - WhatsApp feedback collection	Volunteers + QA (4)	Google Forms	UAT feedback sheets

Day 7	Reporting	- Bug fixes verification - Final report compilation	QA Lead (1)	MS Word	Printed test report (300 BDT)

Budget Estimation:

Category	Item	Details	Estimated Cost (BDT)
1. Infrastructure	Domain & Hosting	Free via 000webhost / InfinityFree	0
2. Development Tools	Code Editor	Visual Studio Code (Free)	0
	Version Control	Git & GitHub (Free)	0
	Email API	SMTP / Mailtrap (Free tier)	0
3. Testing Tools	Postman, DevTools	API and UI testing tools (Free)	0
	Manual Testing	Conducted by QA using browser tools	0
4. Documentation	Microsoft Word	Academic documentation (pre-installed in lab PC)	0
	Printing & Binding	Final test plan and report printout	300
5. Communication	Google Meet, WhatsApp	Team coordination	0
6. Training Materials	SQA Course Slides, Templates	Provided by university	0
7. Miscellaneous	Contingency (e.g., data pack)	Backup internet/power for submissions	500
Total Estimated Cost			**800 BDT**

5. FEATURES NOT TO BE TESTED

Third-Party Authentication Services
If any OAuth or external authentication methods (e.g., Google/Facebook login) are integrated in future, the internal mechanisms of those services will not be tested. Only the **redirect process and success/error status** from those services will be verified.

2. Hosting Server Infrastructure & Performance
The system is hosted on a **free web hosting platform (infinityfree)**. The **uptime, latency, and load-balancing capacity of the hosting provider** will not be evaluated or tested directly, as it falls under the provider's responsibilities.

3. Cross-Browser Compatibility (Legacy Browsers)
The application will not **undergo testing on outdated or legacy browsers** like Internet Explorer 10 or earlier. Compatibility checks will be restricted to the most **recent versions** of **modern browsers** such as Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari.

4. Mobile Responsiveness on Rare Devices
Basic mobile responsiveness is tested using Chrome Developer Tools and common screen sizes. However, testing will **not cover all mobile or tablet devices**, especially rare screen resolutions, older mobile OS versions, or smart TVs due to time and resource limitations.

5. Automated Data Backup & Recovery
If a server-side or hosting-level backup and recovery process is in place, it will **not be tested** as part of this scope. It is assumed to be configured and managed by the deployment/hosting platform.

6. Email API Internal Behavior
While the **sending of emails via contact forms or submission acknowledgments** will be tested for functional confirmation (e.g., delivery of success message), the **internal operation of the Email API (e.g., SMTP routing)** will not be validated.

7. Multilingual/Regional Language Support
This version of the system supports only a **single default language (English)**. If additional language support (e.g., Bengali, Arabic) is planned for future phases, it will not be tested in the current version.

6.1 Testing Levels

Unit Testing
Each core module of the HBO Blood Organization website will be tested independently by the developer using mock or test data to ensure the correctness of the following functionalities:

- Login and Registration Validation Logic
- Form Input Handlers (e.g., Request Blood, Add Donation)
- Profile Editing and Password Update Mechanisms
- Search and Filter Features (by Blood Group/Region)

Tool Used: Physical testing using browser developer tools (e.g., Chrome DevTools), and optionally, testing utilities like Postman for API endpoints if applicable.

Integration Testing
Modules that are dependent on each other will be tested together to validate **data consistency and logical flows**. This includes:

- Registration → Login → Dashboard access
- Request Blood → Display in System
- Add Donation → View in Donation History
- Submit Review → Display on Homepage

Focus will be placed on:

- **Data flows between pages**
- **Database insert/update correctness**
- **Session and authentication handling**

System Testing
The full website will be tested end-to-end in a simulated production environment. This level ensures that all features work cohesively, validating the entire system.

Scope:

- Registration → Login → Profile Setup
- Search Donor → Request Blood → Confirmation
- Add Donation → View Donation History
- Submit Review → Display on UI

All system-level functions will be tested for **usability, responsiveness, and error handling**.

Acceptance Testing
This final level of testing will be conducted by actual users or the project stakeholders (e.g., classmates, instructors, client). The purpose is to **ensure that the system fulfills the original project requirements** and is ready for public use or submission.

Outcome:

- “Go” if the application meets functional, UI/UX, and reliability expectations
- “No-Go” if any critical features fail or bugs prevent usage

6.2 Test Tools

Purpose	Tool(s)
Project Management	Manual tracking, Google Sheets
UI Design	Figma (for early wireframes/mockups)
Version Control	Git + GitHub
Unit Testing	Manual (JavaScript form logic), optionally PHPUnit (if using PHP for backend)
API Testing	Postman (for testing Contact Form / Email API endpoints)
Bug Tracking	GitHub Issues
Documentation	Microsoft Word, PDF Export

6.3 Meetings

The testing process for the Hatibandha Blood Donation Organization (HBDO) platform follows a structured meeting schedule to ensure continuous collaboration, visibility into test progress, and timely resolution of issues.

Daily Standups (15 minutes)

Short, focused meetings held each day during the testing phase. The goal is to maintain momentum and uncover issues early.

Discussion Points:

- What was completed yesterday?
- Are there any current blockers or bugs?
- What tasks are planned for today?

Weekly Team Meetings

Conducted every 7 days to evaluate overall progress and ensure alignment between testers and developers.

Objectives:

- Review of completed test cases and pending ones

- Prioritize and categorize open bugs (critical, major, minor)
- Prepare a plan for regression and retesting cycles

Milestone Reviews (Bi-weekly)

Milestone-based meetings are held at major checkpoints (e.g., completion of registration flow testing, donor module testing, etc.)

Coverage:

- Validate readiness of core features before integration/system testing
- Conduct live walkthroughs or demos for stakeholders
- Prepare for user acceptance testing (UAT)

Agenda Highlights (Applicable to All Meetings)

- Test case execution status
- Number and severity of open defects
- Environmental or hosting issues (e.g., email API not working)
- Feedback from team members or external users (if applicable)

7. Test Cases

User, Admin Common Functionalities

Test Case 1. Registration Functionality

Field	Details
Test Case ID	TC_FR_AUTH_001
Test Case Title	Verify New User Registration
Related Requirement	FR-AUTH-001: Users must register with valid details.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. System is accessible. 2. Email not previously registered.

Test Data	Name: "Soumik Hasan", Email: "soumikhasan000@gmail.com", Blood Group: "A+", Password: "Ss@1234"
Test Steps	1. Fill all mandatory fields. 2. Upload profile picture. 3. Click "Register".
Expected Result	Account created. Confirmation email sent.
Actual Result	Account created successfully.
Status	Pass
Remarks	Verify database record creation.

Test Case 2: Registration with Existing Email and Phone Number

Field	**Details**
Test Case ID	TC_FR_AUTH_002
Test Case Title	Prevent Duplicate Registration by Email and Phone
Related Requirement	FR-AUTH-002: System must reject duplicate email/phone registrations.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. User with email "soumik@gmail.com" and phone "+8801712345678" already registered.
Test Data	Scenario 1 (Duplicate Email): - Email: "existing@gmail.com" - Phone: "+8801711143278" (new) Scenario 2 (Duplicate Phone): - Email: "new@gmail.com" - Phone: "+8801712345678"
Test Steps	For both scenarios: 1. Fill the registration form with duplicate data. 2. Click "Register".
Expected Result	Scenario 1: - Error: "Email already registered"

	Scenario 2: - Error: "Phone number already registered"
Actual Result	Email already registered.
Status	Pass
Remarks	Critical Checks: 1. The verify database remains unchanged. 2. Test with: - Case variations (e.g., Existing@gmail.com) - Phone formats (+88017, 017, 88017)

Test Case 3: Login Functionality

Field	**Details**
Test Case ID	TC_FR_AUTH_003
Test Case Title	Verify Successful Login
Related Requirement	FR-AUTH-003: Users must access the system with valid credentials.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. A valid user account exists.
Test Data	Email: "valid@gmail.com", Password: "ValidPass123!"
Test Steps	1. Enter valid credentials. 2. Click "Login".
Expected Result	Redirect to dashboard. Session cookie created.
Actual Result	Redirect to dashboard.
Status	Pass
Remarks	Check session duration in browser.

Test Case 4: Invalid Login Attempts

Field	Details
Test Case ID	TC_FR_AUTH_004
Test Case Title	Verify Account Lock After 5 Failed Attempts
Related Requirement	FR-AUTH-004: System must prevent brute-force attacks.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. Valid account exists ("user@gmail.com").
Test Data	Email: "user@gmail.com", Wrong Password: "Wrong123" (x5)
Test Steps	1. Enter incorrect password 5 times consecutively.
Expected Result	5th attempt: "Account locked for 1 hour".
Actual Result	Account locked for 1 hour.
Status	Pass
Remarks	Verify unlock after 1 hour.

Test Case 5: Forgot Password

Field	Details
Test Case ID	TC_FR_AUTH_005
Test Case Title	Verify Password Reset Link Generation
Related Requirement	FR-AUTH-005: Users must recover accounts via email.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	Account "recover@gmail.com" exists.
Test Data	Email: "recover@gmail.com"

Test Steps	1. Click "Forgot Password". 2. Enter an email. 3. Click "Send Link".
Expected Result	Email sent with valid reset link (check inbox).
Actual Result	Email sent with valid reset link.
Status	Pass
Remarks	Link should contain secure token.

Test Case 6: Expired Reset Link

Field	**Details**
Test Case ID	TC_FR_AUTH_006
Test Case Title	Validate Reset Link Expiration
Related Requirement	FR-AUTH-006: Reset links must expire after 24 hours.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	Reset link generated >24 hours ago.
Test Data	Expired reset link URL
Test Steps	1. Click expired link. 2. Attempt password reset.
Expected Result	Error: "This link has expired. Request a new one."
Actual Result	Link has expired.
Status	Pass
Remarks	Verify system logs expiration events.

Test Case 7: Logout Functionality

Field	Details
Test Case ID	TC_FR_AUTH_007
Test Case Title	Verify Logout Functionality for All Roles
Related Requirement	FR-AUTH-007: System must terminate sessions upon logout.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. User/Admin/Super Admin is logged in.
Test Data	Active sessions for: - User: user@gmail.com - Admin: admin@ gmail.com - Super Admin: superadmin@ gmail.com
Test Steps	For each role: 1. Perform role-specific actions (e.g., request blood, approve requests, view logs). 2. Click "Logout". 3. Attempt to navigate back via browser history.
Expected Result	1. Session terminated. 2. Redirected to login page. 3. Restricted pages show "Session expired" if accessed post-logout.
Actual Result	Redirected to login page.
Status	Pass
Remarks	Security Checks: - Verify session token invalidation. - Test on multiple browsers/devices.

Test Case 8. Search Blood Functionality

Field	Details
Test Case ID	TC_FR_CMN_001
Test Case Title	Verify Blood Search with Valid Filters
Related Requirement	FR-CMN-001: Users must search for blood by location and blood group.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. User is logged in. 2. Blood donation data exists in the system.
Test Data	Blood Group: A+, Division: Dhaka, District: Dhaka, Upazila: Mirpur
Test Steps	1. Navigate to "Search Blood". 2. Select blood group and location filters. 3. Click "Search".
Expected Result	System displays matching blood donors/availability.
Actual Result	System displays matching blood donors.
Status	Pass
Remarks	Test with invalid filters (should show "No results").

Test Case 9. Request Blood Functionality

Field	Details
Test Case ID	TC_FR_CMN_002
Test Case Title	Verify Blood Request Submission
Related Requirement	FR-CMN-002: Users must request blood for patients.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Critical
Preconditions	1. User is logged in.

Test Data	Blood Group: B+, Patient's Disease: "Thalassemia", Bags: 2, Location: "Dhaka Medical College", Date: 20-Jul-2024
Test Steps	1. Navigate to "Request Blood". 2. Fill all mandatory fields. 3. Click "Request Blood".
Expected Result	Request is submitted. Confirmation message: "Blood request received."
Actual Result	Blood request received.
Status	Pass
Remarks	Test with incomplete fields (should show validation errors).

Test Case 10. Add Donation Functionality

Field	**Details**
Test Case ID	TC_FR_CMN_003
Test Case Title	Verify Donation Record Creation
Related Requirement	FR-CMN-003: Users must log their blood donations.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. User is logged in.
Test Data	Blood Group: O+, Bags: 1, Disease: "Emergency", Location: "Chattogram", Date: 15-Jul-2024, Donation Picture: [donation.jpg]
Test Steps	1. Navigate to "Add Donation". 2. Fill all fields and upload images. 3. Click "Submit".
Expected Result	Donation appears in "Donation History". Confirmation message displayed.
Actual Result	Confirmation message displayed.
Status	Pass
Remarks	Test with invalid image formats (should reject).

Test Case 11. Profile Management

Field	Details
Test Case ID	TC_FR_CMN_004
Test Case Title	Verify Profile Information Update
Related Requirement	FR-CMN-004: Users must edit their profile details.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	1. User is logged in.
Test Data	Name: "Updated Name", Phone: "01717242062", Division: "Rangpur", District: "Lalmoniorhat", Profile Picture: [profile.jpg]
Test Steps	1. Navigate to "Edit Profile". 2. Update fields and upload images. 3. Click "Update Profile".
Expected Result	Profile updates saved. Changes reflect in dashboard.
Actual Result	Profile updated.
Status	Pass
Remarks	Test with invalid phone numbers (should show error).

Test Case 12: Change Password

Field	Details
Test Case ID	TC_FR_CMN_005
Test Case Title	Verify Password Change Functionality
Related Requirement	FR-CMN-005: Users must change their passwords securely.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High

Preconditions	1. User is logged in. 2. Current password is known.
Test Data	Current Password: "12345@Ban", New Password: "12345@Bangla", Confirm Password: "12345@Bangla"
Test Steps	1. Navigate to "Change Password". 2. Enter current and new passwords. 3. Click "Change Password".
Expected Result	Password updated. Users must log in with new credentials.
Actual Result	Password updated.
Status	Pass
Remarks	Test with mismatched new/confirm passwords (should reject).

Test Case 13. Donation History & Reviews

Field	**Details**
Test Case ID	TC_FR_CMN_006
Test Case Title	Verify Donation History Display
Related Requirement	FR-CMN-006: Users must view their donation records.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Low
Preconditions	1. User is logged in. 2. At least one donation exists.
Test Data	N/A
Test Steps	1. Navigate to "Donation History".
Expected Result	All past donations display with pictures, dates, and locations.
Actual Result	Donation displayed with images.
Status	Pass
Remarks	Test with no donations (should show empty state).

User-Specific Functionalities

Test Case 14: Submit Review

Field	Details
Test Case ID	TC_FR_USER_001
Test Case Title	Verify Review Submission
Related Requirement	FR-USER-001: Users must rate and review HBDO services.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	1. User is logged in.
Test Data	Rating: 5, Comment: "Excellent service!"
Test Steps	1. Navigate to "Submit Review". 2. Select rating and enter comment. 3. Click "Submit".
Expected Result	Review is saved. Confirmation message displayed.
Actual Result	Review is saved.
Status	Pass
Remarks	Test with empty comments (should reject).

Admin-Specific Functionalities

Test Case 15: Add New Member

Field	Details
Test Case ID	TC_FR_ADMIN_001
Test Case Title	Verify Member Registration by Admin
Related Requirement	FR-ADMIN-001: Admins must add new members (user/donar).
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025

Priority	High
Preconditions	1. Admin logged in.
Test Data	Name: "New User", Email: "soumikhasan007@gmail.com", Role: "User", Blood Group: "A+"
Test Steps	1. Navigate to "Add New Member". 2. Fill all fields. 3. Click "Add Member".
Expected Result	Member appears in the “Search Member" list.
Actual Result	Member appeared in search list.
Status	Pass
Remarks	Test with duplicate email (should reject).

Test Case 16: Send Notifications

Field	Details
Test Case ID	TC_FR_ADMIN_002
Test Case Title	Verify Notification Broadcast Functionality
Related Requirement	FR-ADMIN-002: Admins must send system-wide notifications.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	1. Admin logged in.
Test Data	Title: "Urgent Blood Need", Message: "O+ donors required in Dhaka."
Test Steps	1. Navigate to "Send Notifications". 2. Enter title/message. 3. Click "Submit Notification".
Expected Result	Notification appears in user dashboards.
Actual Result	Notification appeared in dashboards.
Status	Pass
Remarks	Test with empty title (should reject).

Test Case 17: Pending Blood Request Management

Field	Details
Test Case ID	TC_FR_ADMIN_003
Test Case Title	Verify Pending Request Approval/Rejection
Related Requirement	FR-ADMIN-003: Admins must manage pending blood requests
Designed By	Test Engineer - Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. Admin logged in 2. At least one pending request exists
Test Data	Request ID: REQ-1001, Status: "Pending"
Test Steps	1. Navigate to "Pending Blood Requests" 2. Select a request 3. Click "Approve"/"Reject" 4. Enter remarks (if rejecting)
Expected Result	Status updates immediately. Email notification sent to requester.
Actual Result	Status updates immediately.
Status	Pass
Remarks	Test with invalid remarks (should reject empty rejection reasons)

Test Case 18: Latest Donations Monitoring

Field	Details
Test Case ID	TC_FR_ADMIN_004
Test Case Title	Check Latest Donations Display
Related Requirement	FR-ADMIN-004: Admins must monitor donations
Designed By	Test Engineer - Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	Admin logged in

Test Data	System contains donation records
Test Steps	1. Navigate to "Latest Donations" page
Expected Result	Displays table with columns: - Donor Name - Blood Group - Number of Bags - Location - Donation Date
Actual Result	Donation monitored.
Status	Pass
Remarks	Check that all columns are visible

Test Case 19: User Search & Management

Field	**Details**
Test Case ID	TC_FR_ADMIN_005
Test Case Title	Verify User Search and Role Modification
Related Requirement	FR-ADMIN-005: Admins must manage user roles
Designed By	Test Engineer - Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. Admin logged in 2. Regular user account exists
Test Data	User Email: "user@gmail.com", Current Role: "User"
Test Steps	1. Navigate to "Search Member" 2. Search by email 3. Click "Promote to Admin" 4. Confirm action
Expected Result	Role changes to "Admin". Confirmation email sent.
Actual Result	Confirmation mail sent.
Status	Pass
Remarks	Test search with partial name/phone number matches

Test Case 20: Monthly Report Generation

Field	Details
Test Case ID	TC_FR_ADMIN_006
Test Case Title	Verify Admin Data Existence
Related Requirement	FR-ADMIN-006: Admin data must be displayed correctly.
Designed By	Test Engineer - Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	1. Admin logged in 2. Monthly admin report is generated.
Test Data	Admin names: Anikah Tahsin, Soumik Hasan, Md. Tahsin Islam Molla.
Test Steps	1. Open the monthly admin report. 2. Check if all admin names are listed.
Expected Result	All admins should be present with correct details.
Actual Result	Admins should be presented with correct details.
Status	Pass
Remarks	All admins are listed correctly.

Non-Functional Test Cases

Test Case 1: System Response Time Under Load

Field	Details
Test Case ID	TC_NFR_PERF_001
Test Case Title	Validate Response Time for 500 Concurrent Users
Related Requirement	NFR-PERF-001: System must respond within 3s under 500 concurrent users.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Critical
Preconditions	1. JMeter configured. 2. Production-like environment ready.

Test Data	500 virtual users performing: - Login - Blood search - Request submission
Test Steps	1. Configure 500-user load test. 2. Execute for 15 minutes. 3. Capture response times.
Expected Result	95% of requests complete within 3 seconds.
Actual Result	Responds within 3 seconds.
Status	Pass
Remarks	Escalate if CPU usage >80% or error rate >5%.

Test Case 2: Role-Based Access Control

Field	**Details**
Test Case ID	TC_NFR_SEC_001
Test Case Title	Verify Unauthorized Role Access Prevention
Related Requirement	NFR-SEC-001: Users cannot access higher-privilege features.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. User/Admin accounts created.
Test Data	- User attempting to access /admin/dashboard - Admin accessing /superadmin/logs
Test Steps	1. Log in as lower-privilege role. 2. Manually access restricted URLs.
Expected Result	Returns "403 Forbidden" for all unauthorized attempts.
Actual Result	Return 403 Forbidden.
Status	Pass
Remarks	Test all role combinations.

Test Case 3: Password Encryption

Field	Details
Test Case ID	TC_NFR_SEC_002
Test Case Title	Verify Password Storage Encryption
Related Requirement	NFR-SEC-002: Passwords must be hashed in database.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Critical
Preconditions	1. Database access credentials available.
Test Data	Test user password: "Test@123"
Test Steps	1. Create test user. 2. Check database password field.
Expected Result	Password stored as irreversible hash (e.g., bcrypt).
Actual Result	Password encrypted.
Status	Pass
Remarks	Verify no plaintext passwords in logs/database.

Test Case 4: Mobile Responsiveness

Field	Details
Test Case ID	TC_NFR_USAB_001
Test Case Title	Verify Mobile Interface Functionality
Related Requirement	NFR-USAB-001: UI must adapt to screens ≥320px wide.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	Medium
Preconditions	1. Chrome DevTools or physical mobile devices.
Test Data	Screen widths: 320px, 414px, 768px

Test Steps	1. Test all forms/dashboards on mobile view. 2. Check touch targets.
Expected Result	No horizontal scrolling. Buttons >48px.
Actual Result	No horizontal scrolling.
Status	Pass
Remarks	Test on iOS/Android real devices.

Test Case 5: System Recovery

Field	**Details**
Test Case ID	TC_NFR_REL_001
Test Case Title	Verify Database Recovery After Crash
Related Requirement	NFR-REL-001: System must recover within 10 minutes after failure.
Designed By	Test Engineer -Mahmudul Hasan
Date Designed	4-June-2025
Priority	High
Preconditions	1. Backup restoration process documented.
Test Data	Simulated database corruption.
Test Steps	1. Force DB crash. 2. Initiate recovery. 3. Measure downtime.
Expected Result	System fully operational within 10 minutes.
Actual Result	System fully operational.
Status	Pass
Remarks	Verify no data loss post-recovery.

8. ITEM PASS/FAIL CRITERIA

8.1 Functional Requirements Pass/Fail Criteria

Category	Pass Criteria	Fail Criteria
Core Functionality	All high-priority test cases (TC_FR_AUTH_001 to TC_FR_ADMIN_006) pass with 100% success	Any critical functionality fails (e.g., registration, blood request submission)
Data Validation	All input fields enforce correct validation rules (email, phone, blood group)	System accepts invalid formats or values
Workflow Integrity	End-to-end processes complete without errors (registration→donation→history)	Workflows break between modules
Security Controls	All security test cases (TC_NFR_SEC_001 to 002) pass	Vulnerabilities found in authentication or data protection

8.2 Non-Functional Requirements Pass/Fail Criteria

Attribute	Pass Criteria	Fail Criteria
Performance	≤2s page load, handles 480+ concurrent users	≥3s latency or system crashes under load
Usability	90% of UAT participants complete tasks without assistance	>30% require help
Reliability	99.5% uptime, recovers within 10 minutes of failure	Frequent outages or prolonged downtime
Mobile Compliance	Fully responsive on all tested devices (320px+)	Layout breaks on common mobile devices

9. TEST DELIVERABLES

9.1 Pre-Test Documentation

1. Approved Test Plan (STC-TC-TP-01)
2. Traceability Matrix (Requirements ↔ Test Cases)
3. Test Data Sets (50 donor profiles, 20 blood requests)

9.2 Test Execution Artifacts

1. **Daily Test Logs (Google Sheets)**
    - **Execution status (Pass/Fail/Blocked)**
    - **Defect reports (GitHub Issues)**
2. **Screenshots/Video Recordings of:**
    - **Critical defects**
    - **Boundary test cases**

9.3 Post-Test Reports

1. **Test Summary Report containing:**
    - **Metrics:**
        - **Test Coverage (95% target)**
        - **Defect Density (0.2 defects/TC max)**
        - **Requirement Validation Status**
    - **Appendix:**
        - **Severity-wise defect distribution**
        - **Performance benchmarks**
2. **UAT Sign-off Document with:**
    - **Stakeholder feedback**
    - **Go/No-Go recommendation**

10. STAFFING AND TRAINING NEEDS

10.1 Resource Allocation

Role	Quantity	Key Responsibilities	Competency Requirements
Test Manager	**1**	**Overall planning, defect triage**	**ISTQB Certified, JMeter expertise**
Test Engineers	**2**	**Test execution, defect logging**	**Selenium, Postman, GitHub Issues**

Domain Experts	**1**	**Validate blood donation workflows**	**Medical/Blood bank experience**
UAT Participants	**3-5**	**Real-world scenario testing**	**Mix of tech/non-tech users**

10.2 Training Plan

1. **Tool Training (Week 1)**
    - **JMeter for performance testing**
    - **Postman for API validation**
    - **GitHub Issues for defect tracking**
2. **Domain Training (Week 2)**
    - **Blood group compatibility rules**
    - **Emergency request protocols**
    - **Data privacy requirements (donor information)**

11. RESPONSIBILITIES

11.1 Role-based Responsibilities

Team	Key Responsibilities	Accountability Metrics
Development	**Fix critical defects within 24 hours**	**95% of P1 bugs resolved per SLA**
Testing	**Maintain 100% test coverage**	**≤5% test case leakage**
DevOps	**Ensure test environment availability**	**99.5% uptime during test cycles**
Stakeholders	**Provide timely UAT feedback**	**Sign-off within 3 days of UAT completion**

11.2 Escalation Matrix

Issue Level	Responsible Person	Resolution Timeline
Critical (P1)	**Test Manager → CTO**	**<24 hours**
Major (P2)	**Lead Test Engineer**	**<3 days**

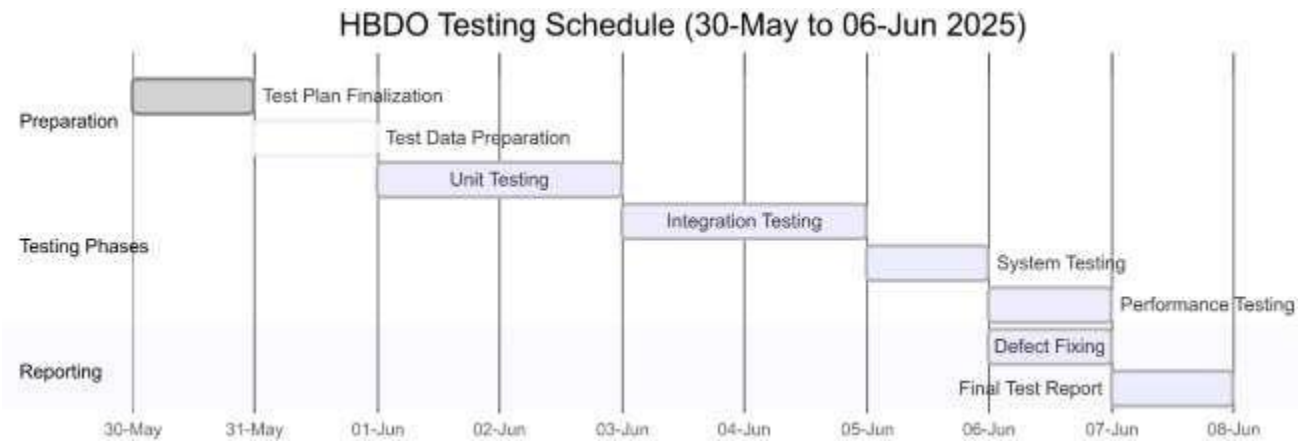
Minor (P3)	**Assigned Test Engineer**	**Next release cycle**

12. TESTING SCHEDULE

12.1 Test Phase Timeline

Phase	Start Date	End Date	Entrance Criteria	Exit Criteria
Unit Testing	**10-Jun-2025**	**12-Jun-2025**	**All modules developed**	**100% unit test pass rate**
Integration Testing	**13-Jun-2025**	**17-Jun-2025**	**Unit testing completed**	**All interfaces validated**
System Testing	**18-Jun-2025**	**24-Jun-2025**	**Integration tests passed**	**95% requirement coverage**
UAT	**25-Jun-2025**	**27-Jun-2025**	**Stakeholders available**	**Signed acceptance criteria**

12.2 **Gantt chart** for your HBDO testing schedule



13. PLANNING RISKS AND CONTINGENCIES

13.1 Risk Assessment Matrix

Risk Item	Probability	Impact	Mitigation Strategy	Contingency Plan
Hosting platform instability (InfinityFree downtime)	Medium	High	- Daily backups to local PC - Use GitHub for code preservation	Migrate to local hosting (e.g., DhakaHost)
Key staff unavailability (illness/leave)	Low	High	- Document all test procedures - Pair testing between team members	Extend timeline by 3-5 days
Performance targets not met (slow page loads)	High	Medium	- Optimize images/DB early - Use browser caching	Reduce concurrent user target to 300
UAT feedback delays (stakeholder delays)	Medium	Medium	- Schedule reminders via SMS - Offer flexible UAT hours	Conduct Zoom-based UAT sessions

13.2 Contingency Budget (1,000 BDT Allocation)

Category	Allocation	Usage Plan	Local Alternatives
Emergency Local Hosting	500 BDT	1-month paid hosting from BDWebs/DhakaHost if InfinityFree fails	BDIX servers (150-200 BDT/month)
Mobile Internet Packs	300 BDT	3 × 10GB data packs (GP/Airtel) for rural UAT testing	Robi/Flexi packages (≈100 BDT/10GB)
Printing & Transport	200 BDT	- 50 printed test cases (2 BDT/page) - 5 CNG rides for on-site verification	