A

Project Report

On

" LactaCare – Infant Care Support"

Human Milk Bank Management System

By

Vaibhavi Sanjay Pasalkar

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1.Introduction

Breast milk is the most nutritious and natural source of nourishment for newborns, especially for premature and low-birth-weight babies. It contains essential antibodies, enzymes, and nutrients that protect infants from infections and promote healthy growth. However, not all mothers are able to breastfeed due to various medical or personal reasons. To support such infants, Human Milk Banks collect, screen, store, and distribute donated breast milk to hospitals and caregivers. These milk banks play a vital role in saving lives, but their management is often manual and unorganized.

LactaCare is a web-based human milk management system designed to connect human milk donors, hospitals, and administrators on a single platform to support infants in need of breastmilk. It allows donors to register, complete health screenings, book appointments, and track donation history, while hospitals can request milk for newborns and monitor request status. Admins manage appointments, milk requests, and inventory. The system also includes features like awareness pages, location-based milk bank search, and a money donation option—making the entire milk donation and distribution process efficient, transparent, and life-saving for vulnerable infants.

1.1. Existing System

- Lack of awareness about human milk donation and its life-saving impact.
- Manual, paper-based processes in milk banks and hospitals.
- No central platform to connect donors, hospitals, and milk banks.
- Health screening is done manually, causing delays and inconsistencies.
- No proper system to track milk donation or hospital requests.
- High risk of data loss, duplication, and inaccessibility.
- No platform to educate or engage the community in milk/money donation.
- Inventory tracking is difficult; admins can't monitor milk expiry or availability.
- No clear accountability or traceability from donor to recipient

1.2. Need of the System

- To create a unified digital platform connecting donors, hospitals, and admins.
- To raise awareness about human milk donation through educational content.
- To allow donors to register, update profiles, and manage appointments online.
- To implement automated donor health screening using smart questionnaires.
- To enable hospitals to request milk with baby details and track request status.
- To give admins full control over appointments, milk approvals, and inventory.
- To provide location-based search for nearby milk centers.
- To encourage and process money donations for infrastructure and outreach.

- ❖ To ensure full traceability of every milk donation and delivery.
- ❖ To replace slow, error-prone manual systems with a fast, secure digital solution.

1.3. Overview of the Project

1. Donor Module

This module allows individuals who wish to donate milk to register, undergo screening, and manage their donations.

- ❖ **Key Features:**
  - Donor Registration & Login
  - Profile Management (update personal info, contact, etc.)
  - Smart Health Screening (system auto-decides eligibility based on questionnaire)
  - Appointment Booking
  - View Donation History (past donations and status)
  - Donor Dashboard (summary donation record)

2. Hospital Module

Hospitals can request milk for infants in need, provide medical details, and track the status of their requests.

- ❖ **Key Features:**
  - Hospital Registration & Login
  - Profile Management
  - Raise Milk Request (Enter baby's condition, doctor details, prescription)
  - Track Request Status (Pending, Approved, Rejected, Fulfilled)
  - View Request History
  - Hospital Dashboard (overview of milk request)

3. Admin Module

Admins oversee and manage all system operations including donor appointments, milk inventory, and hospital requests.

- ❖ **Key Features:**
  - Admin Dashboard
  - Manage Appointments (approve/reject, collect status, mark as completed)
  - Manage Hospital Requests (approve/reject requests, update delivery status)
  - Manage Inventory (track milk activity, expiry, and availability)
  - Track Donations and Fulfilments.

4. Other Pages (Public & Supportive)

Common Features Accessible by All Users or Guests: Home Page, Awareness Page (Learn About Human Milk Banks) ,Search Centers (by City, State, or Location), Money Donation and Contact Us Page

2. Analysis

2.1. Hardware and Software Requirements

❖ **Hardware:**

- Server: Dual-core CPU, 4 GB RAM, 20 GB storage, reliable internet
- Client: Desktop/laptop/tablet/mobile with internet and standard display

❖ **Software:**

- Frontend: HTML, CSS, JavaScript, Bootstrap
- Backend: Java (JDK 17+), Tomcat, Servlets, JSP, JDBC.
- Database: PostgreSQL
- Tools: IDE (Eclipse), Git

3. Design

3.1. Database Table Designing

1) Users Table

Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	-	Primary Key
2	email	VARCHAR	255	Unique, Not Null
3	password	VARCHAR	255	Not Null
4	role	VARCHAR	20	CHECK (donor, hospital, admin), Not Null

2) Donors Table

Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	-	Primary Key
2	user_id	INT	-	Foreign Key
3	full_name	VARCHAR	255	Not Null
4	contact	VARCHAR	20	Not Null
5	dob	DATE	-	Not Null
6	address	TEXT	-	Not Null
7	lactation_status	VARCHAR	50	Not Null
8	screening_frequency	INT	-	Default 1
9	donor_status	VARCHAR	20	CHECK ('Active','Inactive','Suspended'), Default 'Active'
10	last_screened	DATE	-	-
11	next_screening	DATE	-	-

3) Hospitals Table

Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	-	Primary Key
2	user_id	INT	-	Foreign Key
3	full_name	VARCHAR	255	Not Null
4	contact	VARCHAR	20	Not Null
5	dob	DATE	-	Not Null
6	address	TEXT	-	Not Null
7	lactation_status	VARCHAR	50	Not Null
8	screening_frequency	INT	-	Default 1
9	donor_status	VARCHAR	20	CHECK ('Active','Inactive','Suspended'), Default 'Active'
10	last_screened	DATE	-	-
11	next_screening	DATE	-	-

4) Contact Message Table

Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	—	Primary Key
2	full_name	VARCHAR	100	Not Null
3	email	VARCHAR	100	Not Null
4	phone	VARCHAR	15	—
5	subject	VARCHAR	255	—
6	message	TEXT	—	Not Null
7	submitted_at	TIMESTAMP	—	Default CURRENT_TIMESTAMP

5) Screening Table

Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	—	Primary Key
2	donor_id	INTEGER	—	FK (users.id), Not Null
3	baby_dob	DATE	—	Not Null
4	excess_milk to travel	VARCHAR	3	CHECK ('Yes','No'), Not Null
...	consent1 to consent4	BOOLEAN	—	Not Null
5	submission_date	TIMESTAMP	—	Default CURRENT_TIMESTAMP
6	status	VARCHAR	20	Default 'Pending'
7	disqualification_reasons	TEXT	—	—
8	eligibility_expiry	DATE	—	—

6) Appointments Table

Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	—	Primary Key
2	donor_id	INT	—	Foreign Key (donors.id), Not Null
3	user_id	INT	—	Foreign Key (users.id), Not Null
4	type	VARCHAR	10	CHECK ('home','center'), Not Null
5	appointment_date	DATE	—	Not Null
6	time_slot	VARCHAR	20	Not Null
7	notes	TEXT	—	—
8	status	VARCHAR	20	Default 'scheduled', CHECK constraint
9	milk_amount	INTEGER	—	—
10	test_result	VARCHAR	10	CHECK ('accepted', 'rejected')

7) Milk Request Table

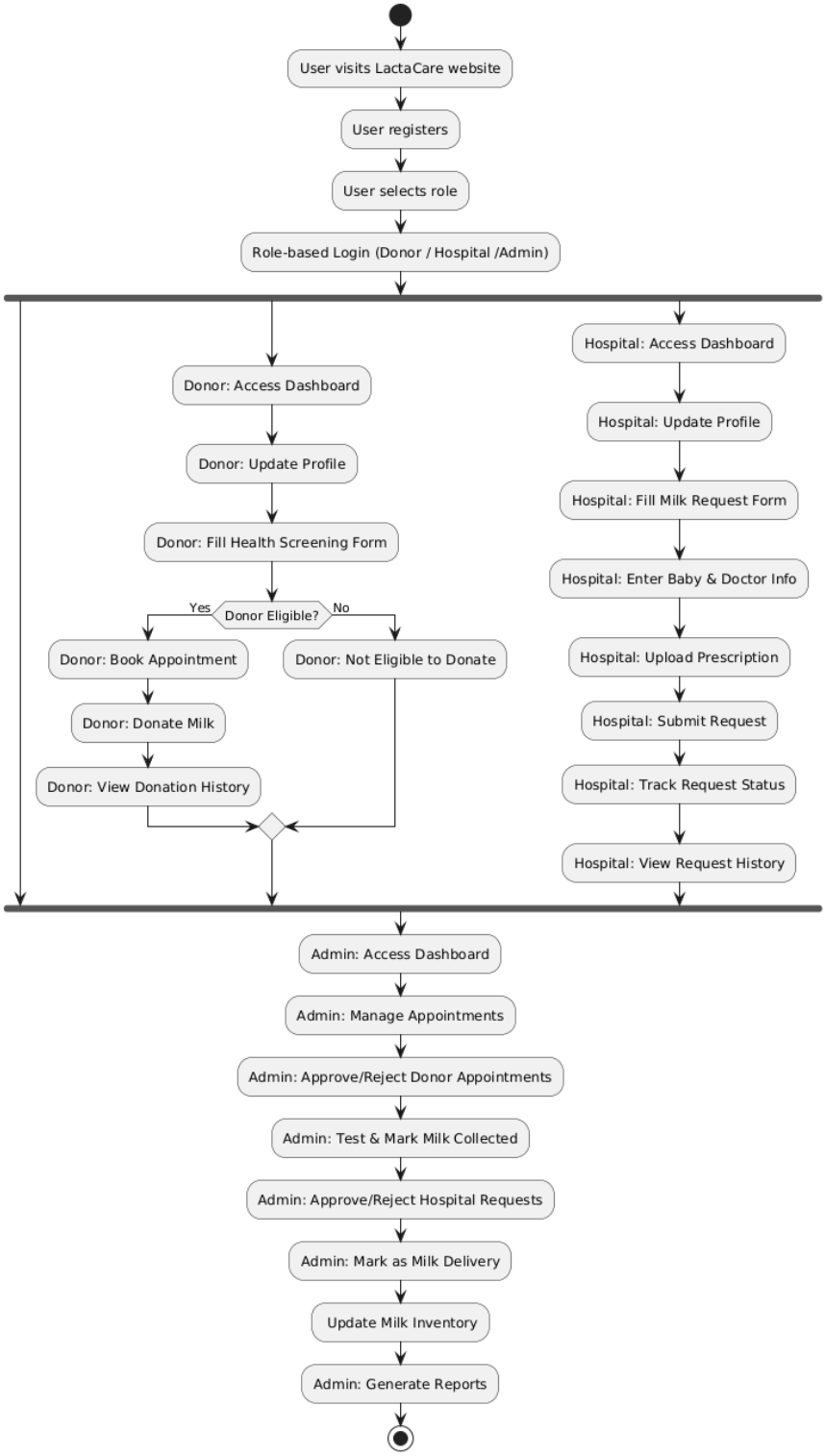
Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	—	Primary Key
2	hospital_id	INTEGER	—	FK (hospitals.id), Not Null
3	user_id	INTEGER	—	FK (users.id), Not Null
4	baby_name	VARCHAR	255	Not Null
5	baby_gender	VARCHAR	10	Not Null
6	baby_dob	DATE	—	Not Null
7	baby_weight	DECIMAL	5,2	Not Null
8	birth_condition	VARCHAR	50	Not Null
9	doctor_name	VARCHAR	255	Not Null
10	milk_type	VARCHAR	20	Not Null
11	quantity_ml	INTEGER	—	Not Null
12	urgency_level	VARCHAR	10	Not Null
13	request_reason	TEXT	—	Not Null
14	prescription_path	VARCHAR	255	Not Null
15	request_date	TIMESTAMP	—	Default CURRENT_TIMESTAMP
16	status	VARCHAR	20	Default 'Pending', CHECK constraint

8) Inventory Transactions Table

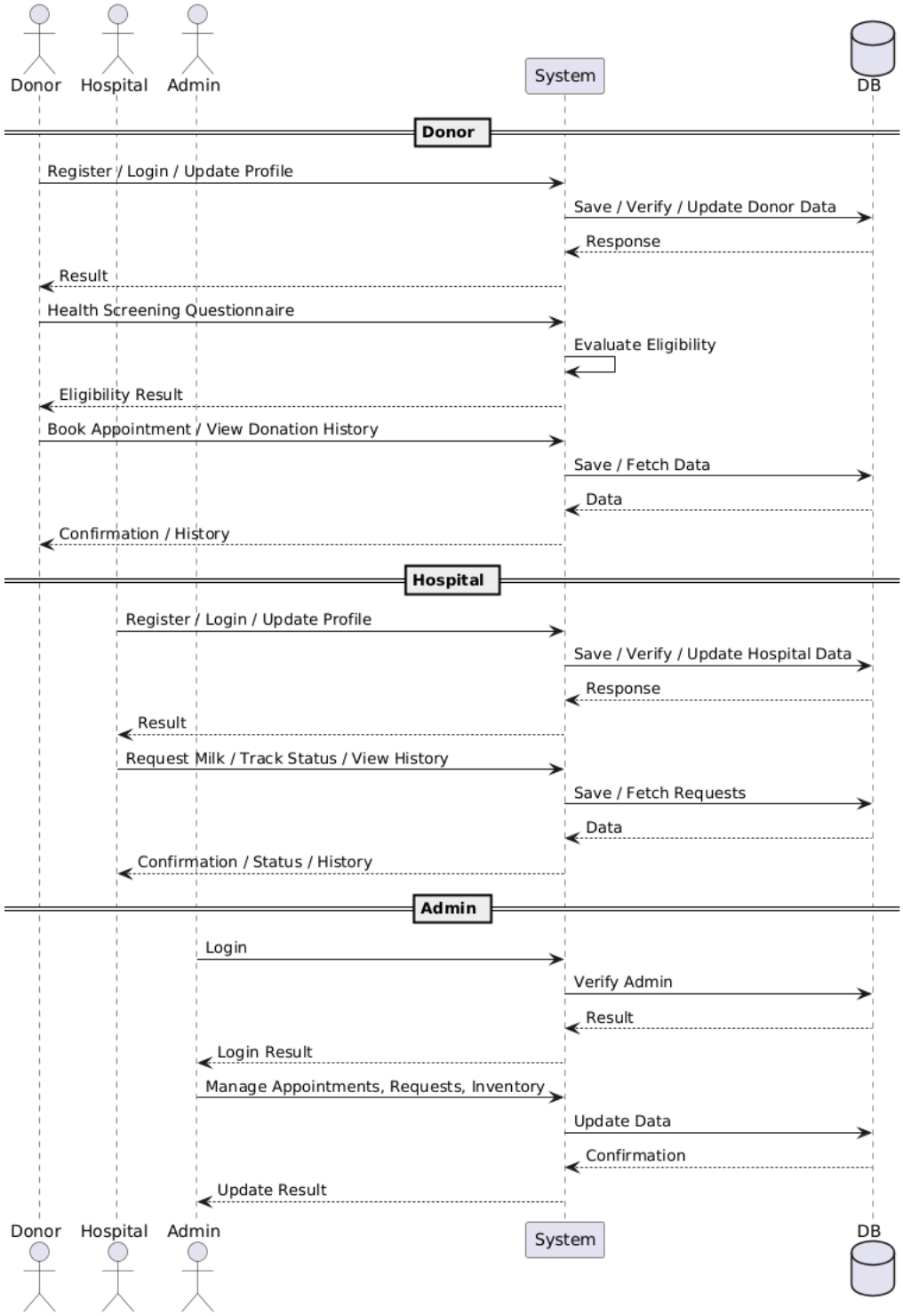
Sr. No	Name	Type	Length	Constraints
1	id	SERIAL	—	Primary Key
2	type	VARCHAR	10	CHECK ('donation', 'delivery')
3	donor_id	INTEGER	—	FK (donors.id)
4	hospital_id	INTEGER	—	FK (hospitals.id)
5	appointment_id	INTEGER	—	FK (appointments.id)
6	request_id	INTEGER	—	FK (milk_requests.id)
7	amount_ml	INTEGER	—	Not Null
8	transaction_date	TIMESTAMP	—	Default CURRENT_TIMESTAMP
9	expiration_date	DATE	—	—

3.2. Software Engineering Diagram

1) Activity Diagram

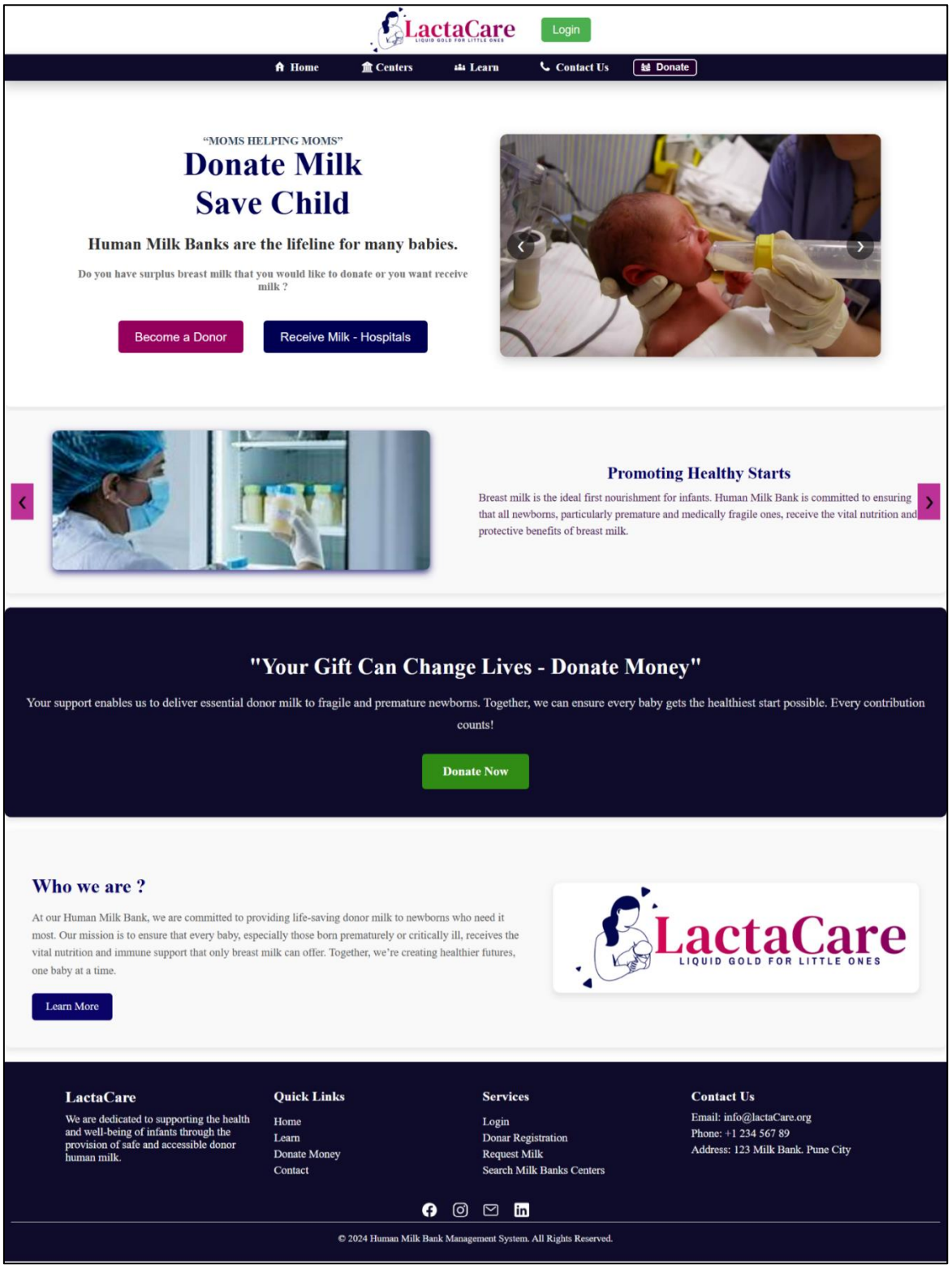


2) Sequence Diagram

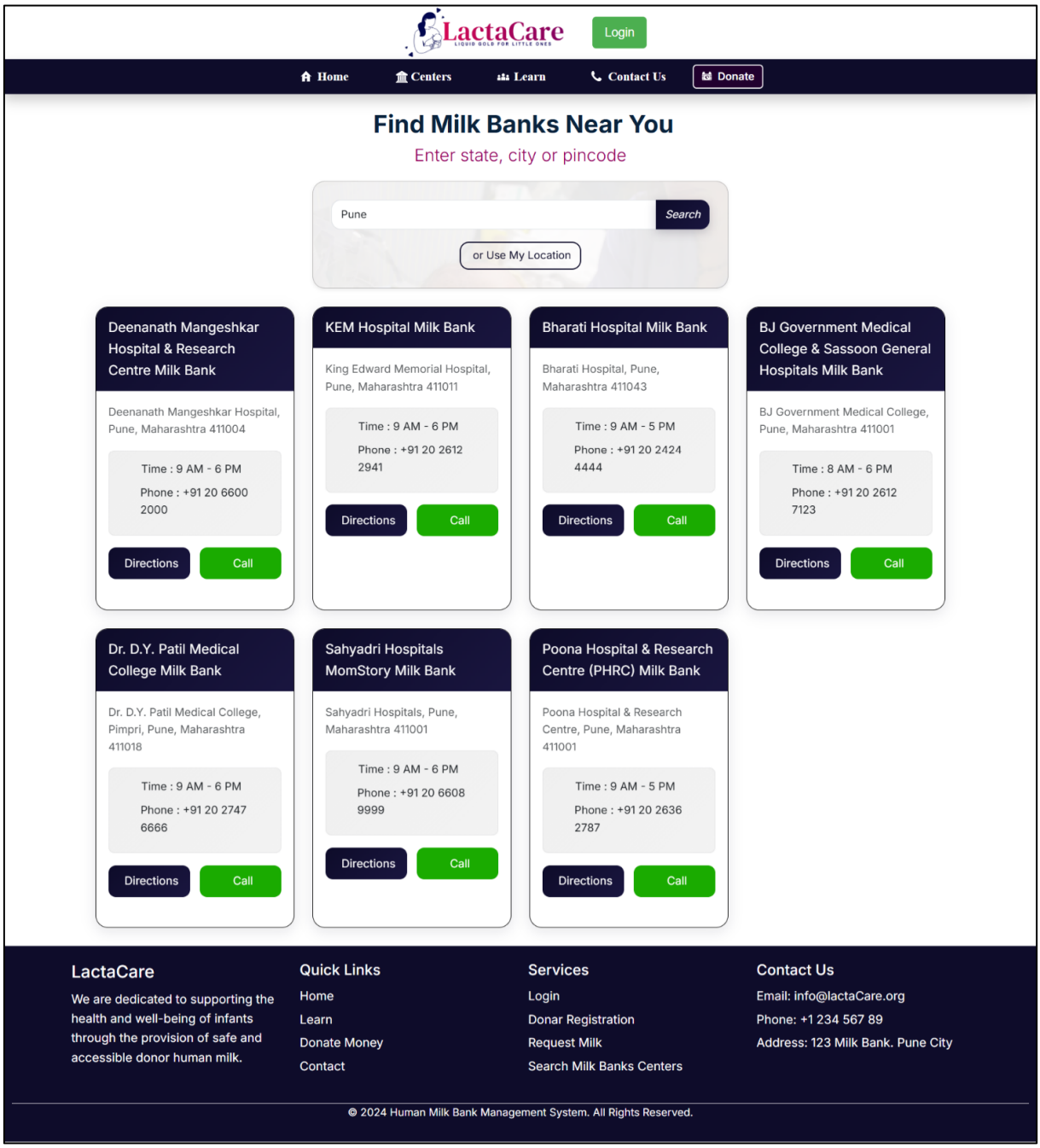


3.3. Input and Output Screens and reports

Home Page



Center Page


LactaCare
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Phone : +91 20 6600 2000
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King Edward Memorial Hospital, Pune, Maharashtra 411011
Time : 9 AM - 6 PM
Phone : +91 20 2612 2941
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Bharati Hospital Milk Bank
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BJ Government Medical College, Pune, Maharashtra 411001
Time : 8 AM - 6 PM
Phone : +91 20 2612 7123
Directions
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Dr. D.Y. Patil Medical College Milk Bank
Dr. D.Y. Patil Medical College, Pimpri, Pune, Maharashtra 411018
Time : 9 AM - 6 PM
Phone : +91 20 2747 6666
Directions
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Sahyadri Hospitals MomStory Milk Bank
Sahyadri Hospitals, Pune, Maharashtra 411001
Time : 9 AM - 6 PM
Phone : +91 20 6608 9999
Directions
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Poona Hospital & Research Centre (PHRC) Milk Bank
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LactaCare
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Phone: +1 234 567 89
Address: 123 Milk Bank. Pune City
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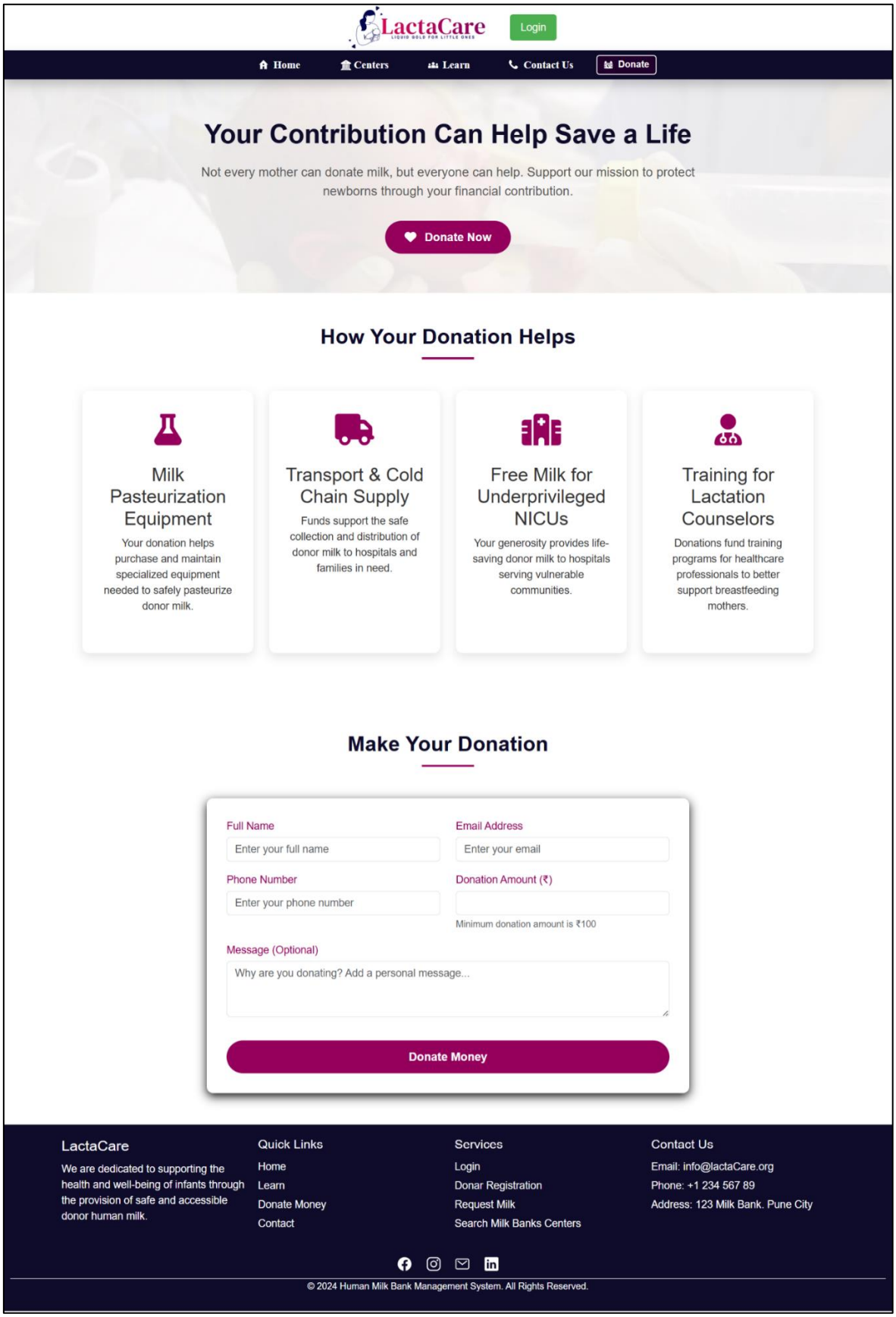
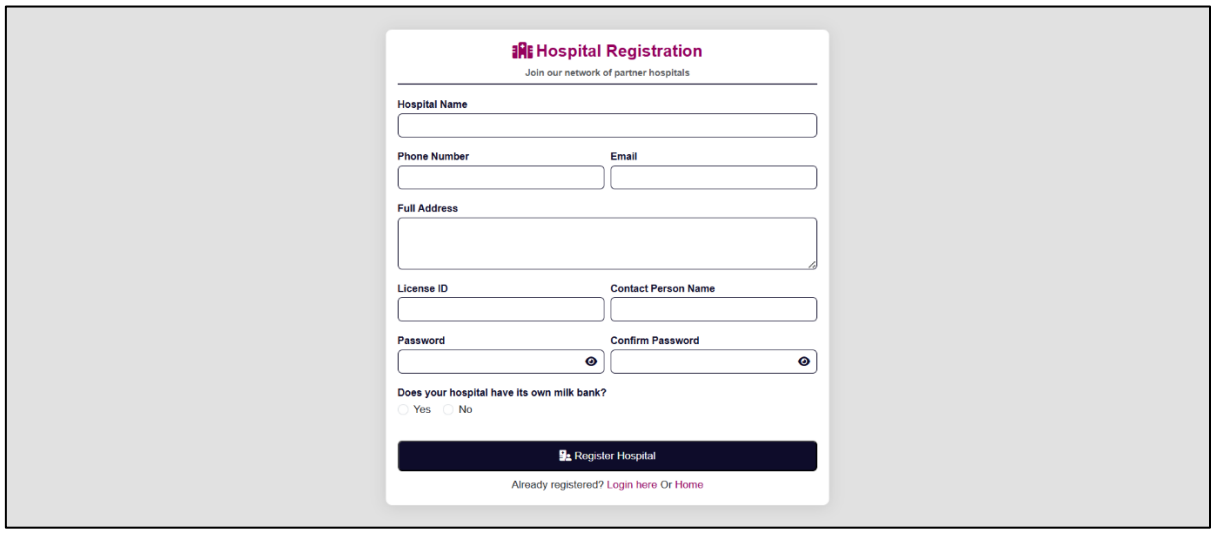
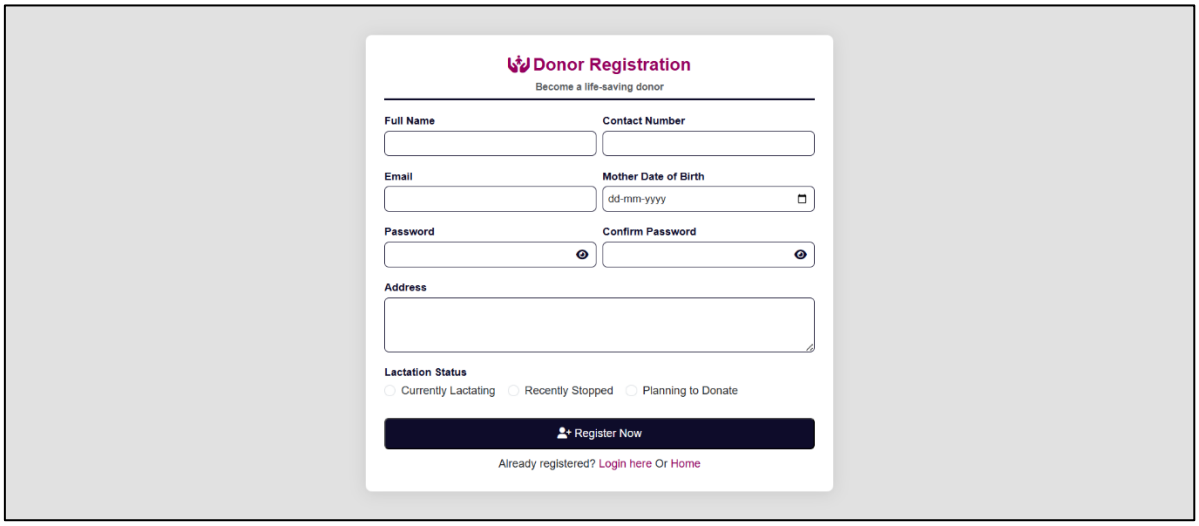
Money Donation Page



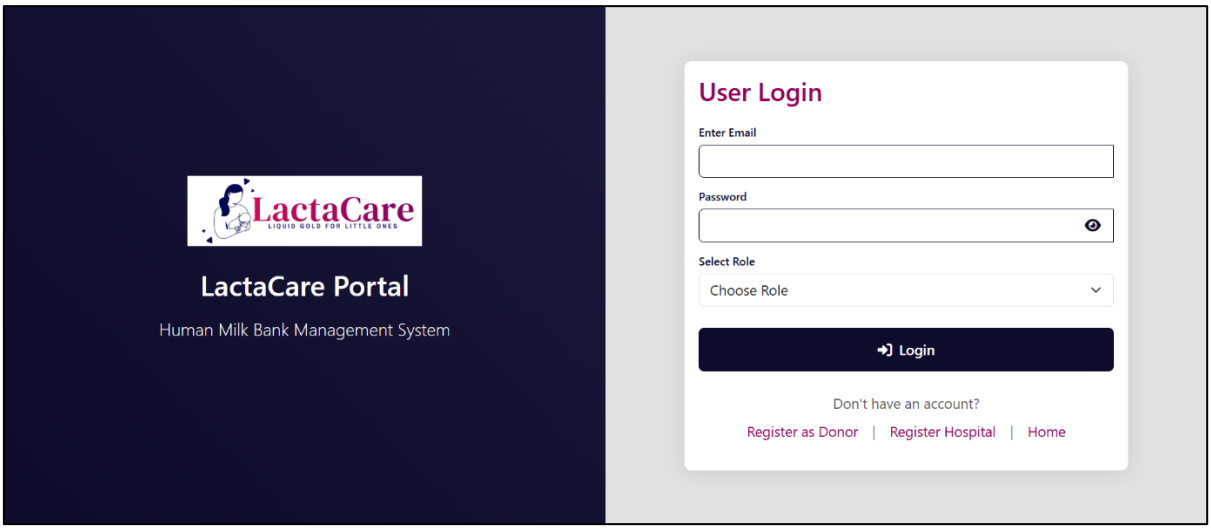
Hospital Registration



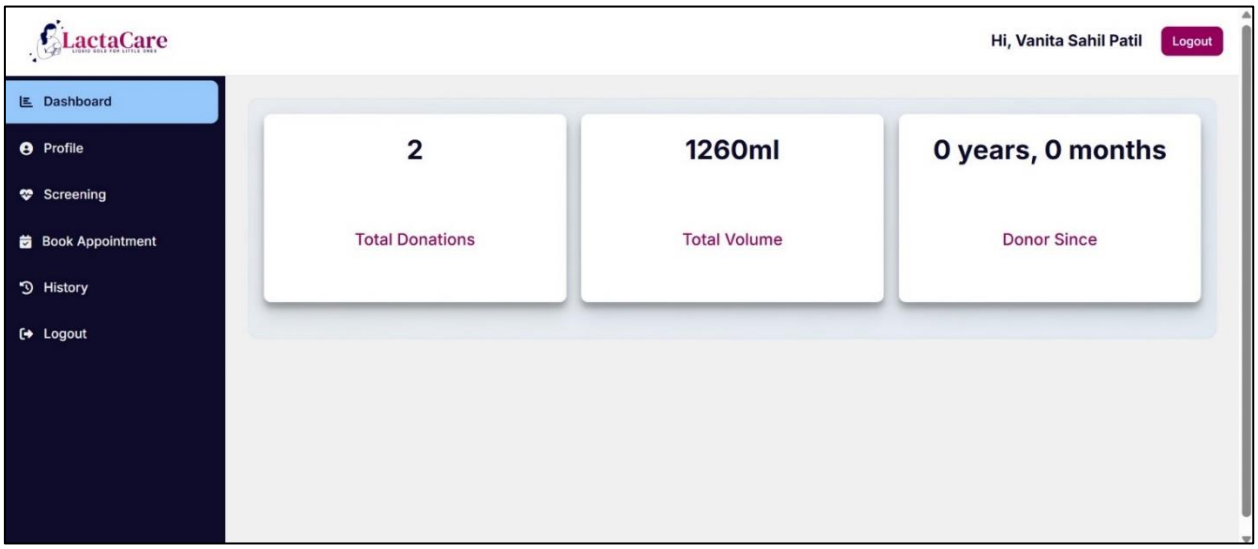
Milk Donor Registration



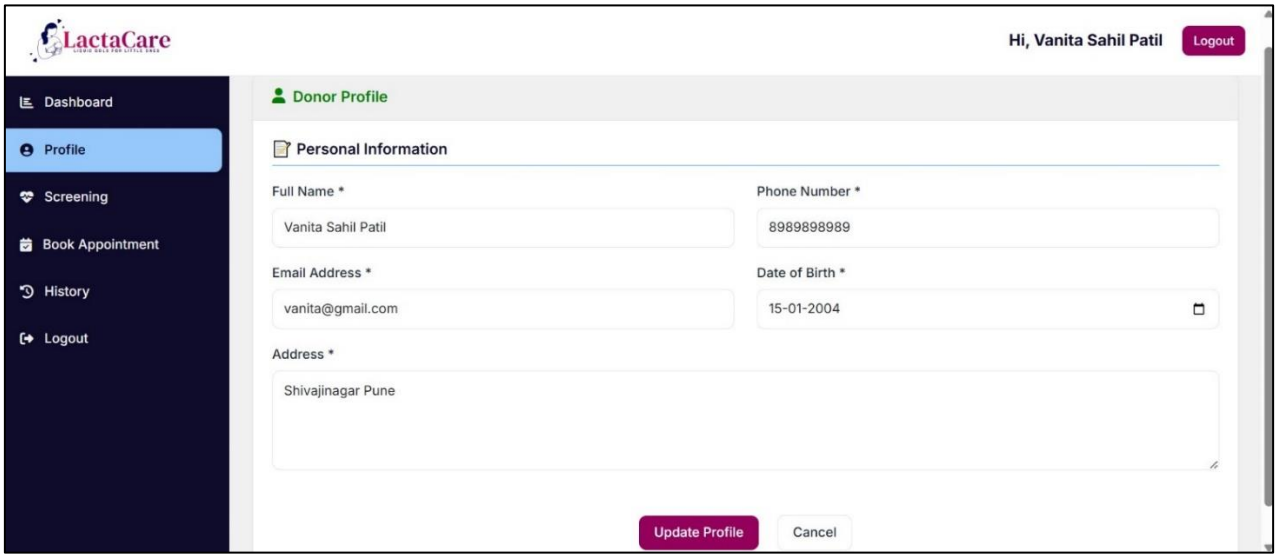
Login Page



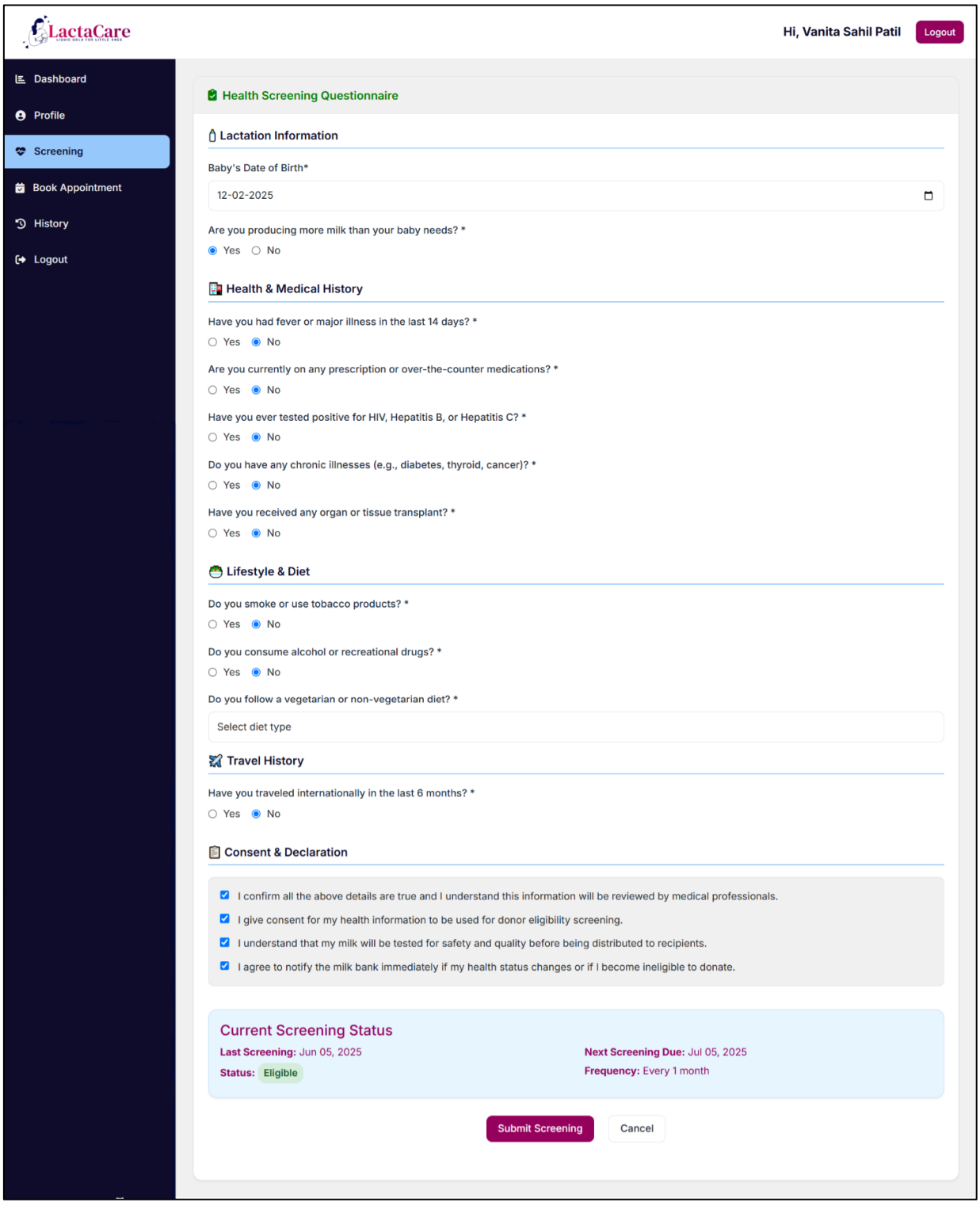
Donor Dashboard



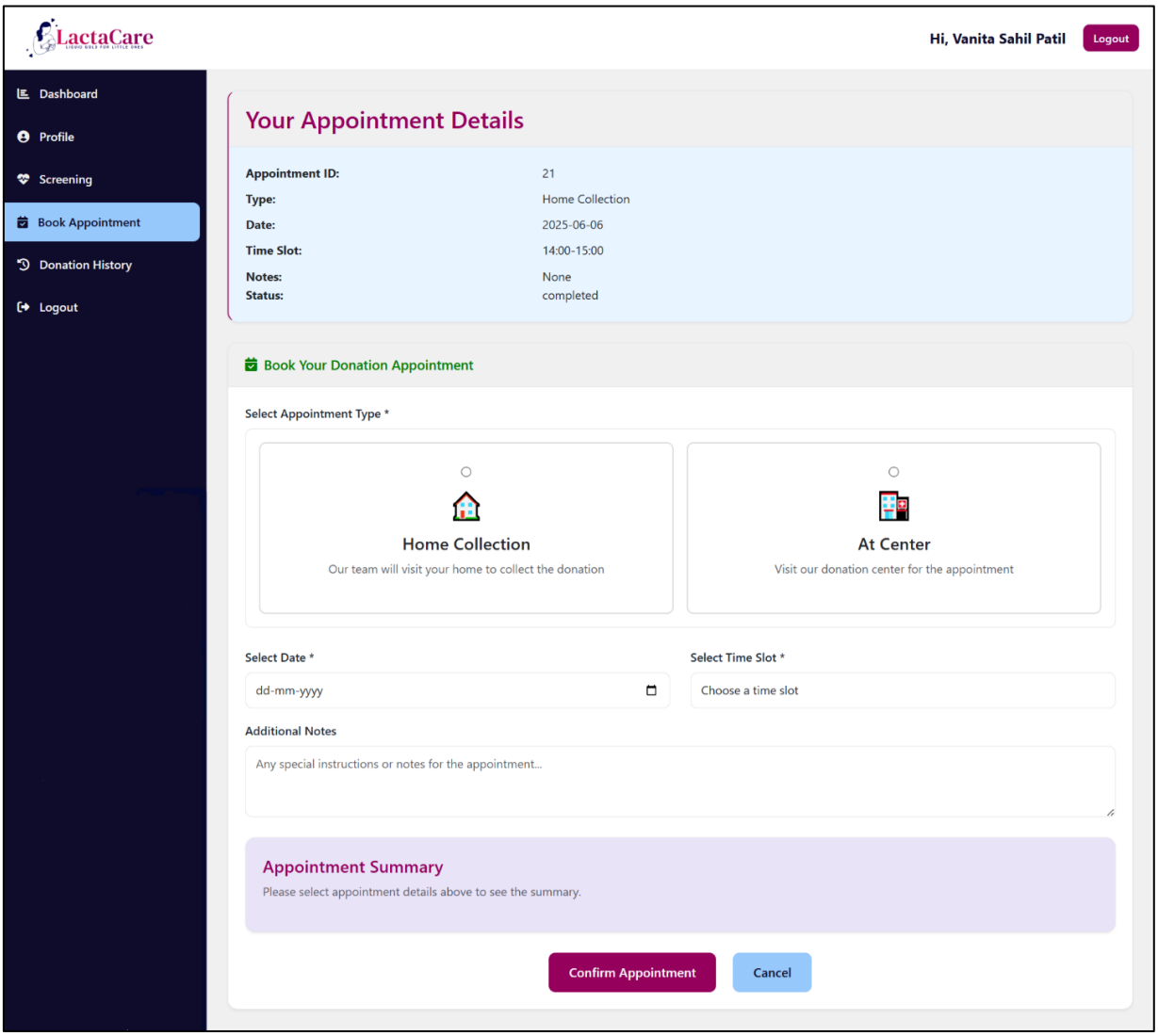
Donor Profile page



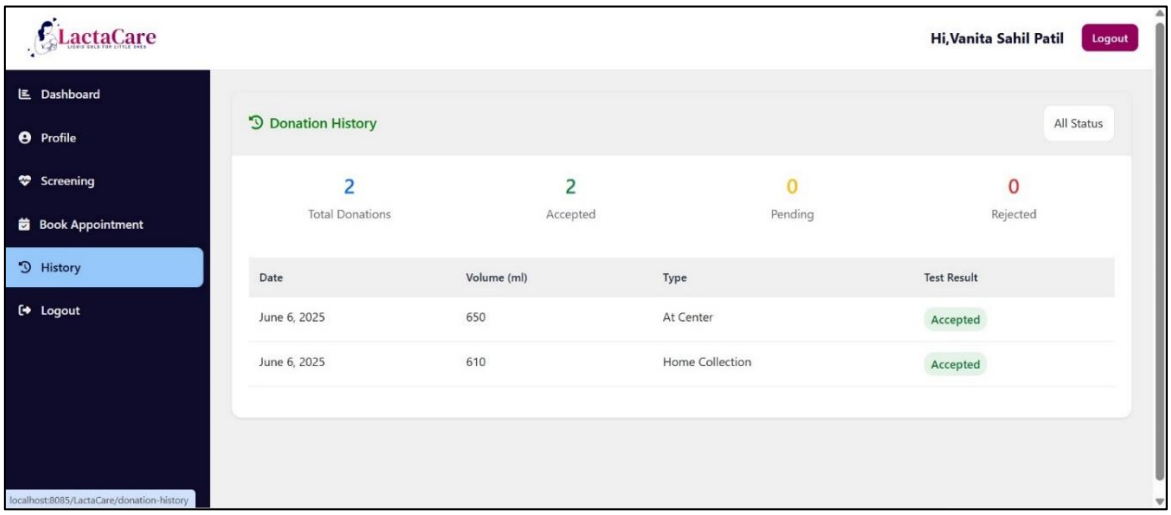
Health Screening Page



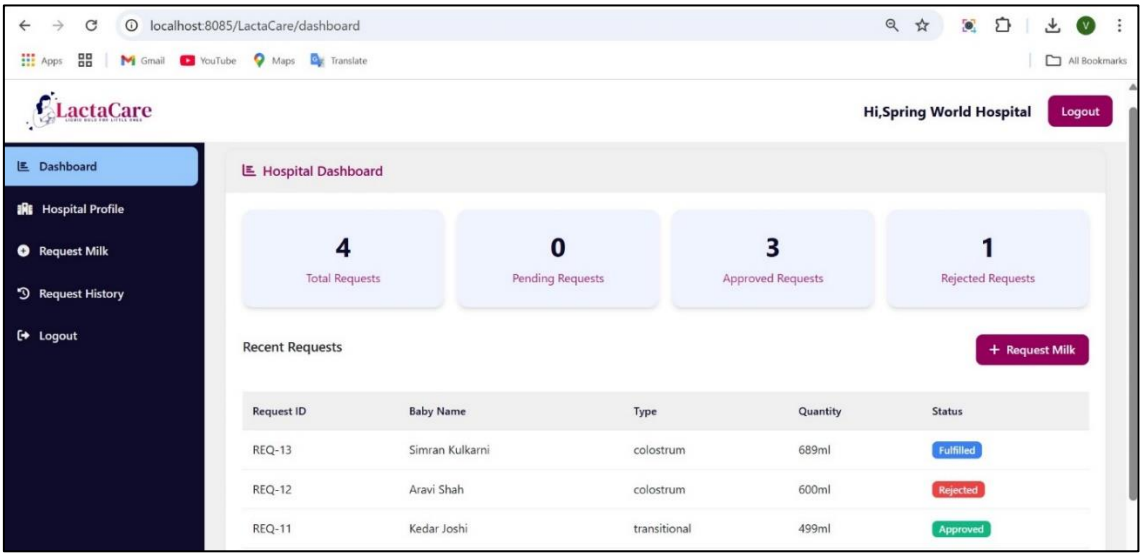
Donor Appointment Page



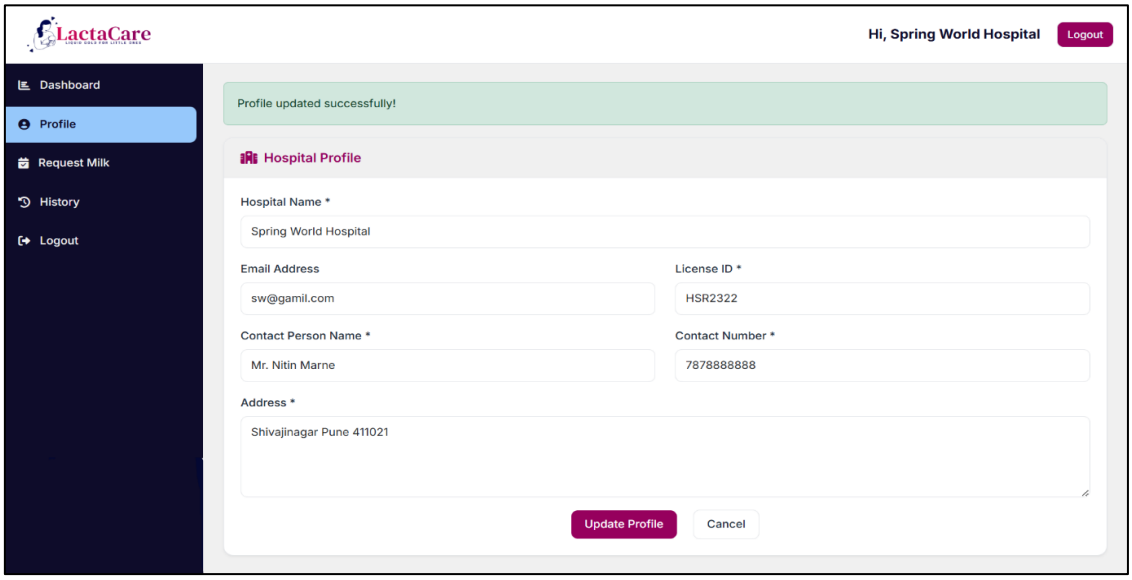
Donor History Page



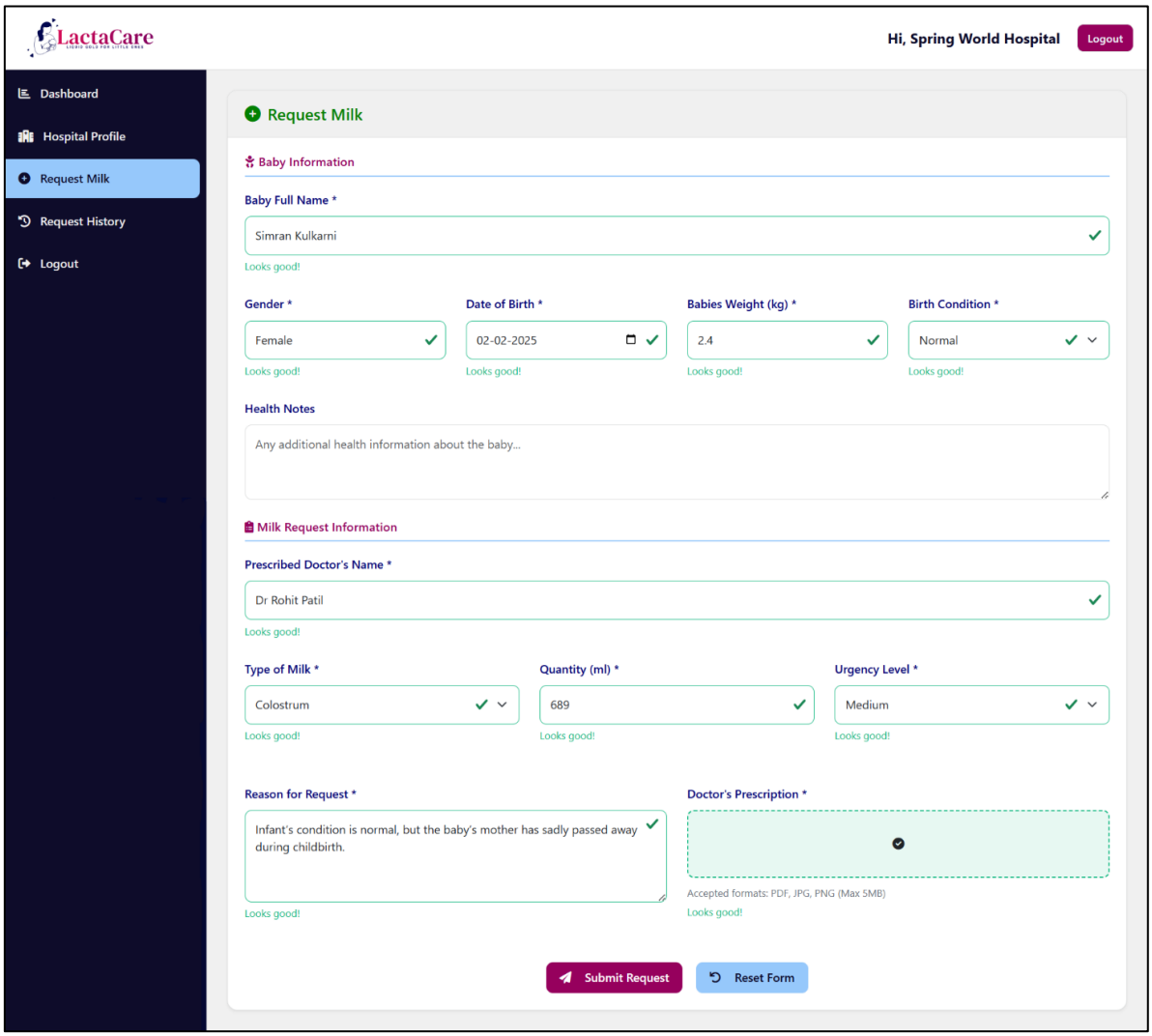
Hospital Dashboard



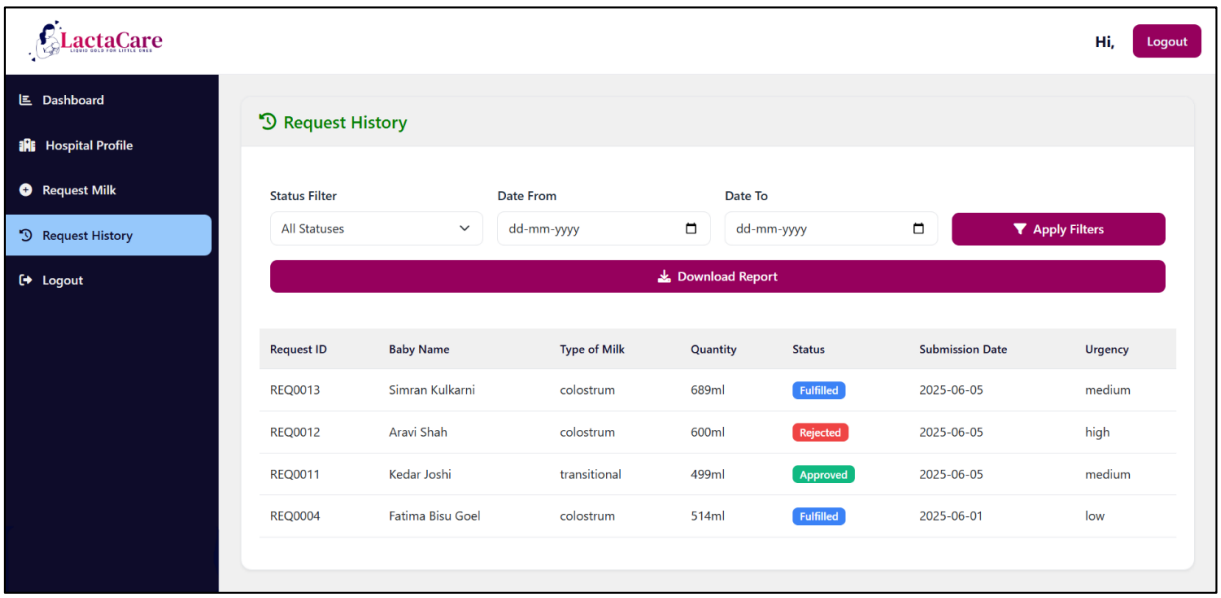
Hospital Profile Page



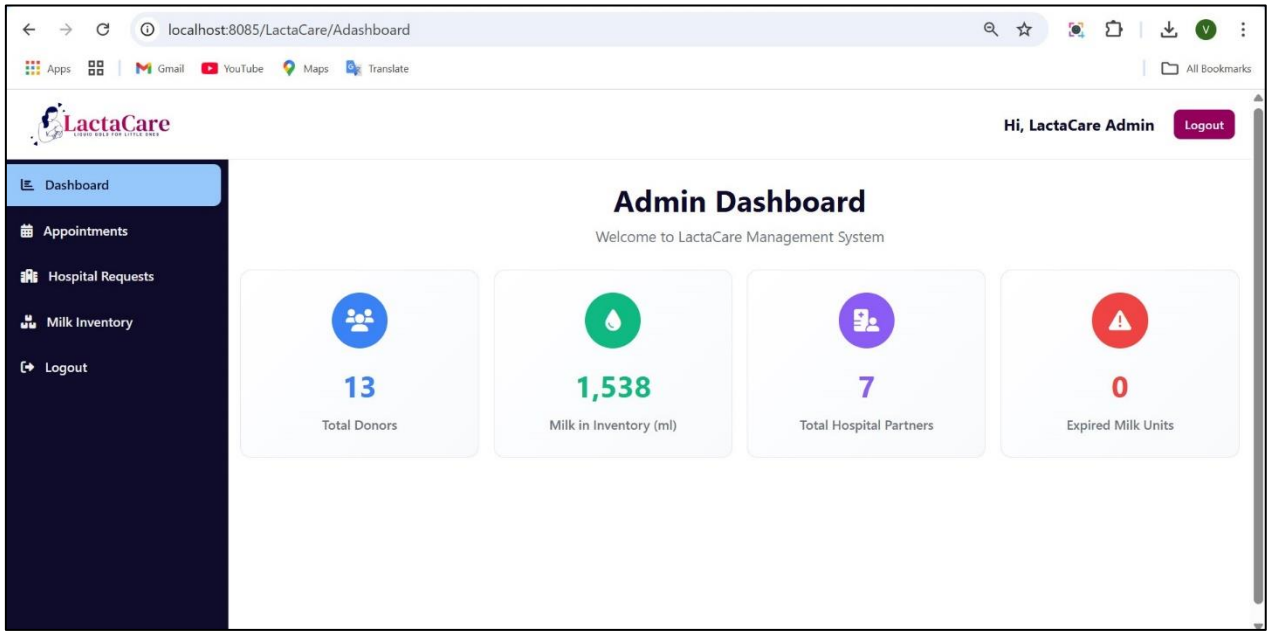
Milk Request Page



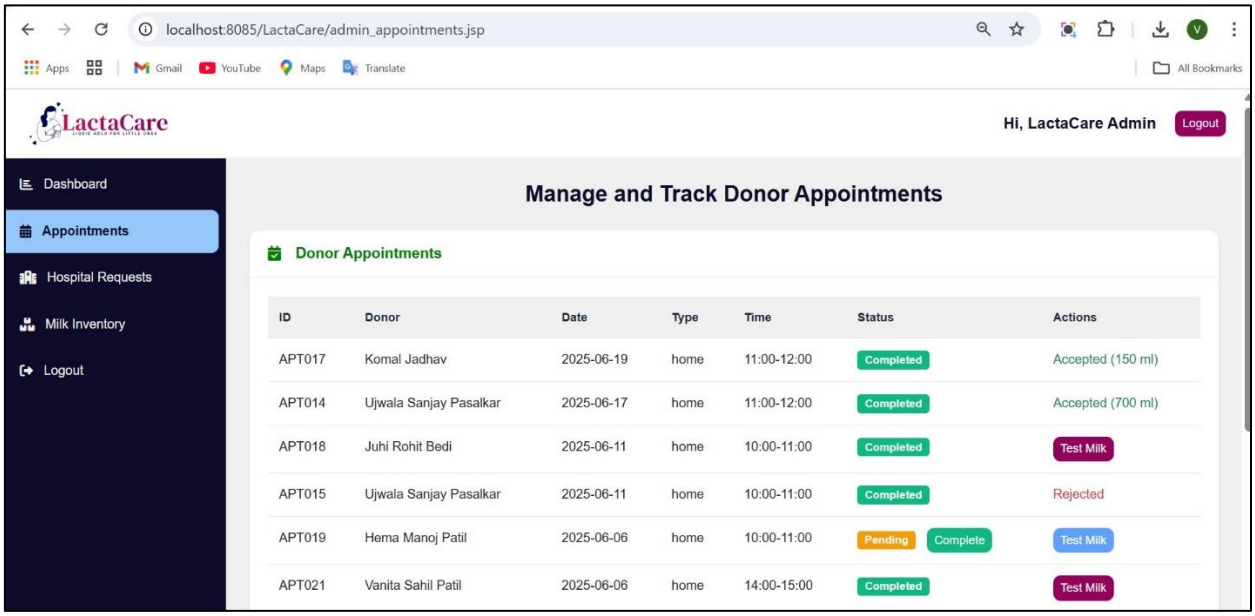
Donor History Page



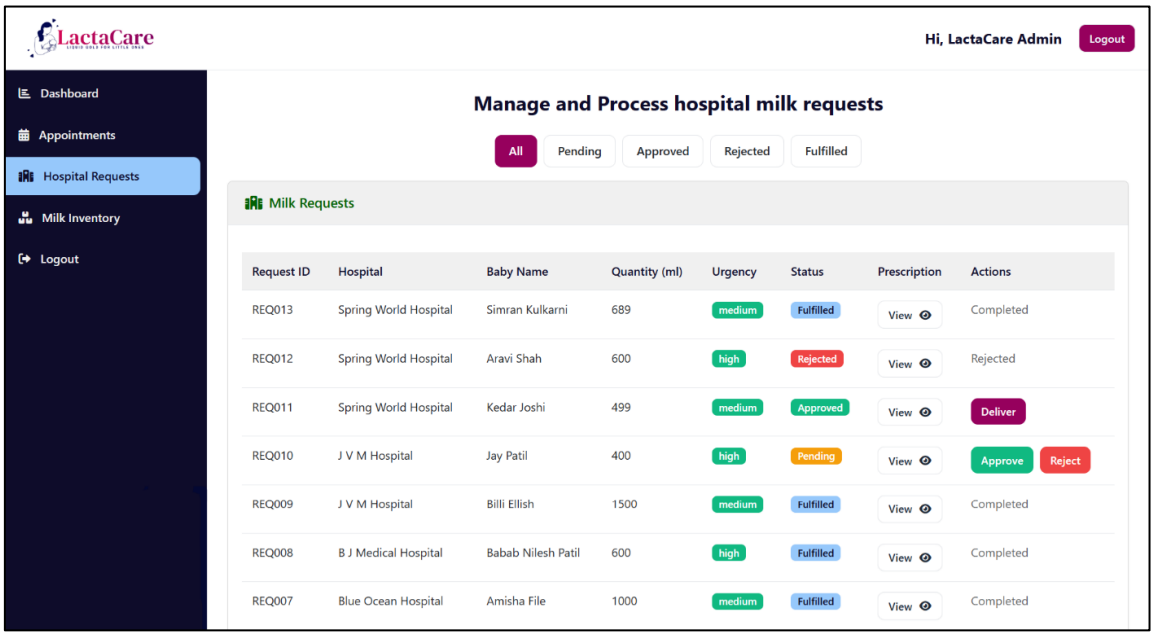
Admin Dashboard



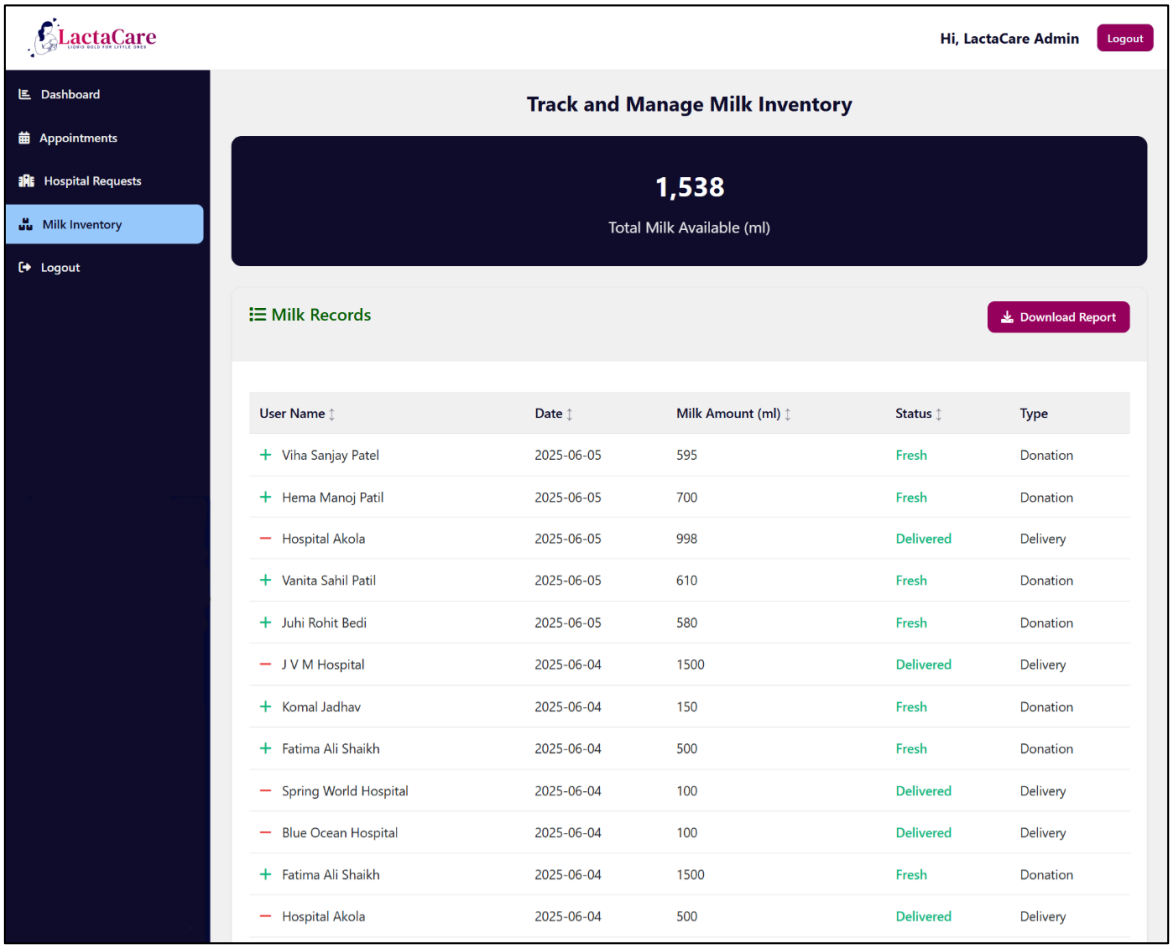
Appointment Tracking and Managing Page



Hospital Request Managing Page



Inventory Managing Page



4. Drawbacks and Limitations

4.1. Drawbacks

- Rigid donor eligibility logic — no doctor override..
- Poor accessibility for differently-abled users.
- Missing privacy/legal compliance features.
- No audit logs or user activity tracking.
- No support for feedback/review system.
- No notification.
- No verification for hospital's authenticity.
- No chatbot or AI assistant for donor/hospital queries

4.2. Limitations

- No offline access.
- No multi-language support.
- No real-time notifications (SMS/email).
- No option to cancel/reschedule appointments.
- No integration with other milk banks.
- No roles for nurses/delivery staff.
- No live chat/helpdesk for support.
- System lacks mobile app version.
- No appointment reminders or alerts.

5. Future Enhancement and Conclusion

5.1. Future Enhancement

- Add multi-language support.
- Add SMS/email notifications.
- Introduce appointment cancel/reschedule.
- Add feedback & complaint system.
- Integrate payment gateway for donations.
- Connect with other milk banks/health systems.

5.2. Conclusion

In conclusion, online human milk banks are still a new idea, and there isn't much research yet on how safe and effective they are. However, creating the *LactaCare* system is an important step in helping both mothers who want to donate breast milk and babies who need it.

This project was made to connect donors who have extra milk with hospitals caring for babies in need. It includes features like health checks, appointment booking, donation tracking, and request management to make the process easier and more organized.

With some future improvements, *LactaCare* can become a powerful and trusted system that supports newborn health and encourages more people to donate human milk.

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  - https://getbootstrap.com/