

Blood Bank Management System

Full Stack Web Application | Java Spring Boot | Angular | MySQL |
Developed by Nikil Valusa

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Project Overview

- The Blood Bank Management System is a scalable full-stack web application designed to manage blood stock, user registrations, and urgent requirements. It streamlines the blood donation process, supporting both users and admins with efficient operations and real-time data updates.
- Tech Stack: Java Spring Boot, Angular, REST APIs, MySQL, Swagger, Docker

Key Features

- User Registration & Login with validations
- Blood availability search by area, state, blood group
- Admin CRUD operations for blood inventory
- Real-time filtering and urgent requirements list
- REST APIs with Swagger documentation
- Future-ready architecture for JWT and cloud deployment

- **Landing Page showcasing the Blood Bank System entry point with Admin and User login options.**

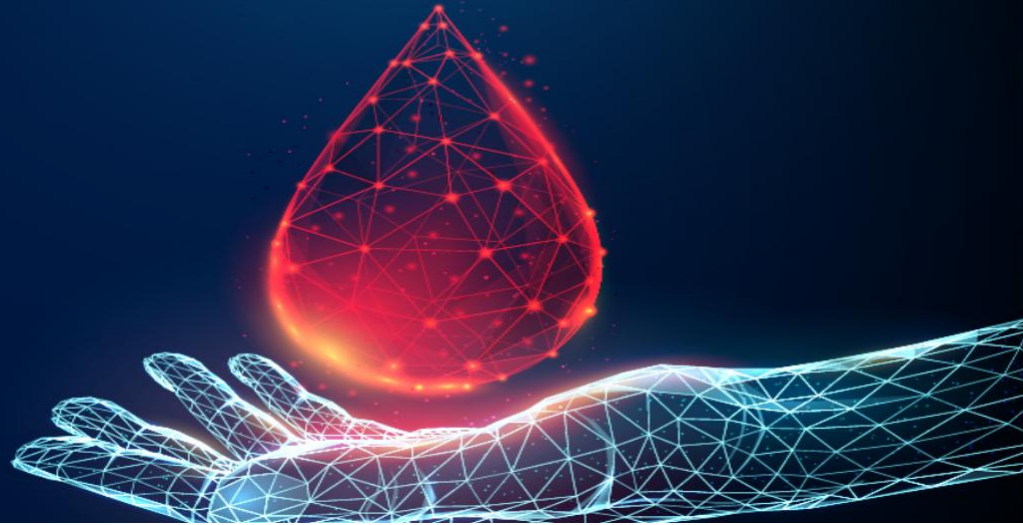
Functionalities

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- Created two microservices as part of the project and connected it using Rest template.
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- Implemented Junit and Mockito frameworks to test the modules of service and controller layers.
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- Implemented swagger to build API documentation with different endpoints.
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- Created custom exception handling for different modules to maintain normal flow of application.
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- Involved in developing the UI using Html, CSS and Angular framework.
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- Used Spring boot and JPA repository to manage the user data such as create, read, update and delete.
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- Implemented validations for client side and server side for properties and attributes.
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Blood Bank System

**BE GRATEFUL
AND DONATE
BLOOD**

Give Blood Save Live



Dashboard

Detailed Blood Record View displaying individual blood donation details fetched from the database.

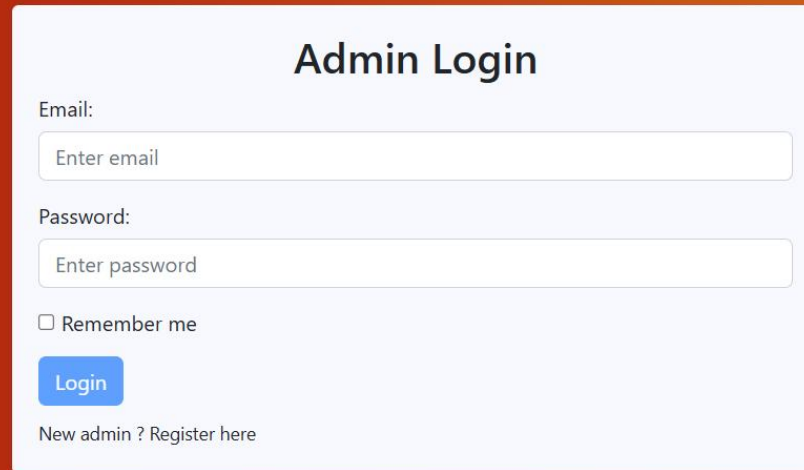
Blood Bank System

Admin Login

User Login

Landing Page

Admin Dashboard - Blood Availability Table
displaying available blood records with
update and delete actions.

A mockup of an Admin Login form. The form is white with a light blue border and is centered on a background with a red-to-orange gradient. It contains fields for Email and Password, a Remember me checkbox, a Login button, and a link to Register here.

Admin Login

Email:

Enter email

Password:

Enter password

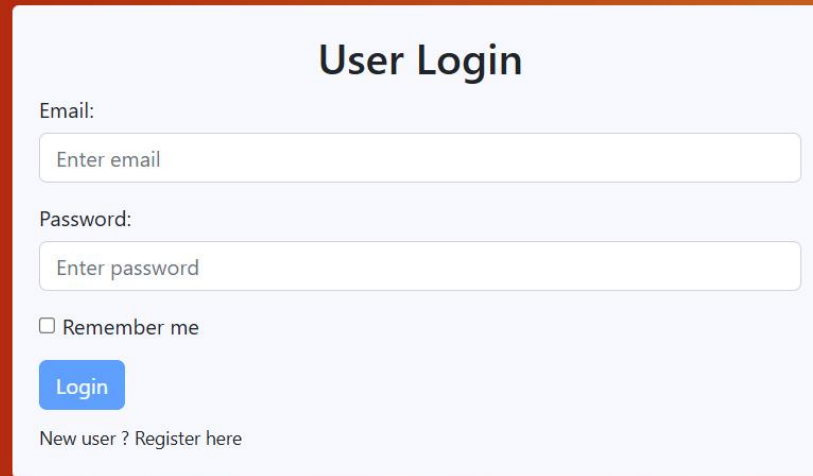
☐ Remember me

Login

New admin ? Register here

Admin Login Screen

- Add Blood Details form for the Admin to register new blood records in the system.

A mockup of a user login form centered on a background with a red-to-orange gradient and a white curved line at the bottom. The form is a white rectangle with rounded corners. It has a title 'User Login' at the top center. Below the title are two input fields: 'Email:' with a placeholder 'Enter email' and 'Password:' with a placeholder 'Enter password'. Below the password field is a checkbox labeled 'Remember me'. At the bottom left of the form is a blue 'Login' button. At the bottom right is a link 'New user ? Register here'.

User Login Screen

- Dashboard Banner promoting blood donation awareness to motivate users.

BLOOD AVAILABLE

+ Add Blood

Search

Id	State	Area	Pincode	Blood Group	Actions	
60	Telangana	Aashalapally	520326	O-	<button>Update</button>	<button>✕ Delete</button>
101	Andhra	Rayalaseema	546580	A+	<button>Update</button>	<button>✕ Delete</button>
102	Telangana	Warangal	506002	O+	<button>Update</button>	<button>✕ Delete</button>
103	Uttarkhand	Kedarnath	504887	AB-	<button>Update</button>	<button>✕ Delete</button>
104	Mumbai	Dharavi	659878	A+	<button>Update</button>	<button>✕ Delete</button>
105	Telangana	Hanamkonda	506001	B-	<button>Update</button>	<button>✕ Delete</button>

Blood Availability
(Admin)

User View of Blood Availability table showcasing records with blood group, state, area, and detailed view.

REST API Endpoints

- /user/register (POST) - Register a new user
- /user/login (POST) - User login
- /admin/register (POST) - Admin registration
- /admin/login (POST) - Admin login
- /blood/available (GET) - List all blood entries
- /blood/add (POST) - Add new blood record (Admin)
- /blood/update/{id} (PUT) - Update blood record
- /blood/delete/{id} (DELETE) - Delete blood record
- /blood/urgent (GET) - List urgent blood requirements

Admin Login Page enabling secure access for administrators to manage blood inventory.

Technology Stack

- Backend: Java, Spring Boot, Spring Data JPA, RESTful APIs
- Frontend: Angular, TypeScript, HTML5, CSS, Bootstrap
- Database: MySQL
- Tools: Swagger UI, Maven, Docker, Postman
- Deployment Ready: AWS Elastic Beanstalk / Azure

- **User Login Page allowing users to securely check blood availability and raise requests.**

[Dashboard](#)[Availability](#)[Requirement](#)[Donation](#)

Search

[LogOut](#)

Add Blood Details

Id:

Enter id

State:

Enter state

Area:

Enter area

Pin code:

Enter pin code

Blood Group:

Enter bloodgroup

Add

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Add Blood Record Form

Urgent Blood Requirement page listing critically needed blood groups and locations.

User Blood Availability View

[Dashboard](#)[Availability](#)[Requirement](#)[Donation](#)[LogOut](#)

BLOOD AVAILABLE

Search

Id	State	Area	Pincode	Blood Group	Actions
60	Telangana	Aashalapally	520326	O-	Details
101	Andhra	Rayalaseema	546580	A+	Details
102	Telangana	Warangal	506002	O+	Details
103	Uttarkhand	Kedarnath	504887	AB-	Details
104	Mumbai	Dharavi	659878	A+	Details
105	Telangana	Hanamkonda	506001	B-	Details

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Urgent Blood Requirement List

[Dashboard](#)[Availability](#)[Requirement](#)[Donation](#)[LogOut](#)

Blood Bank System

URGENT BLOOD REQUIRED

Search

Id	State	Area	Pincode	Blood Group
100	Telangana	Warangal	506002	O-
101	Telangana	Hanamkonda	506001	AB+
102	Andhra	Kurnool	965685	B+
200	Chennai	Madras	878789	O+

[Donate blood, Save life](#)

[Visit Home Page](#)

BLOOD DETAILS

Id:	60
State:	Telangana
Area:	Aashalapally
Pincode:	520326
Blood Group:	O-

[Back](#)

Detailed Blood Record View

Deployment Ready

✓ Spring Boot backend ready for AWS / Azure

✓ Angular frontend compatible with Netlify / Vercel

✓ MySQL database configurable locally and on the cloud

✓ Docker-ready architecture for containerization

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Conclusion

- The Blood Bank Management System is a comprehensive full-stack project designed with best coding practices, modular architecture, and a clean user interface. It enhances the blood donation process while supporting future scalability, cloud deployment, and advanced features like JWT security.
- Developed by Nikil Valusa