LIFE LINE : ONLINE BLOOD BANK MANAGEMENT SYSTEM

A MINI PROJECT REPORT

SUBMITTED BY

SABARISH M

220701234

In partial fulfillment for the award of the degree of

COMPUTER SCIENCE AND ENGINEERING

RAJALAKSHMI ENGINEERING

COLLEGE(AUTONOMOUS)

THANDALAM

CHENNAI-602105

2023 - 24

Life Line : Online Blood Management System

Introduction :

"Lifeline" is an online blood bank management system designed to facilitate the process of blood donation and blood request. The system aims to create a seamless connection between blood donors and those in need of blood, ensuring a reliable and timely supply of blood in emergency situations.

The platform allows users to register as blood donors, providing essential information such as their name, blood type, gender, age, and contact details. Once registered, donors can be easily located based on their blood type by individuals in need of blood. On the other hand, users in need of blood can browse available donors and request blood according to their requirements.

An administrative dashboard provides the system's administrators with the ability to manage and monitor donor data, ensuring that all records are up to date. Admins can also update the status of donors (available or booked), remove donors from the system, and handle other administrative tasks to keep the platform efficient and operational.

With its user-friendly interface and efficient management tools, "Lifeline" aims to improve the accessibility and reliability of blood donations, saving lives and providing a critical service to the community.

Abstract :

The "Lifeline" project is an online blood bank management system designed to streamline the process of blood donation and blood request. The system facilitates a user-friendly platform where individuals can register as blood donors, making it easier for people in need of blood to find suitable donors quickly. The platform stores critical donor information such as name, blood type, gender, age, and contact details, enabling efficient blood type search for those requiring assistance.

The backend of the system is powered by a MySQL database, ensuring secure storage and management of donor data. The project leverages HTML, CSS, Bootstrap, PHP, and XAMPP to create a responsive and interactive web application.

The "Lifeline" project aims to bridge the gap between donors and recipients, providing a vital service for the community. It ensures the availability of blood when needed most, particularly in emergencies, and supports the efficient management of blood bank operations through an easy-to-use administrative interface.

Features :

1. Donor Registration

- **Description:** This feature allows individuals to register as blood donors on the platform. Donors provide their personal details, including name, blood type, gender, age, and contact information.
- **How it Works:**
    - The user accesses the **Donor Registration page**, fills out the form, and submits it.
    - The information is securely saved in the MySQL database.
    - Upon successful submission, the donor receives a confirmation message.
- **Benefit:** This feature ensures that a list of registered donors is available for potential recipients. It helps in building a database of volunteers who can be contacted for blood donation.

---

2. Blood Request

- **Description:** This page allows users who need blood to search for available donors based on blood type.
- **How it Works:**
    - Users go to the **Request Page**, where they can select a blood type.
    - The system queries the database and displays a list of registered donors who match the selected blood type.
- **Benefit:** This feature helps in quickly locating the required blood type, ensuring that individuals in need can be matched with available donors in their area.

---

3. Admin Dashboard

- **Description:** The admin dashboard is the central control panel for the system. It allows administrators to manage and oversee donor information, including updating donor status, modifying personal information, and deleting records.
- **How it Works:**
    - Only authorized users (admins) can access the dashboard by logging in with the correct credentials.
    - The dashboard provides options to **view all donors**, **edit donor details**, and **delete donor information**.

    - Admins can update the **status** of each donor, marking them as either "available" or "booked" depending on their willingness to donate.
- **Benefit:** This feature ensures the proper management of donor data. The admin can easily update or remove records, keeping the system up-to-date. It also helps ensure the accuracy of the blood donor database.

---

4. Donor Management (Edit and Delete)

- **Description:** Admins have the ability to edit donor details or delete them from the database if needed.
- **How it Works:**
    - Each donor record displayed in the admin dashboard has two action buttons: **Edit** and **Delete**.
    - Clicking **Edit** opens a modal where the admin can update donor information such as name, blood type, gender, age, and status.
    - The **Delete** button allows the admin to remove a donor's record entirely.
- **Benefit:** This feature provides flexibility in managing donor information. Admins can ensure that outdated or incorrect records are updated or removed, maintaining the integrity of the database.

---

5. Donor Status Management

- **Description:** Donors can be marked as either "available" or "booked." This status helps users and admins know whether a donor is ready to donate or has already been matched with someone.
- **How it Works:**
    - When a donor registers, the default status is set to "available."
    - The admin can change this status to "booked" if the donor has already donated or is unavailable.
- **Benefit:** This feature enables the tracking of donor availability, ensuring that the system only lists available donors for requests, avoiding confusion for users searching for donors.

---

6. Responsive Design

- **Description:** The system is designed to be fully responsive, ensuring a seamless user experience across devices such as desktops, tablets, and smartphones.

- **How it Works:**
    - The system uses **Bootstrap** to ensure that the layout adapts to various screen sizes.
    - Navigation menus, forms, and tables adjust dynamically, ensuring that users can interact with the system on any device without difficulty.
- **Benefit:** This feature makes the application accessible to a wider audience, enabling users to request blood or register as donors anytime, from any device, ensuring greater accessibility and user engagement.

---

7. Secure User Authentication (Admin Login)

- **Description:** Only authorized users (admin) can access the admin dashboard. The system employs a basic authentication method to restrict access.
- **How it Works:**
    - The admin must log in using a unique username and password (e.g., username: "admin", password: "admin").
    - If login credentials are incorrect, the user is redirected to the login page.
    - Once logged in, the admin is granted access to manage the donor database.
- **Benefit:** This feature ensures that only authorized personnel can modify critical data, such as donor information and statuses, enhancing the security of the platform.

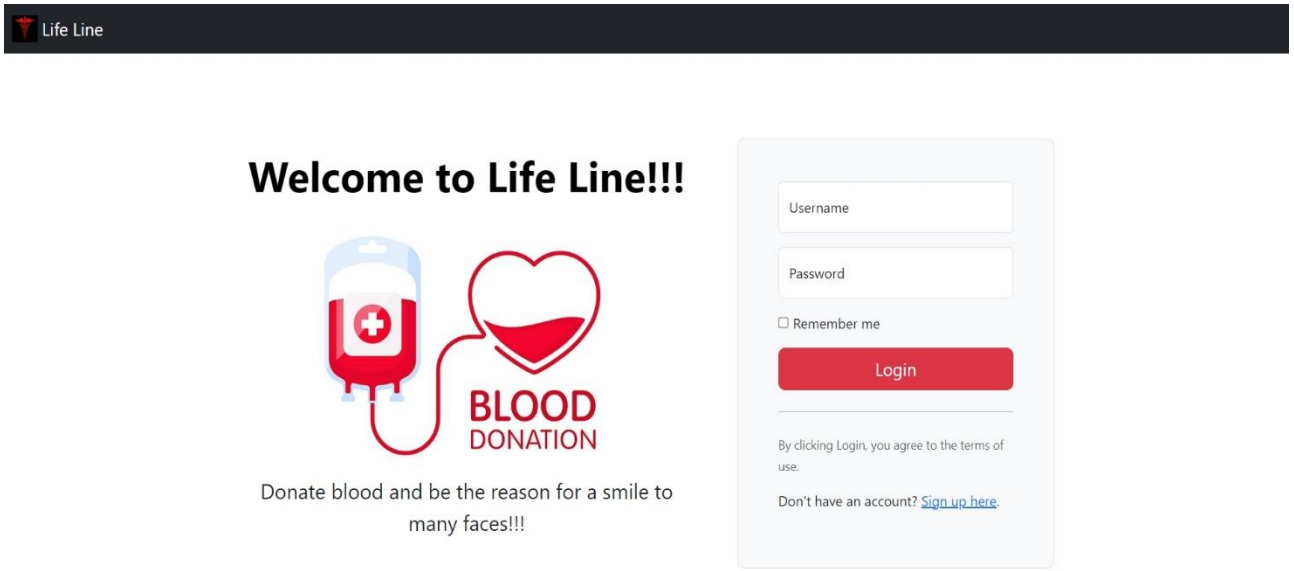
---

8. Database Management (MySQL Integration)

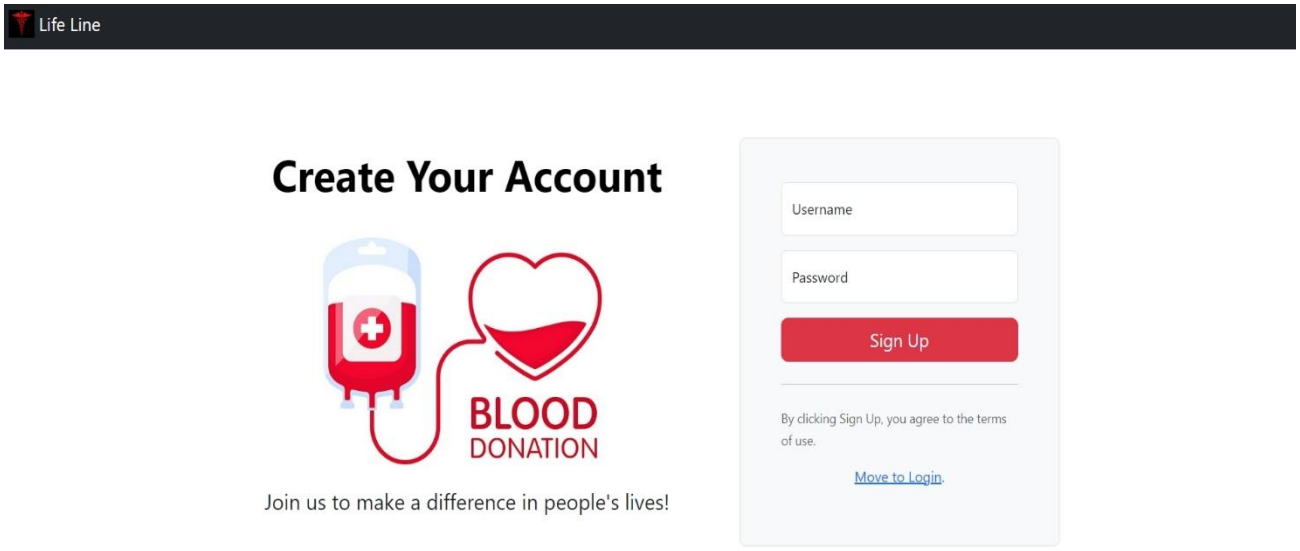
- **Description:** The system uses a MySQL database to store donor information, including personal details and status.
- **How it Works:**
    - Data is stored in the **donors** table in the database, where each record contains fields such as name, blood type, gender, age, and contact information.
    - The database allows for quick retrieval of donor data when a user searches for a specific blood type.
    - The system ensures secure handling of data, including proper sanitization of user inputs to prevent SQL injection attacks.
- **Benefit:** Using MySQL ensures that donor information is stored securely and can be efficiently queried. It also allows the platform to scale as more donors register.

User Interface :

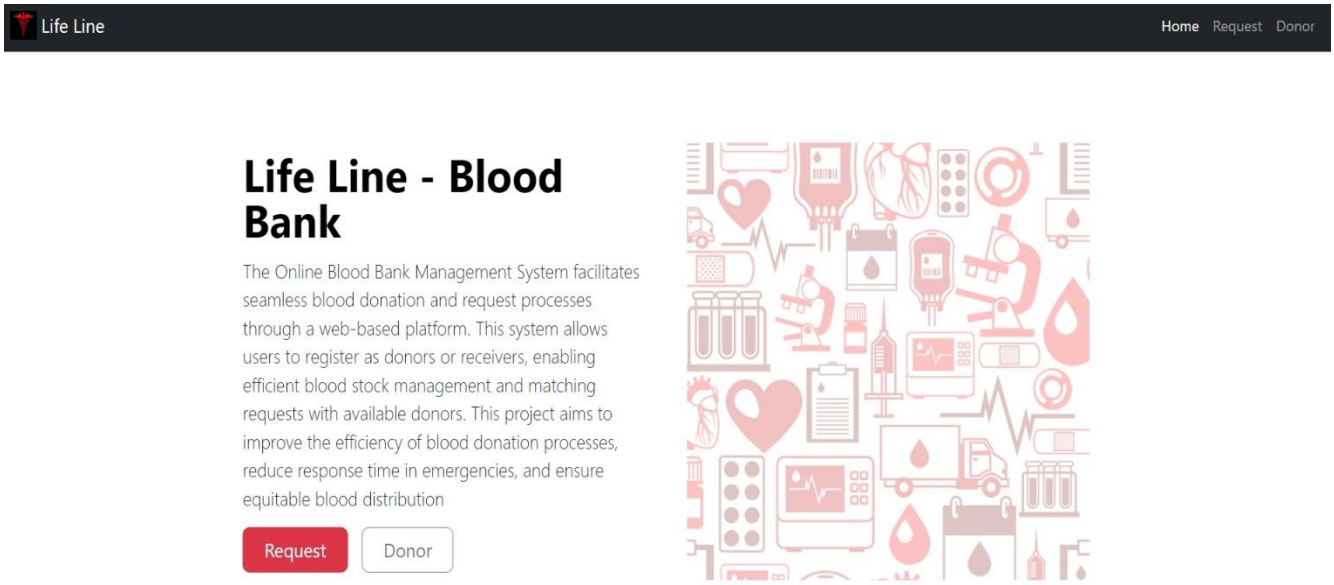
Login page :



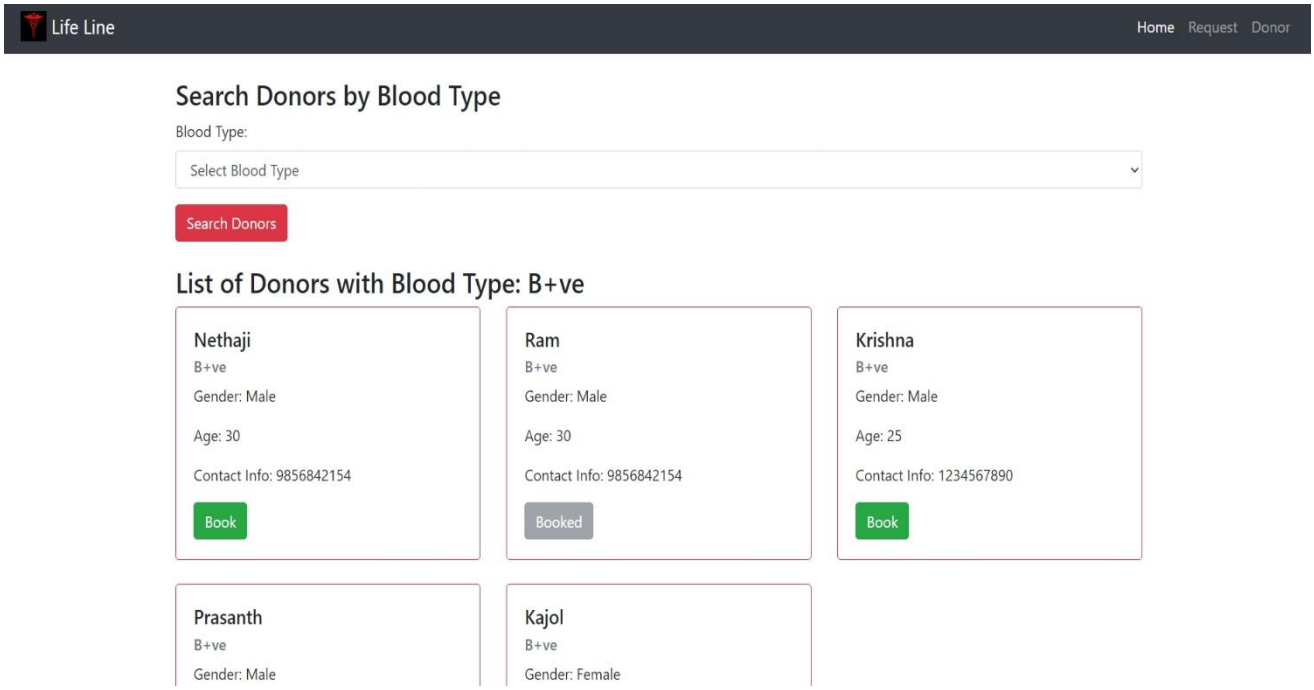
Signup page:



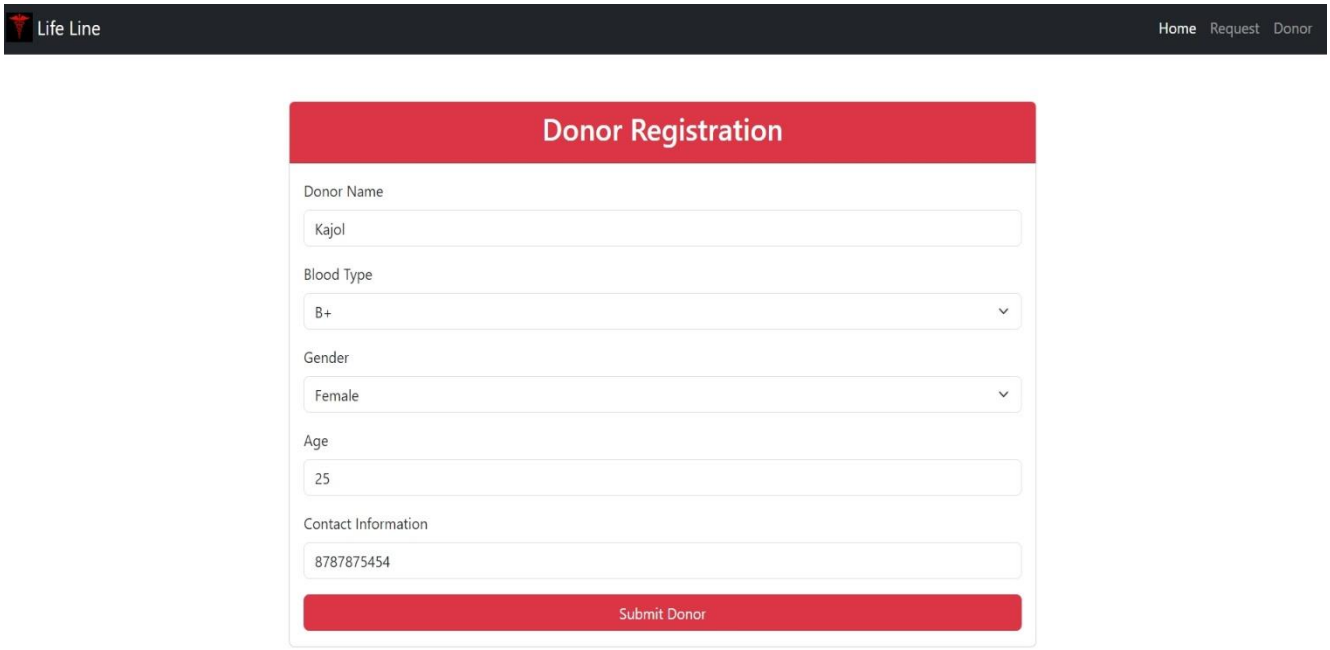
Home page:



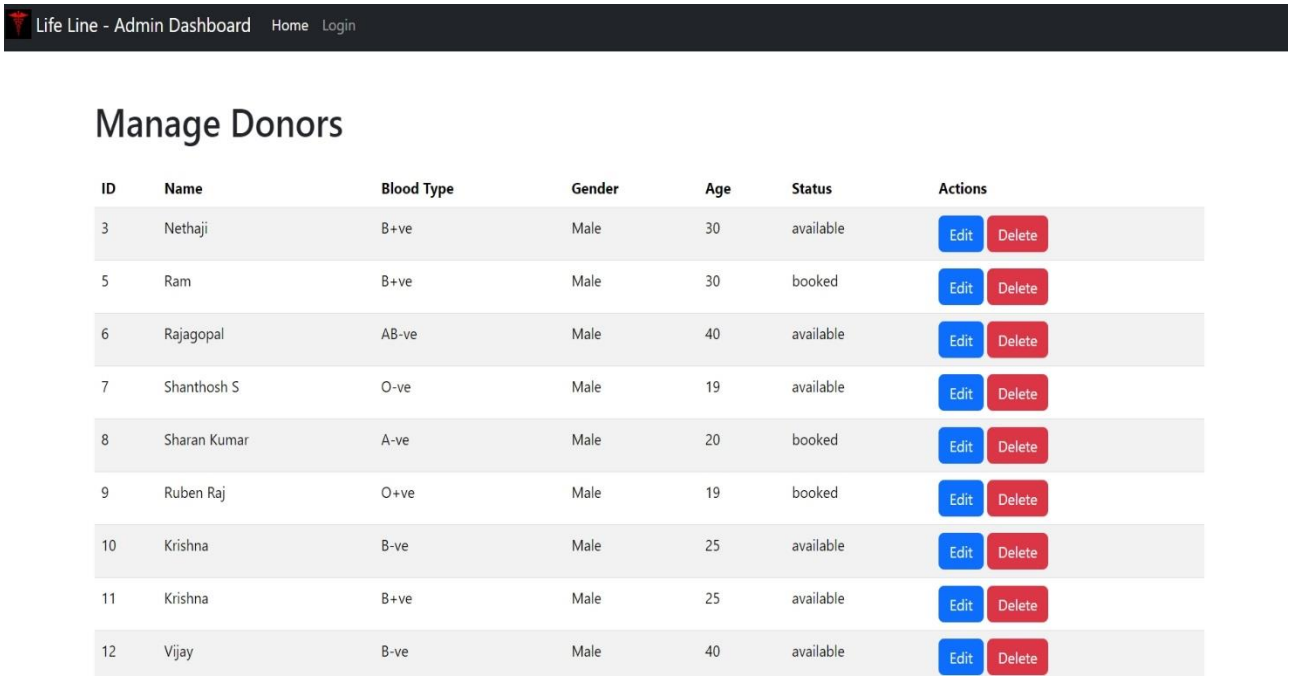
Request page:



Donor page:



Admin page:



System architecture :

1. Client-Side (Frontend)

- **Technologies Used:** HTML, CSS, Bootstrap, JavaScript
- **Description:**
    - The **client-side** is the user interface of the "Lifeline" system. It consists of web pages that allow users (donors and recipients) to interact with the system.
    - The frontend is responsible for presenting data, taking user input, and sending it to the backend.
    - It includes:
        - **Landing Page**: The initial page with options to either request blood or register as a donor.
        - **Request Page**: Allows users to search for donors based on blood type.
        - **Donor Registration Page**: Allows individuals to register as blood donors.
        - **Admin Login and Dashboard**: Restricted access page for admins to manage the donor database.
- **Flow:**
    - Users (donors or recipients) interact with the **user interface** via their web browsers.
    - The frontend sends HTTP requests to the **server** (backend) to fetch or update data.

---

2. Backend (Server-Side)

- **Technologies Used:** PHP, MySQL
- **Description:**
    - The **backend** handles the business logic, user requests, and database operations. It processes data sent from the client-side, interacts with the MySQL database, and returns the results to the frontend.
    - The backend is responsible for:
        - **Processing Donor Registration**: It validates and saves donor details to the database.

        - **Handling Blood Requests**: It queries the database based on blood type and returns matching donors.
        - **Admin Authentication**: It verifies admin credentials and grants access to the admin dashboard.
        - **Managing Donor Data**: Admins can edit, delete, or update donor information via the backend.

- **Flow:**
    - When a user submits a form (e.g., donor registration or blood request), the data is sent to the backend through HTTP requests (POST for form submissions, GET for data fetching).
    - The backend processes the request, interacts with the **MySQL database**, and sends a response back to the frontend.

---

3. Database Layer (Data Storage)

- **Technologies Used:** MySQL (via XAMPP)
- **Description:**
    - The **MySQL database** stores all the critical data for the "Lifeline" system, including donor information, user credentials (for admin), and the status of blood requests.
    - The database schema includes at least two tables:
        - **Donors Table**: Contains donor details such as name, blood type, gender, contact info, and status (available/booked).
        - **Admin Table**: Contains admin credentials (username, password) for secure login access.
- **Flow:**
    - The backend sends SQL queries to interact with the database (e.g., SELECT, INSERT, UPDATE, DELETE queries).
    - Data is retrieved, updated, or deleted based on user/admin actions. For example, when a blood request is made, the backend queries the database for available donors and returns the results to the frontend.

---

4. Admin Panel

- **Technologies Used:** PHP, HTML, Bootstrap
- **Description:**

    - The **admin panel** is a restricted area of the application, accessible only to authorized admins. It allows the administrator to manage donor information, including editing or deleting donor records and updating donor status.
    - Features include:
        - **Dashboard**: Overview of registered donors, pending requests, etc.
        - **Donor Management**: The ability to edit, update, or delete donor records.
        - **User Authentication**: Ensures that only authorized users (admins) can log in.

- **Flow:**
    - After successful login, the admin accesses the **admin dashboard** where they can perform various operations like updating donor status, viewing donor information, and managing data efficiently.

Database design :

1. users Table

This table is designed to manage user authentication for the system. It stores the credentials of both regular users and administrators.

- **Schema Design:**

sql

```
CREATE TABLE users (
   id INT AUTO_INCREMENT PRIMARY KEY,
   username VARCHAR(50) NOT NULL,
   password VARCHAR(255) NOT NULL
);
```

- **Fields Explanation:**
    - id: A unique identifier for each user (primary key).
    - username: The username used for logging in (must be unique for each user).
    - password: The hashed password for security.

---

2. donors Table

This table manages the data of blood donors. It tracks donor details, their blood group, and availability status.

- **Schema Design:**

sql

```
CREATE TABLE donors (
   id INT AUTO_INCREMENT PRIMARY KEY,
   name VARCHAR(100),
   blood_group VARCHAR(3),
   age INT,
   gender VARCHAR(10),
   contact_info VARCHAR(20),
   status VARCHAR(20)
);
```

- **Fields Explanation:**
    - id: A unique identifier for each donor (primary key).
    - name: The full name of the donor.
    - blood_group: The blood group of the donor (e.g., A+, O-, etc.).
    - age: The donor's age (validated to be above 18 during data entry).
    - gender: The gender of the donor (e.g., Male, Female, Other).
    - contact_info: The donor's contact details (phone or email for communication).
    - status: Indicates the availability of the donor (e.g., "available" or "booked").

Conclusion :

The "Lifeline" Online Blood Bank system has been successfully designed and developed to streamline the process of blood donation and request management. By creating an intuitive web platform, this project aims to bridge the gap between donors and those in need of blood, thereby facilitating quicker and more efficient blood distribution. The system integrates features such as user registration, blood request management, donor registration, and an administrative dashboard for managing donor data and requests.

Key aspects of the project include:

- **User Accessibility**: The platform provides easy access for both blood donors and requesters, ensuring that anyone in need can quickly find available blood donors based on blood group and location. Donors can also register easily through the system, contributing to a growing donor base.
- **Admin Functionality**: The admin dashboard ensures smooth operation by allowing administrators to manage donor data, approve or reject requests, and monitor overall system activity, ensuring data integrity and smooth functionality.
- **Database Efficiency**: The system is supported by a robust database design that allows efficient storage and retrieval of user and donor data. This ensures that both the front-end and back-end systems work seamlessly, with minimal latency.
- **Security Measures**: Security features, including secure user authentication and authorization protocols, have been implemented to protect sensitive data and maintain system integrity. Passwords are securely hashed, and role-based access ensures that data privacy is maintained.
- **Scalability**: The project is built with scalability in mind, ensuring that as the number of users and donors grows, the system will continue to perform efficiently.
- **Performance Optimization**: The system's performance was rigorously tested under various conditions, ensuring that it can handle high traffic and large datasets without compromising user experience.

Future Enhancements:

While the system is designed to meet the current needs of an online blood bank, there are several opportunities for future enhancements:

- **Mobile Application**: Developing a mobile app for easier access and notifications to users.
- **Geolocation Integration**: Implementing geolocation features to better match blood donors with requesters based on proximity.
- **Blood Donation Campaigns**: Adding functionality for the organization of blood donation drives and events, encouraging more people to donate.