**GUI Design Document for Blood Bank Management System**

**1. Introduction**

The Blood Bank Management System (BBMS) aims to provide a user-friendly, intuitive interface catering to three main user roles: Admins, Patients, and Donors. This document outlines the GUI design for each module, emphasizing user experience, accessibility, and efficiency.

**2. GUI Design for Modules**

**2.1 Admin Module**

**Functional Requirements**

1. Manage blood inventory (add, update, delete stock).
2. Perform CRUD operations for donor and patient profiles.
3. Generate reports and analytics on donations, stock, and requests.

**GUI Design**

1. **Dashboard**:
   * **Design Features**:
     + Blood inventory statistics displayed via bar and pie charts.
     + Notifications for low stock or urgent blood requests with red/yellow alerts.
     + Quick links for inventory management, user management, and reports.
   * **User Actions**:
     + Admin can click on inventory stats to view detailed stock data.
     + Dismiss or act on notifications directly.
2. **User Management**:
   * **Design Features**:
     + Table layout with sortable columns (Name, Role, Blood Group, Contact).
     + Search bar for filtering by name, role, or blood type.
     + Action buttons for Add, Edit, and Delete users.
   * **User Actions**:
     + Add or update donor/patient profiles via pop-up forms.
     + Delete records with confirmation prompts.
3. **Reports**:
   * **Design Features**:
     + Dropdown for selecting report types (e.g., "Donor Report," "Inventory Report").
     + Date range selector for filtering reports.
     + Export options for PDF or Excel formats.
   * **User Actions**:
     + Generate and download custom reports based on filters.

**2.2 Donor Module**

**Functional Requirements**

1. Register and manage personal/medical profiles.
2. Schedule donation appointments.
3. View donation history and notifications.

**GUI Design**

1. **Donor Dashboard**:
   * **Design Features**:
     + Cards for donation history and eligibility status (e.g., “Eligible to donate after 90 days”).
     + List of upcoming donation camps with Google Maps integration for locations.
   * **User Actions**:
     + View past donations and confirm upcoming donation reminders.
     + Navigate to the camp page for scheduling.
2. **Profile Management**:
   * **Design Features**:
     + Editable fields for name, address, medical history, and notification preferences.
     + Save and cancel buttons for user updates.
   * **User Actions**:
     + Update and save personal and medical details.
     + Toggle between notification options (e.g., SMS, Email).
3. **Donation Booking**:
   * **Design Features**:
     + Calendar view for selecting available donation dates.
     + Dropdown for selecting a nearby blood donation camp.
   * **User Actions**:
     + Choose a preferred date and location for donation.
     + Confirm booking with a success message.

**2.3 Patient Module**

**Functional Requirements**

1. Search for available blood and submit requests.
2. Manage personal profiles.
3. Track request status and receive notifications.

**GUI Design**

1. **Search and Request**:
   * **Design Features**:
     + Search bar with dropdowns for blood type and quantity.
     + Results displayed in a table showing available stock with visual indicators (green for available, red for unavailable).
   * **User Actions**:
     + Submit a blood request form with details like type, quantity, and urgency.
     + View confirmation of the submitted request.
2. **Profile Management**:
   * **Design Features**:
     + Simple form layout for managing contact and personal details.
     + Save button with success/error messages upon update.
   * **User Actions**:
     + Edit and save profile details.
3. **Notifications**:
   * **Design Features**:
     + Notification panel with real-time updates (e.g., “Your request for A+ blood is approved”).
     + Visual status indicators (green for approved, yellow for pending).
   * **User Actions**:
     + Click notifications to view request details.

**3. General Design Principles**

**Consistency**

Maintain uniform color schemes, typography, and button styles across all modules for a cohesive experience.

**Feedback Mechanisms**

Provide immediate feedback for user actions such as successful submissions, errors, or loading statuses.

**Accessibility**

Incorporate ARIA labels, high-contrast modes, and responsive designs for mobile and desktop users.

**4. Validation and Error Handling**

**Input Validation**

1. Ensure required fields are filled (e.g., blood type, quantity).
2. Validate email and phone number formats.

**Error Messages**

* Clear, user-friendly messages:
  + “Invalid email address.”
  + “Blood type cannot be empty.”

**Server-Side Validation**

* Prevent duplicate records and sanitize inputs to avoid SQL injection.

**5. Tools and Technologies**

**Frontend**

* **React.js** or **Angular** for interactive UIs.

**Backend**

* **Node.js** or **Django** for APIs and server-side logic.

**Database**

* **MySQL** or **MongoDB** for secure and efficient storage.

**Styling**

* **Tailwind CSS** or **Bootstrap** for responsive designs.

**Icons**

* **FontAwesome** or **Material Icons** for intuitive navigation.

**6. Implementation Timeline**

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| --- | --- | --- |
| **Phase** | **Duration** | **Activities** |
| Requirements Gathering | 2 Weeks | Stakeholder meetings, analysis of needs, and defining project scope. |
| Design | 3 Weeks | Wireframe creation, mock ups, and iterative feedback from stakeholders. |
| Implementation | 4 Weeks | Development of frontend and backend, integration of modules. |
| Testing | 2 Weeks | Usability testing, debugging, and performance optimization. |
| Deployment | 1 Week | Launch system, provide user training, and gather feedback for improvements. |
| Maintenance | Ongoing | Address bugs, add features, and improve usability based on feedback. |