**BLOOD BANK APPLICATION: SDLC DOCUMENTATION**

**TEAM MEMBERS**

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**OBJECTIVE OF A BLOOD BANK APPLICATION**

The primary objective of a blood bank application is to create an efficient, transparent, and user-friendly platform for managing blood donations and requests. It aims to bridge the gap between blood donors and recipients, ensuring that life-saving blood reaches those in need at the right time. By leveraging technology, the system seeks to simplify operations, minimize shortages, and enhance the accessibility of blood services.

**INTRODUCTION TO THE BLOOD BANK APPLICATION**

A blood bank application is a digital platform designed to modernize the management of blood donation and distribution. This system enables donors, recipients, and administrators to collaborate seamlessly, ensuring a reliable supply of blood for medical emergencies.

The application supports various functionalities, including donor registration, blood stock monitoring, request processing, and real-time notifications. It minimizes manual effort and maximizes efficiency by automating routine tasks. By integrating technology with healthcare, the blood bank application not only saves time but also contributes to saving lives.

**1. REQUIREMENT GATHERING AND ANALYSIS**

**Involved Parties:**

* **End Users**: Donors, recipients, blood bank administrators
* **IT Specialists** (System Analysts, Business Analysts, Developers)

**Primary Activities:**

1. **Gathering Business Requirements**:
   * Identifying key needs from end users (e.g., donor registration, blood request system for recipients, real-time stock management by admins).
2. **Prioritizing Requirements**:
   * Critical features: system availability, real-time notifications, blood type search.
   * Non-critical features: user interface customization, reporting tools.

**2. PLANNING**

**Involved Parties:**

* **Business Analyst**: Works with the customer and involved members.
* **Customer**: Blood bank administrators, donors, and recipients.

**Primary Activities:**

* The system will allow user registration, blood donations, requests, and stock management.
* Careful monitoring of changes in project scope (e.g., features like online payments or adding more blood types).

**Documents Produced:**

* **BRS (Business Requirements Specification)**: High-level business needs and expectations for the system.
* **CRS (Customer Requirements Specification)**: Captures customer-specific features and quality requirements.
* **URS (User Requirements Specification)**: Describes user expectations for system functionality and ease of use.

**DETAILED BREAKDOWN OF REQUIRED DOCUMENTS FOR BLOOD BANK APPLICATION**

**SRS - Software Requirements Specification**

**Introduction**:

* **Purpose**: To define the overall system functionality, design, and performance criteria.
* **Scope**: A blood bank management system for donors, recipients, and administrators.
* **Assumptions**: The application will be web or mobile-based.

**Functional Requirements**:

* **Donor Registration**: Allow donors to register personal and medical details.
* **Blood Donation Management**: Track donations and update stock levels automatically.
* **Blood Requests**: Recipients can search and request blood types; notifications for donors when needed.
* **Admin Panel**: Admins manage records, stock, and generate reports.

**Non-Functional Requirements**:

* **Performance**: The system should handle 1000 concurrent users.
* **Security**: Data encryption and secure login should be implemented.
* **Scalability**: The system should scale as the number of users increases.
* **Reliability**: 99.9% uptime is mandatory.

**System Design**:

* **Architecture**: Client-server model with user interfaces for donors, recipients, and administrators.
* **Database Design**: Tables for users, blood types, donations, recipients, stock, and transactions.

**FRS - Functional Requirements Specification**

1. **Donor Registration**:
   * The system shall allow users to register with personal and medical details.
   * The system shall store donor information (e.g., blood type, contact details, donation history).
2. **Blood Donation Management**:
   * The system shall track blood donations and update stock levels.
   * Expired blood products will be flagged automatically.
3. **Blood Requests**:
   * The system shall allow recipients to search for blood types.
   * The system will notify donors when their blood type is needed.
4. **Admin Panel**:
   * Admins shall be able to manage donor records, blood stocks, and generate reports on donations and inventory.
   * Admins will have real-time access to statistics like blood stock levels, donation frequency, etc.

**NFRS - Non-Functional Requirements Specification**

1. **Performance**:
   * The system must support at least 1000 concurrent users.
   * Response times for all user actions should not exceed 2 seconds.
2. **Security**:
   * All user data must be encrypted using industry-standard encryption protocols.
   * Role-based access control (RBAC) for secure access to the admin panel.
3. **Usability**:
   * The application should be accessible for desktop and mobile devices.
   * The system should provide multi-language support.
4. **Scalability**:
   * The system should be designed for scaling to accommodate future growth.
5. **Reliability**:
   * The system must be available 24/7 with 99.9% uptime.
   * Automated daily backups to ensure data protection.

**Conclusion**

The **Blood Bank Application** follows the **SDLC** process, ensuring that all requirements (both functional and non-functional) are met. By adhering to established standards in **requirement gathering**, **planning**, and **design**, the application will provide an efficient, secure, and reliable platform for managing blood donations, recipient requests, and blood bank operations.

**Blood Bank Management System Requirements Documentation**

**1. Business Requirements Specification (BRS):**

**Objective:** To develop a comprehensive Blood Bank Management System that streamlines the processes of blood collection, storage, and distribution while ensuring compliance with regulatory standards.

**High-Level Business Needs:**

1. Enable efficient management of donor registrations, blood collection, and inventory.
2. Ensure real-time tracking of blood stock levels and availability.
3. Provide a secure and intuitive system for hospital and clinic access to request blood.
4. Facilitate compliance with health and safety regulations related to blood collection and storage.
5. Integrate with SMS and email services to notify donors and requesters about events and requirements.
6. Generate detailed reports for audits and management insights.
7. Enhance public trust by ensuring transparency and data security.

**2. Customer Requirements Specification (CRS):**

**Customer-Specific Features:**

1. **Donor Registration Module:**
   * Allow online and offline registration.
   * Maintain donor history and eligibility based on health criteria.
2. **Blood Inventory Management:**
   * Categorize blood by type, Rh factor, and expiry date.
   * Real-time tracking of stock levels.
3. **Hospital and Clinic Access:**
   * Secure login for hospitals to view available stock and make requests.
   * Priority allocation based on urgency.
4. **Notification System:**
   * Automated reminders for repeat donations.
   * Alerts for low inventory levels.
   * Notifications to hospitals when their requests are processed.
5. **Data Analytics and Reporting:**
   * Generate reports on blood usage, donor demographics, and inventory trends.
   * Exportable formats for compliance and audit purposes.
6. **Multi-Language and Accessibility:**
   * Support for regional languages for wider reach.
   * User-friendly interface accessible to non-technical users.
7. **Integration and Compatibility:**
   * Compatibility with mobile platforms.
   * Integration with health department databases and third-party applications.

**3. User Requirements Specification (URS):**

**User Expectations:**

1. **Donors:**
   * Simple and intuitive registration and appointment scheduling.
   * Access to personal donation history.
   * Notifications for upcoming donation drives and eligibility.
2. **Hospitals/Clinics:**
   * Quick search for required blood type.
   * Real-time availability updates.
   * Priority-based request processing.
3. **Blood Bank Staff:**
   * User-friendly dashboard for managing donations and inventory.
   * Tools to monitor storage conditions and expiry dates.
   * Easy generation of compliance and management reports.
4. **Administrators:**
   * Role-based access control for system security.
   * Monitoring tools for operational efficiency.
   * Customizable reporting and analytics tools.
5. **General Public:**
   * Access to blood donation camps and events.
   * Information on the importance of blood donation.
   * Secure process for volunteering and inquiries.

**Conclusion:** This document outlines the core requirements for a Blood Bank Management System, addressing the needs of businesses, customers, and end-users. The system aims to ensure operational efficiency, compliance, and user satisfaction while promoting a culture of regular blood donation.