# Low-Level Design (LLD) for Blood Bank Management System

## User Management

### Overview

* **Responsibility**: Manages user registration, authentication, and authorization.
* **Technologies**: Django, SQLite

### Detailed Specifications

1. **User Registration**
   * Inputs: Username, Email, Password
   * Validation: Email format, strong password requirements
   * Actions: Create user record in database, send confirmation email
2. **Authentication**
   * Inputs: Username, Password
   * Validation: Verify credentials against stored records
   * Actions: Grant access to authenticated users
3. **Authorization**
   * Roles: Admin, Staff, Donor
   * Actions: Define permissions based on roles

## Donation Management

### Overview

* **Responsibility**: Manages blood donation appointments and records.
* **Technologies**: Django, SQLite

### Detailed Specifications

1. **Appointment Scheduling**
   * Inputs: Donor details, preferred date/time
   * Actions: Create appointment record, send confirmation to donor
2. **Donation Recording**
   * Inputs: Donor details, blood type, quantity
   * Actions: Record donation in database, update inventory

## Inventory Management

### Overview

* **Responsibility**: Tracks blood units in the inventory.
* **Technologies**: Django, SQLite

### Detailed Specifications

1. **Inventory Update**
   * Inputs: Blood type, quantity
   * Actions: Add/remove blood units, update availability status

## Transfusion Management

### Overview

* **Responsibility**: Manages blood transfusion requests and records.
* **Technologies**: Django, SQLite

### Detailed Specifications

1. **Request Processing**
   * Inputs: Hospital details, blood type, quantity
   * Actions: Process request, update inventory after approval

## Notifications

### Overview

* **Responsibility**: Sends notifications to users about appointments and inventory updates.
* **Technologies**: Celery, Email, SMS (if integrated)

### Detailed Specifications

1. **Event-Based Notifications**
   * Events: Appointment confirmation, low inventory alert
   * Actions: Send email/SMS notifications based on event triggers