**Technical Design Document**

**Project Name:** CharityLens  
**Author:** Kbrom Mehari  
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### 1. ****System Overview****

CharityLens is a web-based platform built to bring transparency to charity donations and spending. It uses a modular and layered architecture, separating the frontend, backend, and database logic. The system is designed for scalability, maintainability, and security.

### 2. ****Architecture****

#### 2.1 High-Level Architecture

[Client (Web Browser)]

↓

[Frontend (React or HTML/CSS/JS)]

↓

[Backend (Spring Boot REST APIs)]

↓

[Database (MySQL/PostgreSQL)]

### 3. ****Technology Stack****

| **Component** | **Technology** |
| --- | --- |
| **Frontend** | HTML/CSS/JS or React |
| **Backend** | Java, Spring Boot |
| **Database** | MySQL or PostgreSQL |
| **Hosting** | Render, Vercel, or AWS (TBD) |
| **Version Control** | Git + GitHub |
| **Authentication** | Spring Security, JWT (optional) |

### 4. ****Modules & Responsibilities****

#### 4.1 User Module

* Register, log in
* Role-based access (Admin, Donor, Charity Manager)
* Profile management

#### 4.2 Project Management Module

* Create/edit charity projects
* Log donations and expenses
* Upload financial proof

#### 4.3 Transparency Feed

* Public view of updates on charity projects
* Anonymized donation summaries

#### 4.4 Donor Dashboard

* View personal donation history
* View impact reports

#### 4.5 Admin Panel

* View platform-wide stats
* Approve/reject charity accounts
* Export reports

### 5. ****Database Design (Simplified)****

#### 5.1 Key Tables

| **Table** | **Purpose** |
| --- | --- |
| users | Stores user login info and roles |
| charities | Info about charity organizations |
| projects | Each charity’s active/inactive projects |
| donations | Records of each donation made |
| expenses | Spending logs per project |
| updates | Project progress feed entries |

### 6. ****API Design (Sample Endpoints)****

| **Endpoint** | **Method** | **Description** |
| --- | --- | --- |
| /api/auth/register | POST | Register a new user |
| /api/auth/login | POST | Authenticate user |
| /api/projects | GET | List all public projects |
| /api/donations | POST | Submit a donation |
| /api/expenses | POST | Add expense to a project |
| /api/reports/monthly | GET | Generate monthly reports |

### 7. ****Security Design****

* JWT-based authentication (or session-based as fallback)
* Password hashing using BCrypt
* Role-based authorization (Spring Security)
* Input validation and request sanitization

### 8. ****Design Considerations****

* Follow REST principles for backend APIs
* Keep the UI accessible and responsive
* Log errors and track user behavior for improvements (with consent)
* Follow clean code and SOLID principles

### Summary

This Technical Design Document serves as the blueprint for how CharityLens will be developed. It ensures that the platform is scalable, secure, and maintainable.