Technical Documentation

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1. Introduction

The Plantation Management System (PMS) is a web application that assist users in managing plantations and related info.

2. Architecture Overview

The application has three layers:

- **Presentation Layer:** The user interface is implemented using Thymeleaf templates.
- **Business Logic:** The Spring Framework is used to implement the business logic.
- **Data Access Layer:** Data is stored in a database managed by Spring Data JPA.

3. Technologies Used

- **Java:** Principle programming language used.
- **Spring Boot:** The framework for creating the application.
- **Thymeleaf:** A Java template engine for web dev.
- **Spring Data JPA:** It makes it easy to implement JPA-based repositories.
- **HTML, CSS, JavaScript:** Frontend development.

4. Implementation Details

The application is implemented with the help of controllers, services, and repositories.

- **Controllers:** Handle incoming requests, interact with services, and return responses.
- **Services:** Contains logic and provide necessary functionalities.
- **Repositories:** Talk with the database using JPA for CRUD operations.

5. Libraries and Frameworks

- **Apache Tomcat:** The built in servlet provided by Spring Boot.
- **Thymeleaf:** Used for server-side display of HTML templates.

6. Database Structure

The application uses a database, and the entities are mapped to corresponding database tables. The database structure includes tables for Users, Owners, Crops, Requests, and Plantations.

7. Security Measures

- **Authentication:** It ensure secure access to different parts of the application based on user roles.
- **Authorization:** Role-based access control to ensure that users have appropriate permissions.