E-commerce Pharmacy Website - Intern Project Documentation

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1. Introduction

Project Objective

The primary objective of this intern project is to develop a robust E-commerce website for a pharmacy shop. The website will facilitate the selling of medicines to customers, provide inventory management tools, and enable role-based access control for different user levels. The project will also incorporate a cart system for customers to purchase products and a delivery management system to track orders.

Scope

The project scope encompasses the development of a fully functional E-commerce website with the following key features:

- Pharmacy Product Management
- Inventory Management
- Role-Based Access Control
- Customer Cart System
- Order Management
- Delivery Management
- Performance Optimization
- Authorization and Authentication

Project Requirements Overview

The project requirements include:

- Loading an extensive medicines database
- Enabling pharmacy shops to add custom products
- Allowing shop owners to request additions to the main product database
- Managing inventory and product availability
- Implementing four roles: Owner, Admin, Manager, and Staff
- Designing a cart system for customers
- Providing order placement and management functionality
- Creating a delivery status tracking system
- Ensuring performance and optimization
- Implementing JWT-based authorization
- Providing search, API throttling, and caching functionalities
- Including features for delivery personnel and customer ratings

2. System Architecture

Technology Stack

- Database: PostgreSQL
- Backend: Django, Django Rest Frameworrk
- API Authentication: JWT using djangorestframework-simplejwt
- Monitoring: Django Silk or Django Debug Toolbar
- Other Packages: Autoslugfield, versatileimagefield, drf_spectacular, axes

Database Design

The database will consist of multiple tables, including:

- Users (Shop owners, Admins, Managers, Staff, Customers)
- Products (Medicines and custom products)
- Inventory (Shop-specific inventory)
- Orders (Customer orders and their details)
- DeliveryStatus (Delivery tracking)

Note: Provide ER diagrams or database schema for a visual representation.

3. Pharmacy Product Management

Loading Medicines Database

- Implement a script to load a comprehensive medicines database.
- Pharmacists can inherit products into their inventory.

Adding Custom Products

- Pharmacy shop owners/admin/staff can add custom products if not in the database.

Requesting Product Addition

- Shop owners can request superusers to add their custom products to the main database.

4. Inventory Management

Shop-Specific Inventory

- Each shop can manage its product inventory and track quantities available.

Product Availability

- Customers can only purchase products that are in stock.

Stock Management

- Implement stock tracking mechanisms to update product quantities.

5. Role-Based Access Control

Roles and Permissions

- Define roles: Owner, Admin, Manager, Staff, Customer.
- Assign specific permissions to each role.

Role Hierarchy

- Establish a hierarchy where higher roles have broader permissions.

Creating Assistants

- Shop owners and admins can create assistants with roles like manager or staff.

6. Customer Cart System

Adding Products to Cart

- Allow customers to add multiple products to their cart.

Cart Price Calculation

- Display the current product price in the cart.

7. Order Management

Placing Orders

- Customers can place orders, and order details are stored.

Order Constraints

- Once an order is placed, the product price and delivery address cannot be changed.

Stock-Out Handling

- Orders fail if a product is out of stock, and customers are notified.

8. Delivery Management

Delivery Status Tracking

- Implement a system to track delivery status.

Delivery Status Update

- All roles can update the delivery status, and only Admin/Owner can undo completed status.

Completion and Undoing

- Completed delivery status can be undone only by Admin/Owner.

9. Performance and Optimization

Pagination

- Utilize pagination to handle large datasets efficiently.

Response Time Limits

- Queries should not exceed 350ms response time.

Query Monitoring and Optimization

- Use Django Silk or Debug Toolbar to monitor and optimize queries.

- Implement annotate and eager loading to minimize query count.

10. Authorization and Authentication

JWT-based Authorization

- Implement JWT-based authorization for secure API endpoints.

Custom Authorization

- Develop custom authorization for role-based access.

Secure API Endpoints

- Define public (read-only) and private (read+write) endpoints with appropriate permissions.

11. Additional Features

Search Functionality

- Implement search endpoints for customers and products.

API Throttling

- Apply API throttling to prevent excessive requests.

Caching

- Implement caching to reduce database load.

Delivery Man Features

- Delivery personnel can view assigned tasks and earnings for the month.

Customer Rating System

- Allow customers to rate deliveries on a 1-5 star scale.

12. Conclusion

Project Completion

Upon successful implementation of the above features, the E-commerce Pharmacy Website will be ready for deployment.

Future Enhancements

- Provide user feedback and rating mechanisms.
- Integrate with payment gateways.
- Enhance user interface and experience.
- Explore additional features based on user feedback.

This comprehensive project documentation outlines the objectives, scope, requirements, architecture, and key functionalities of the E-commerce Pharmacy Website intern project. It serves as a roadmap for the development process and guides project stakeholders throughout its lifecycle.