

Software Architecture and Design - Week 6 Lab

Project Title: Coffee Bean Ordering and Management System

Group Members: _____

Problem Statement — Coffee Bean Ordering and Management System

Ideal

In an ideal environment, customers should be able to browse, select, and purchase high-quality coffee beans through a modern and interactive online platform. The system should provide a smooth and intuitive shopping experience with powerful search and filtering tools, personalized recommendations, and a secure checkout process. From the business perspective, administrators should be able to manage products, track inventory, handle customer orders, and monitor business performance efficiently through a central management dashboard. The platform should also maintain a secure user account system that allows customers to manage their profiles, view past orders, and save favorite products.

Reality

The current coffee bean ordering website only supports basic product browsing, adding to cart, and placing orders. However, several limitations significantly affect both the customer experience and operational efficiency:

1. User Experience — The interface is simple and lacks advanced features such as product filtering, sorting, or responsive design, making navigation inconvenient.
2. Personalization — The platform does not provide any product recommendations or record user preferences, leading to a generic and less engaging shopping experience.
3. Product & Inventory Management — Inventory updates are done manually, which causes inconsistency between actual and displayed stock. There are no tools to automate stock level adjustments or prevent overselling.
4. Order System — After placing an order, customers cannot track the order status or make changes. The business must update order statuses manually, which increases workload and errors.
5. Payment System — The system lacks online payment integration. All payments are handled offline, reducing convenience and trust for customers.
6. Admin Dashboard — There is no centralized management interface for administrators. Viewing orders, analyzing sales, or updating products must be done through separate database operations.
7. User Account System — Users can place orders anonymously but cannot manage profiles, view purchase history, or save preferences, limiting engagement and loyalty.

These weaknesses reduce overall usability and make the system hard to scale as customer numbers and products grow.

Consequences

If the current limitations persist, the system will continue to suffer from poor customer satisfaction and inefficient internal operations. Customers may abandon the platform for more user-friendly competitors. The absence of automation and analytics will lead to data errors, slower business decisions, and limited insight into user behavior. The business will also struggle to manage stock and payments, resulting in financial inefficiency and reduced credibility.

Proposal

To address these issues, our team proposes a redesigned Coffee Bean Ordering and Management System that follows the Software Development Life Cycle (SDLC) and adopts a modular architecture for scalability and maintainability. The proposed improvements include:

1. Enhanced User Interface and Experience: Develop a responsive, modern UI with search, sorting, and filtering capabilities for a smoother shopping process.
2. Personalized Recommendations: Implement a basic recommendation engine based on user purchase history or browsing patterns.
3. Automated Inventory Management: Integrate real-time stock tracking and auto-updates upon order confirmation or cancellation.
4. Order Tracking System: Allow customers to view order status (Pending, Processing, Shipped, Delivered) and receive updates automatically.
5. Secure Online Payment Integration: Connect to a payment gateway such as PayPal, Stripe, or a localized provider to enable online transactions safely.
6. Admin Dashboard: Provide a centralized backend system for managing products, viewing analytics, generating reports, and handling user inquiries.
7. User Account Module: Enable secure registration and login, with encrypted password storage, profile editing, order history, and wishlist management.

By implementing these features, the system aims to deliver a complete e-commerce solution for coffee bean sales — improving customer satisfaction, automating key operations, and strengthening the business's digital presence.