

Business Requirements Document (BRD)

Project Overview

Project Name: E-commerce Backend System

Version: Draft 1.0

Date: 01/28/2024

Executive Summary

We are developing a robust backend system for an e-commerce platform. This document outlines the requirements, personas, and use cases, serving as a blueprint for project development.

Goals and Objectives

Why are we building this?

The purpose of this project is to demonstrate technical expertise in backend development and to create a functional ecommerce backend that supports modern business needs, including scalability, security, and flexibility.

What are we building?

A backend system that powers an e-commerce platform enabling merchants to upload items for sale and buyers to browse, search, and purchase items. The system will manage user authentication, inventory, and transactions while providing APIs for frontend integration.

Persona and Use Cases

Personas

1. Merchant

- **Description:** Small business owners or individual sellers.
- **Goals:** Efficiently upload and manage their inventory.

- **Pain Points:** Complex interfaces, slow data upload, and lack of inventory visibility.
- 2. **Buyer**
 - **Description:** Online shoppers looking for various products.
 - **Goals:** Find and purchase items seamlessly.
 - **Pain Points:** Poor search functionality, unclear transaction status, and lack of payment options.

Use Cases

Merchant Use Cases

1. **Log in (authentication)**
2. **View inventory (what has being uploaded)**
 - Take to the inventory page with options
3. **Add New Product**
 - Input: Product name, description, price, and images.
 - Output: Confirmation of product upload.
 - No category (all belongs to product)
4. **Update Inventory**
 - Input: Product ID, updated stock levels, ect.
 - Output: Confirmation of inventory update.
5. **View Sales Reports**
 - Input: Date range.
 - Output: Sales data and trends.
 - Timeline of sales or views by hours
6. **View Order Status**
 - Orders in list view (in progress, delivered, canceled)
7. **Message system (merchant end)**
 - Chats sorted by time

Buyer Use Cases

1. **Log in**
 - Homepage, search, my account (orders), cart, message
2. **Homepage**
 - Recommended products based on history
 - Recommendation is based on name and description of past viewed/brought products
3. **Search for Products**
 - Input: Keywords or categories.
 - Output: Search results with filters.
4. **Add Product to Cart**
 - Input: Product ID and quantity.
 - Output: Confirmation of cart update.

5. Communicate with merchants / add reviews

- At a product listing, able to start chat with merchants
- The chat will go to message system

6. Checkout and Payment

- Input: Payment details and delivery address.
- Output: Order confirmation.

7. Message system (buyer)

- Sees existing merchants messages

System Requirements

Scope of the Project

Core Features

1. Authentication and Authorization

- User registration and login (JWT-based authentication).
- Role-based access control for merchants and buyers.

2. Product Management

- CRUD operations for products.
- Bulk upload via CSV or API.
- Active (registered and listed) vs inactive (only registered)
- Change price
 - i. Formal changes
 - ii. Sale (for a period and showing the original price)

3. Search and Filtering

- Full-text search with filters for category, price range, and ratings.

4. Shopping Cart

- Persistent cart storage.
- Real-time updates.

5. Order Management

- Place, track, and manage orders.
- Handle refunds and returns.

6. Payment Integration

- Integration with payment gateways (e.g., Stripe or PayPal).
- Support for multiple payment methods.

7. Reports and Analytics

- Generate reports for merchants.
- Track sales, revenue, and customer trends.

8. Message system

Acceptance Criteria

1. **Functional Scope**
 - Authentication system supports both buyers and merchants.
 - Merchants can add, update, and delete products.
 - Buyers can search, filter, and purchase products seamlessly.
 - Payment processing is secure and reliable.
 2. **Performance Criteria**
 - The system supports up to 1,000 concurrent users.
 - Search results return within 500ms.
 3. **Security**
 - All sensitive data is encrypted.
 - The system implements OWASP-recommended security practices.
 4. **Scalability**
 - The backend can scale horizontally to accommodate growing user demand.
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High-Level Components

1. **User Management**
 - Authentication, role management, and profile handling.
2. **Product Catalog**
 - Database schema for product data.
 - APIs for CRUD operations.
3. **Search Engine**
 - Elasticsearch or equivalent for indexing and fast retrieval.
4. **Shopping Cart and Checkout**
 - Session or database-based cart storage.
 - Order processing logic.
5. **Payment Gateway**
 - API integration with payment providers.
6. **Analytics Module**
 - Data aggregation for reports.
7. **Deployment Infrastructure**
 - Cloud-based hosting (AWS, GCP, or Azure).
 - CI/CD pipelines for streamlined updates.
8. **Monitoring and Alarms**
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