Online Shopping API SPECIFICATIONS

for

Java Web Programming 2023

Version 1.0

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1 Introduction

Introducing this online shopping application, a meticulously crafted solution designed for the best e-commerce industry. Built upon the robust Java Spring Boot framework with Maven, this application seamlessly integrates with a PostgreSQL database, ensuring reliability and efficiency in data management. With scalability and extensibility at its core, this application serves as a versatile foundation, ready to evolve and adapt to the ever-changing landscape of online retail. Whether you're a startup venturing into the e-commerce space or an established business seeking a flexible solution, our online shopping application is poised to elevate your digital storefront to new heights.

2 Business requirements

2.1 User Authentication and Authorization

The system must provide a secure and user-friendly authentication mechanism, allowing users to register, log in, and manage their accounts. Additionally, roles and permissions should be implemented to control access to specific features based on user roles.

2.2 Order Processing

The system must facilitate secure order processing, including the ability to review and confirm orders before payment. Users should receive order confirmation emails, and the system should maintain an order history for reference.

2.3 Order Customization

Allow users to customize their orders by choosing product variants (e.g., size, color) or adding special instructions. The system should reflect these customizations in the order details and ensure they are communicated to the fulfillment team accurately.

2.4 Payment Method Integration

Implement integration with a secure and reliable payment gateway to support online transactions. Users should be able to set up their their payment method, and the system must handle payment processing securely.

2.5 User Account Management

Provide users with the ability to update their profiles, like changing their username.

2.6 Promotions and Discounts

Enable the application to support promotional campaigns, discounts, and special offers. Administrators should have the ability to create and manage promotional codes, percentage discounts, or other incentives to attract and retain customers.

2.7 Delivery Processing and Estimation

The application must provide users with accurate delivery time estimates during checkout, considering factors like product availability and logistics constraints. Administrators should have control over delivery parameters and analytics to optimize the overall delivery process for enhanced customer satisfaction.

2.8 Products Management

The application must offer a user-friendly product management system, allowing administrators to effortlessly add, edit, and manage products within the catalog. In this MVP, Products will not have a dedicated column for available quantity in the database since some businesses will sell services, not items and it will be at the client's discretion how they wish to expand this application.

2.9 Vendor Management (if applicable)

If your platform involves multiple vendors or sellers, implement a vendor management system. Vendors should be able to manage their product listings, view order details, and update inventory. Administrators should have tools to onboard and monitor vendors.

3 Features

Aligned with the business requirements, the application's features are defined. These features encapsulate the practical expressions of strategic goals and functional necessities outlined by the business requirements, ensuring the application meets and exceeds the set expectations. Through this meticulous process, a robust, user-centric, and versatile application is crafted, seamlessly aligning with the core objectives and unique needs of the target audience.

3.1 Order Management

This feature empowers users with a comprehensive set of tools to seamlessly place and manage their orders, fostering a personalized and user-centric shopping experience. Users can initiate the ordering process by adding products to the order and to proceed to shipment. During this phase, they have the capability to leave specific order specifications or customizations, tailoring their purchase to individual preferences. To enhance the personalization aspect, users are provided with options to customize certain elements of their orders. This may include specifying preferences for product variants, indicating preferred delivery times, or leaving personalized notes for the vendor. The customization capabilities extend to the checkout process, ensuring that users have the flexibility to tailor their orders to meet their unique requirements.

3.2 Discount Management and Promotion Integration

This feature introduces a dynamic Discount Management and Promotion Integration system, providing users with the capability to enhance their shopping experience through personalized discounts and limited-time promotions. Within their user accounts, customers can accumulate one or more discounts, each serving as a valuable tool to reduce the overall cost of their orders. The Discount Management system allows users to easily view and keep track of active discounts associated with their account. Discounts can come form such as percentage-based reductions. To further engage users and drive loyalty, the discounts and promotions come with a predefined validity period. Users are informed about the expiration date of each discount, encouraging them to utilize these benefits within the specified timeframe. Incorporating this feature into the application not only enhances the cost-effectiveness of user purchases but also contributes to a more interactive and engaging shopping environment.

3.3 Product Management and Catalog Customization

The Product Management and Catalog Customization feature empower administrators with a robust suite of tools to effortlessly curate, update, and optimize the online shopping platform's product catalog. This functionality ensures a dynamic and well-organized presentation of products, enhancing the overall user experience. Administrators can seamlessly add new products to the catalog, including essential details such as product name, description, pricing. The system accommodates diverse product types, allowing for the inclusion of both physical items and services. Each product entry is customizable, enabling administrators to tailor product information according to the unique characteristics of the offerings.

3.4 Delivery Processing

The Delivery Date Estimation feature simplifies the user experience by providing a straightforward estimate of when their order will arrive after placement. Users can easily select their preferred delivery option, and the system provides a clear and reliable estimate of the expected delivery date. This ensures users have a basic understanding of when to anticipate their orders, promoting a convenient and straightforward shopping process.

3.5 User Authentication and Account Management

The User Authentication and Account Management feature form the backbone of a personalized and secure user experience. Users can seamlessly authenticate into their accounts, enabling access to a range of account management functionalities. This feature empowers users to keep their information up-to-date effortlessly, ensuring a tailored and secure interaction with the platform. Within the user-friendly account management interface, users can securely set up and manage their preferred payment methods, including credit or debit cards, for seamless transactions. This feature not only streamlines the checkout process but also offers users the flexibility to choose their preferred payment option. By allowing users to conveniently manage their payment details within their accounts, the platform aims to provide a frictionless and trustworthy payment experience for every transaction.

4 Swagger

4.1 Endpoints

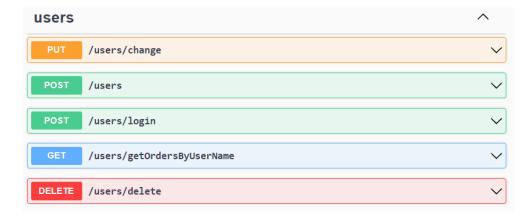


Figure 4.1: User endpoints



Figure 4.2: Orders endpoints

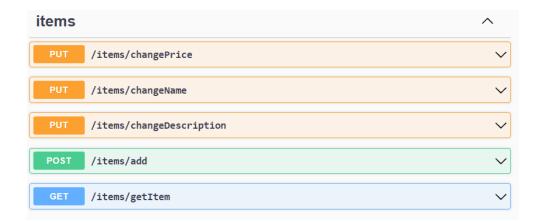


Figure 4.3: Items endpoints



Figure 4.4: Discount endpoint

5 Entity Relationship Diagram

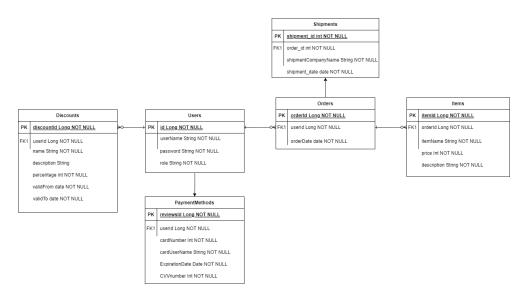


Figure 5.1: ERD