

# Project Module Documentation

## CentraMart – Single-Vendor Multi-Branch E-Commerce System

### 1. Authentication & Authorization Module

#### User Authentication:

- Handles user signup, login, forgot/reset password, and secure session management.
- Supports OTP verification for account validation and sensitive actions.
- Implements JWT-based authentication with secure password hashing.

#### Admin & Branch Authentication

- Provides secure login for administrators and branch operators with role-based access control (RBAC).
- Manages token validation, session monitoring, and authentication activity logging for security and auditing.

### 2. User Management Module

#### User Profile

- Stores and manages user information such as name, email, phone, gender, and preferences.
- Allows users to edit and update their profile details securely.

#### Address Management

- Supports adding, editing, and deleting multiple shipping addresses.

- Includes address validation and default address selection.

## **Wishlist Management**

- Allows users to add and remove products from their wishlist.
- Syncs user wishlist across devices.

## **Wallet Management**

- Provides wallet balance tracking and transaction history.
- Manages refund credits and wallet-based adjustments for users.

## **3. Category Management Module**

- Manages creation, updating, and organization of product categories.
- Supports hierarchical category structures.
- Enables category-based browsing and filtering.

## **4. Product Catalog & Variant Module**

- Manages centralized product information.
- Supports product variants (SKUs) with distinct attributes.
- Handles product images and descriptive metadata.
- Controls product visibility and availability status.

## **5. Inventory & Stock Management Module**

- Maintains branch-level inventory for product variants.
- Manages stock reservation during order creation.
- Updates stock during fulfillment and returns.

- Records inventory adjustments with audit logs.

## 6. Cart Management Module

- Allows users to add, remove, and update items in the cart.
- Displays cart summary and pricing details.
- Maintains cart as a temporary pre-order state without reserving stock.

## 7. Checkout & Order Initiation Module

- Handles address selection, order review, and payment method selection.
- Validates inventory availability and initiates order placement with stock reservation.

## 8. Order Management Module

- Manages order creation and lifecycle tracking across user, branch, and admin interactions.
- Locks prices, quantities, and VAT values at order creation to ensure financial correctness.
- Maintains order status, history, and links orders to one or more fulfillment records.

## 9. Fulfillment Management Module

- Manages branch-level fulfillment allocation and execution, including picking, packing, and shipping.
- Tracks delivery outcomes and handles returns and delivery failures.

## 10. Payment & VAT Management Module

- Processes online payments and cash-on-delivery (COD) orders, including payment confirmations and refunds.
- Calculates and locks VAT at order creation and maintains financial transaction records for audit purposes.

## **11. Coupon Management Module**

- Manages creation and configuration of discount coupons.
- Validates coupon eligibility, expiry, usage limits, and applies coupons during order creation.

## **12. Offers & Promotion Module**

- Manages promotional pricing rules.
- Supports product-level and category-level offers.
- Evaluates applicable offers during checkout.

## **13. Review & Ratings Module**

- Allows users to submit reviews and ratings for products.
- Supports moderation and displays aggregated product ratings.

## **14. Search Module**

- Enables keyword-based search across products and categories.
- Supports efficient retrieval of catalog data.

## **15. Sorting & Filtering Module**

- Provides sorting options such as price, rating, and relevance.
- Supports multi-criteria filtering for product listings.

## **16. Sales & Reporting Module**

- Generates sales and order reports.
- Provides insights into revenue and fulfillment performance.
- Supports data export for analysis.

## **17. Logging & Error Handling Module**

- Captures system logs and application errors.
- Supports monitoring, debugging, and reliability tracking.

## **18. Notification Module**

- Sends order, payment, and fulfillment notifications via email and SMS based on system events.

## **19. File Upload & Media Management Module**

- Manages image uploads for products and users, handling secure storage and retrieval of media assets.
- Associates uploaded media files with the relevant system entities.

## **20. Admin Operations Module**

- Enables administrators to manage products, inventory, orders, and oversee fulfillment and payment workflows.
- Enforces administrative controls and audit requirements.

## **21. Banner & Content Management Module**

- Manages promotional banners and static content.
- Supports scheduling and content updates.

## **22. Admin Dashboard Module**

- Provides consolidated views of system metrics and activity.
- Displays orders, inventory status, and reports.

## **23. User Dashboard Module**

- Displays user account information and order status.

- Provides access to profile and activity summaries.

## **24. Audit & Compliance Module**

- Records critical system and administrative actions.
- Ensures traceability and accountability.
- Supports compliance with operational policies.

## **25. Configuration & Feature Management Module**

- Manages system configuration parameters.
- Controls feature enablement and operational settings.