

Enterprise E-Commerce Website Development Requirement Specification (Final Version)

1. Project Overview

Develop a fully responsive, enterprise-grade, secure, scalable, and high-performance E-Commerce Website using the following technology stack:

HTML5

CSS3

JavaScript (Vanilla JavaScript)

PHP 8+

MySQL

The application must follow international coding standards, clean architecture, modular development practices, and be optimized for speed, maintainability, and security. Every module must be production-ready with no placeholder code or incomplete implementations.

2. Authentication & User Management

User Registration

Register using Email

Email verification via OTP

OTP expiry and resend option

Duplicate email validation

Strong password policy

Password hashing using bcrypt/password_hash()

Login

Email & Password Login

Email OTP Login

Remember Me option

Secure session management

Automatic logout after inactivity

Device/IP login logging

Login attempt limitation

Brute-force protection

Password Recovery

Forgot Password using Email OTP

OTP expiry

Password reset

Password strength validation

User Profile

View Profile

Edit Profile

Change Password

Manage Billing Address

Manage Shipping Address

Save Multiple Addresses

3. Customer Dashboard

Customers should be able to:

View Orders

Track Orders

Download Invoices

View Payment Status

Manage Addresses

View Order History

View Purchase History

Wishlist

Saved Cart

Reorder Previous Orders

Edit Profile

Contact Support

Raise Support Tickets

4. Product Management (Admin)

Admin should be able to:

Add Products

Edit Products

Delete Products

Enable/Disable Products

Categories

Sub Categories

Brands

Product Variants

Product Attributes

SKU Generation

Multiple Images

Product Thumbnail

Product Description

Specifications

SEO Title

SEO Description

Product Tags

5. Inventory Management

Inventory should include:

Stock Quantity

Add Stock

Reduce Stock

Manual Stock Adjustment

Inventory Logs

Low Stock Alert

Out of Stock Status

Inventory Status

**If stock reaches below configurable threshold
(Example: 5 units):**

Notify Admin Dashboard

Highlight Low Stock Products

Inventory must automatically decrease after successful order completion.

6. Shopping Cart

Add to Cart

Remove from Cart

Update Quantity

Save Cart

Estimated Shipping

Coupon Application

Tax Calculation

Shipping Calculation

7. Checkout System

Collect:

Customer Name

Mobile Number

Email

Billing Address

Shipping Address

City

State

Country

PIN Code

GST Number (Optional)

Order Notes

Complete validation for all fields.

8. Payment Gateway Integration

Integrate Razorpay.

Admin should be able to update:

Razorpay Key ID

Razorpay Secret Key

from Admin Settings without modifying source code.

Payment Status:

Pending

Paid

Failed

Cancelled

Refunded

Payment verification must happen securely through Razorpay APIs.

9. Shipping Integration

Integrate Shiprocket API.

Admin should be able to update:

API Credentials

Email

Password

Token

without editing source code.

Features:

Shipment Creation

Pickup Request

Shipping Label

AWB Generation

Shipment Tracking

Delivery Updates

10. Order Management

Complete Order Lifecycle:

Pending

↓

Confirmed

↓

Packed

↓

Shipped

↓

In Transit

↓

Out for Delivery

↓

Delivered

↓

Completed

Additional Status:

Cancelled

Returned

Refunded

Admin can manually update status.

Customer should view live tracking status.

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11. Coupon Management

Admin should be able to:

Create Coupons

Edit Coupons

Delete Coupons

Coupon Types:

Percentage Discount

Flat Discount

Free Shipping

Settings:

Expiry Date

Usage Limit

Per User Limit

Minimum Order

Maximum Discount

12. Invoice & Billing System

Invoice must be automatically generated after successful delivery.

Invoice should contain:

Company Information (Default)

Editable from Admin Profile:

Company Name

Company Logo

GST Number

PAN (Optional)

Company Address

Contact Number

Email

Website

WhatsApp Number

Bank Details

IFSC Code

Invoice Prefix

Invoice Footer

Authorized Signature

Digital Signature

Company Seal

These details should automatically appear on every invoice.

Customer Information (Dynamic)

Customer Name

Customer GST Number

Billing Address

Shipping Address

Purchased Products

Quantity

Unit Price

Tax

Shipping Charge

Discount

Grand Total

Invoice Number

Invoice Date

Order Number

Invoice should be downloadable by:

Customer

Admin

Generate PDF invoices.

13. Admin Dashboard

Dashboard should display:

Today's Revenue

Weekly Revenue

Monthly Revenue

Yearly Revenue

Total Revenue

Total Orders

Pending Orders

Completed Orders

Cancelled Orders

Returned Orders

Refunded Orders

Low Stock Products

Best Selling Products

New Customers

Recent Orders

Sales Graph

Revenue Graph

Dashboard should load instantly.

14. Customer Management

Admin should be able to:

View All Customers

Search Customers

Filter Customers

View Customer Profile

Activate/Deactivate Customer

Registration Date

Last Login

Each customer profile should show:

Personal Information

Billing Address

Shipping Address

Total Orders

Total Purchase Amount

Average Order Value

Order History

Latest Order

Pending Orders

Delivered Orders

Cancelled Orders

Payment History

Invoice Downloads

Coupon Usage

Wishlist

Internal Admin Notes

Analytics:

Total Customers

New Customers

Repeat Customers

Top Customers by Purchase Value

Top Customers by Order Count

15. Payment Tracking

Admin should see:

Payment ID

Transaction ID

Payment Status

Verification Status

Gateway Response

Refund Status

Data should be fetched securely from Razorpay APIs.

16. Help Desk / Support Ticket System

Customer should be able to:

Create Ticket

Upload Screenshot

Send Message

View Ticket Status

Admin Dashboard:

Ticket List

Open Tickets

Pending Tickets

Resolved Tickets

Closed Tickets

Conversation history should be maintained.

17. Website Banner

Display a highlighted notice:

"Need a Special Discount? Contact us on WhatsApp."

Banner should be editable from Admin Panel.

18. Admin Settings

Editable Settings:

Company Profile

Razorpay API Keys

Shiprocket API

SMTP Settings

Website Name

Logo

Contact Details

WhatsApp Number

Social Media Links

GST Details

Invoice Settings

Currency

Tax Percentage

Shipping Charges

No source code modification should be required.

19. UI / UX Requirements

Premium UI with:

Modern Design

Responsive Layout

Mobile First

Tablet Optimized

Desktop Optimized

Rich Animations

Smooth Scrolling

Sticky Navigation

Mega Menu

Breadcrumbs

Skeleton Loading

Toast Notifications

Beautiful Product Pages

Optimized Checkout Experience

20. Website Performance

Application must include:

Optimized HTML

Optimized CSS

Optimized JavaScript

Optimized PHP

Optimized MySQL Queries

Lazy Loading

Image Compression

Browser Caching

GZIP Compression

CDN Ready

Fast Page Load

High Google PageSpeed Score

21. Security Requirements

The application must implement enterprise-level security, including:

Prepared Statements (PDO/MySQLi)

SQL Injection Protection

XSS Protection

CSRF Protection

Input Validation

Input Sanitization

Output Escaping

Secure Password Hashing

Session Regeneration

Secure Cookies

HttpOnly Cookies

SameSite Cookies

HTTPS Enforcement

Security Headers

File Upload Validation

MIME Validation

Rate Limiting

Brute Force Protection

OTP Expiry

Login Attempt Limitation

Admin Authentication

Role-Based Access Control (RBAC)

Audit Logs

Error Logging

Exception Handling

Secure Database Access

Automated Database Backup Support

The application should follow OWASP Top 10 Security Guidelines.

22. SEO Features

SEO Friendly URLs

Meta Title

Meta Description

Open Graph Tags

Schema Markup

XML Sitemap

Robots.txt

Canonical URLs

Alt Text Management

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23. Email System

SMTP Integration for:

Registration OTP

Login OTP

Password Reset OTP

Order Confirmation

Shipment Updates

Delivery Confirmation

Invoice Delivery

Support Ticket Notifications

24. Notifications

Email Notifications

Admin Notifications

Low Stock Alerts

Order Status Updates

Payment Updates

Ticket Notifications

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25. Code Quality Standards

The project must follow:

Clean Architecture

Modular Development

MVC-Friendly Structure

Reusable Components

Proper Folder Structure

Separation of Concerns

Meaningful Variable Names

Meaningful Function Names

PSR Coding Standards

Standard Naming Conventions

Optimized Database Queries

No Duplicate Code

26. Documentation & Code Comments

Every file must include:

File Header

Module Description

Author Section

Every function must include:

Purpose

Parameters

Return Values

HTML, CSS, JavaScript, PHP, and SQL should include meaningful comments for maintainability.

27. Final Deliverables

The completed application must be:

100% Responsive

Enterprise Grade

Fully Secure

Scalable

Production Ready

Fully Tested

Bug-Free

Error-Free

SEO Friendly

High Performance

Fully Optimized

Maintainable

Easy to Upgrade

International Coding Standards Compliant

All modules must be fully functional, integrated, documented, and thoroughly tested. The website should deliver a premium user experience, robust security, optimized performance, and a clean, maintainable codebase suitable for real-world commercial deployment. No feature should be left incomplete, and every requirement listed above must be implemented to production standards.