

# **ECOM CRAFT: A FUTURE- GEN ECOMMERCE PLATFORM**

A project report submitted in partial fulfillment of the requirements for  
the award of the degree of

## **BACHELOR OF COMPUTER APPLICATIONS**

Submitted By

**A.P. LOGA DEEPAK**

**(22UCA119)**

Under the Guidance of

**Ms. R. Janani, B.Sc.,MCA.,**



**K.S. RANGASAMY COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**

**NAAC Accredited with 'A' and an ISO Certified Institution affiliated to**

**Periyar University, Salem,**

**Included under 2(f) & 12B of UGC Act, 1956**

**K.S.R. Kalvi Nagar, Tiruchengode – 637 215**

**Namakkal District, Tamil Nadu, India**

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**Submitted for the Viva-Voce Examination held on \_\_\_\_\_**

**Signature of the Guide**

**Head of the Department**

**Internal Examiner**

**External Examiner**

# DECLARATION

## **DECLARATION**

I hereby declare that this project entitled “**ECOM CRAFT: A FUTURE - GEN ECOMMERCE PLATFORM**” submitted to **K.S.Rangasamy College of Arts and Science (Autonomous), Tiruchengode – 637 215, Periyar University, Salem** is a record of original work done by myself under the guidance of, **Ms. R. Janani, B.Sc., MCA.**, Assistant Professor, Department of Computer Applications, **K.S.Rangasamy College of Arts and Science (Autonomous), Tiruchengode** and this project work has not formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any university.

**Place:** Tiruchengode

**Date:**

**Signature of the Candidate**

**A.P. LOGA DEEPAK  
(22UCA119)**

# **ACKNOWLEDGEMENT**

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# SYNOPSIS

## **SYNOPSIS**

The project entitled "eCom Craft: The Future Gen E-Commerce" is an innovative platform designed to redefine the online shopping experience for the next generation of consumers. Developed with a vision to blend cutting-edge technologies with an intuitive user experience, this project represents a significant advancement in the e-commerce landscape. ecom Craft is built to create a seamless, intelligent, and highly personalized online retail environment. By integrating advanced features such as AI-driven product recommendations, intelligent search capabilities, real-time customer support through AI chatbots, and predictive analytics for inventory management, the platform focuses on enhancing customer engagement and optimizing business operations. With a strong emphasis on personalization, ecom Craft crafts individualized shopping experiences by analyzing user behavior, preferences, and browsing patterns. This ensures that customers receive highly relevant product suggestions, boosting satisfaction and loyalty. The intelligent search feature further simplifies product discovery, while AI-powered chatbots provide instant, 24/7 assistance, making the shopping journey smoother and more interactive. Furthermore, predictive analytics enable proactive inventory management, helping businesses forecast demand trends, minimize stockouts, and optimize resources effectively. This, combined with a scalable, user-centric design, ensures that ecom Craft is not just meeting current market expectations but is also ready for the future evolution of online retail. Hosted and developed on robust and reliable technology frameworks, ecom Craft: The Future Gen E-Commerce stands as a transformative project, promising to set new standards in the digital commerce sector and lead the next wave of e-commerce innovation

# INTRODUCTION

# CHAPTER I

## 1. INTRODUCTION

### 1.1 ABOUT THE ORGANIZATION

Educational institutions form the building blocks of one's personality. A good institute leaves no stone unturned in mauling one's character. It wields a powerful influence as the formative years of every individual are spent within the premises of the institution. K.S.Rangasamy College of Arts and Science ensures a memorable chapter in the campus life of each and every student.

K.S.Rangasamy College of Arts and Science (Autonomous) is well known among the reputed KSR group of educational institution. The foundation stone for college was laid by K.S.Rangasamy Educational and Charitable Trust in 1995. The founder and the president of the trust is Lion Dr. K.S. RANGASAMY, MJF, a visionary in the field of education. The sprawling campus of the college is found in the system atmosphere of shady palm group of about 350 acres. It is situated on the Tiruchengode-Erode state highway. From 1995-1998 the college was affiliated to Periyar University, Salem.

The college has been recognized by the NAAC Reaccredited and an ISO Certified Institution affiliated to Periyar University, Salem, Included under 2(f) & 12B of UGC Act, 1956.

### 1.2 PROJECT DESCRIPTION

ecom Craft: The Future Gen E-Commerce is a visionary project aimed at redefining the online retail experience by leveraging advanced technologies and user-centric innovations to create a seamless, intelligent, and immersive shopping environment. By integrating artificial intelligence (AI), smart predictive analytics, and next-generation e-commerce features, Ecom Craft is designed to transform how consumers engage with products and brands in the digital marketplace.

- **Personalized Product Recommendations:** Receive tailored product suggestions based on user preferences, browsing patterns, and purchase history, ensuring a highly personalized and engaging shopping journey.
- **Seamless Checkout Experience:** Enjoy a streamlined and hassle-free checkout process with multiple secure payment options, fast order processing, and intuitive navigation for maximum convenience.

- **Real-Time Customer Support:** Access instant assistance through AI-powered chatbots and live virtual support, ensuring quick resolution of queries and enhancing customer satisfaction.
- **Mobile Optimization:** Shop anytime and anywhere with a fully mobile-optimized and responsive design, delivering a flawless shopping experience across smartphones, tablets, and desktops.
- **High-Quality Product Selection:** Explore a curated collection of top-quality products across various categories, sourced from trusted brands and verified vendors, ensuring quality and variety for customers.
- **Secure and Reliable Platform:** Shop with confidence, backed by robust security protocols, data protection measures, and a highly reliable platform architecture that safeguards personal information and transaction integrity.

Overall, ecom Craft, developed with the vision to anticipate and adapt to future e-commerce trends, is poised to set new standards in the digital retail industry. By emphasizing user experience, security, innovation, and operational efficiency, Ecom Craft: The Future Gen E-Commerce not only addresses the current demands of online shoppers but also leads the way toward shaping the future of global digital commerce.

# SYSTEM ANALYSIS

## CHAPTER II

### 2. SYSTEM ANALYSIS

#### 2.1 EXISTING SYSTEM

Existing e-commerce websites often face several challenges that impact their performance, user satisfaction, and overall success. Many platforms suffer from performance issues due to server limitations, inefficient backend code, and the use of large, unoptimized media files, leading to slow page loading times and higher bounce rates. With the widespread adoption of mobile devices for shopping, mobile optimization has become critical; however, several existing systems fail to deliver fully responsive designs and seamless mobile experiences, causing user frustration and resulting in lost sales opportunities. Another significant drawback is the inefficiency in payment processing, where customers encounter errors during checkout, limited payment method options, and unreliable payment gateways, all of which disrupt the purchasing process and negatively affect conversion rates.

Customer support is often another weak point in many existing platforms, with limited support channels and delayed response times that leave users dissatisfied and erode brand trust; real-time support through live chat or AI-driven assistance is often missing or underdeveloped. Moreover, poor search engine optimization (SEO) practices further limit the visibility of many e-commerce websites, with unoptimized product listings, irrelevant or missing meta tags, and a lack of keyword-targeted content reducing their chances of appearing prominently in search engine results. Security is yet another pressing concern, as not all e-commerce sites implement robust measures to protect customer data, leaving users vulnerable to data breaches, phishing attacks, and other cyber threats.

Despite the growth of online retail, these persistent shortcomings in performance, mobile experience, payment security, customer support, SEO, and overall system reliability highlight the need for a more advanced and user-focused solution, such as Ecom Craft: The Future Gen E-Commerce, which aims to overcome these limitations and set new standards for the digital shopping experience.

##### 2.1.1 DRAWBACKS OF EXISTING SYSTEM

- **Performance Issues:** Slow loading times due to unoptimized servers, inefficient coding practices, and heavy media files negatively impact user experience.

- **Poor Mobile Optimization:** Many existing e-commerce platforms are not fully responsive, leading to a frustrating shopping experience on mobile devices and resulting in lost sales.
- **Payment Processing Failures:** Limited payment options, unreliable gateways, and transaction errors during checkout cause customers to abandon their purchases.
- **Ineffective Customer Support:** Lack of real-time support channels like live chat or virtual assistants leads to delayed issue resolution and reduces customer trust and loyalty.
- **Weak Search Engine Optimization (SEO):** Poor SEO strategies, including unoptimized product pages and inadequate keyword use, result in low visibility in search engine results, reducing organic traffic.
- **Security Vulnerabilities:** Inadequate data protection measures expose customers to cyber threats like hacking, phishing, and data breaches, damaging the platform's reputation.
- **Limited Personalization:** Many current platforms offer generic shopping experiences without AI-driven recommendations, making customer engagement less effective.
- **Complex User Interface:** Complicated navigation, confusing layouts, and non-intuitive designs make it difficult for users to browse and complete purchases efficiently.

## 2.2 PROPOSED SYSTEM

The proposed system for Ecom Craft: The Future Gen E-Commerce is designed to redefine the online shopping experience by incorporating a range of next-generation features and intelligent optimizations. At the heart of Ecom Craft is a highly personalized shopping environment powered by AI-driven recommendation engines that tailor product suggestions based on users' browsing patterns, purchase histories, and preferences, ensuring that each customer is presented with the most relevant products quickly and effortlessly. The platform is engineered for fast and efficient performance, featuring optimized coding practices and robust hosting infrastructure that guarantee swift page load times, thereby enhancing user satisfaction and minimizing bounce rates.

A fully responsive design ensures seamless mobile optimization, delivering a consistent and superior shopping experience across smartphones, tablets, and desktops. The checkout process is simplified and intuitive, minimizing friction and reducing cart abandonment through the integration of multiple secure payment gateways and user-friendly navigation. Advanced



search functionalities, combined with intelligent filtering options, empower users to easily discover products based on diverse attributes and criteria.

Robust security protocols, including SSL encryption, secure authentication mechanisms, and real-time monitoring, are embedded throughout the platform to safeguard customer data and transactions. Ecom Craft features an intelligent inventory management system that ensures real-time stock updates, efficient order processing, and timely fulfillment, supporting smooth operational workflows. Additionally, comprehensive multi-channel customer support, including live chat, email assistance, and AI-powered virtual agents, ensures quick resolution of customer queries and issues, fostering trust and reliability.

Enhanced user engagement is driven by dynamic promotional tools, personalized offers, and loyalty programs designed to increase customer retention and encourage repeat purchases. Together, these advanced features position Ecom Craft: The Future Gen E-Commerce as a pioneering platform that sets new benchmarks for the future of digital commerce.

### 2.2.1 ADVANTAGES

- **Personalized Shopping Experience:** AI-driven product recommendations create a highly personalized shopping environment, improving customer satisfaction and increasing purchase rates.
- **Faster Performance:** Optimized code and robust hosting infrastructure ensure faster page loading times, leading to better user retention and a smoother browsing experience.
- **Mobile-Friendly Design:** Fully responsive layouts provide a consistent and user-friendly experience across all devices, including smartphones and tablets.
- **Streamlined Checkout Process:** A simplified and secure checkout process with multiple payment options reduces cart abandonment and boosts successful transactions.
- **Advanced Search and Filtering:** Intelligent search algorithms and dynamic filtering make it easy for users to quickly find products based on various criteria, improving usability.
- **Enhanced Security:** Strong security measures such as SSL certificates, data encryption, and secure authentication protect customer information and build trust.
- **Efficient Inventory Management:** Real-time stock tracking and automated inventory updates ensure smooth order fulfillment and minimize stockouts or overstocking issues.

- **Comprehensive Customer Support:** Multi-channel support, including live chat and AI-based virtual assistants, provides quick and effective solutions to customer queries, enhancing user experience.
- **Increased Customer Loyalty:** Personalized offers, loyalty programs, and dynamic promotions encourage repeat purchases and foster long-term customer relationships.
- **Scalability and Future-Readiness:** The system is designed to easily scale with growing user demands and adapt to future e-commerce trends, ensuring longevity and competitiveness.

## 2.3 SYSTEM REQUIREMENT AND SPECIFICATION

To successfully build and run the eComCraft project, certain hardware and software resources are required. These requirements ensure the system is efficient, responsive, and capable of supporting the website's interactive functionalities and features like real-time updates and dynamic page rendering.

### 2.3.1 HARDWARE REQUIREMENTS

This section gives the details of the hardware that are used for the development.

Component	Specification
Processor	Intel Core i5 (12th Gen) or AMD Ryzen 5 (4000 Series)
RAM	8 GB DDR3 RAM or higher
Monitor	17" Color Display
Storage	Minimum 500 GB HDD or SSD
Keyboard	Standard 104 Keys Keyboard
Mouse	Optical Scroll Mouse

### 2.3.2 SOFTWARE REQUIREMENTS

This section gives the details of the software that are used for the development.

Component	Specification
Frontend Technologies	HTML5, CSS3, JavaScript
Libraries & Frameworks	Vanilla JS (for interactivity), Font Awesome (icons)
Browser Support	Google Chrome, Microsoft Edge
Operating System	Windows 10/11 for Desktop, Android/iOS for Mobile
Code Editor	Visual Studio Code or Sublime Text
Version Control (optional)	Git and GitHub for backup/versioning
Network	High-speed Internet (5GHz preferred)

### 2.3.3 ABOUT THE SOFTWARE

#### OVERVIEW OF THE PLATFORM

eComCraft is a custom-developed e-commerce platform created using core front-end technologies: HTML, CSS, and JavaScript. It distinguishes itself from template-based platforms like Wix Studio by offering developers complete freedom over the UI/UX, interactivity, and application logic. This granular level of control results in a high-performance, scalable, and visually rich web application that simulates a modern online retail experience.

Unlike drag-and-drop builders that limit customization, this system showcases the power and versatility of hand-coded development. Each page, animation, interaction, and layout was manually structured and styled, making it not only technically sound but also an excellent academic demonstration of real-world web design and front-end architecture.

#### FRONTEND

The front end of eComCraft defines the visual and interactive part of the application that users see and interact with. It combines the power of HTML5, CSS3, and JavaScript to deliver a seamless and modern shopping experience.

#### TECHNOLOGIES USED

### **HTML5 (Hypertext Markup Language):**

- Forms the semantic structure of the application.
- Used to build all interface sections: headers, footers, product cards, modals, etc.
- Supports SEO and accessibility, which enhances search ranking and usability for all users.

### **CSS3 (Cascading Style Sheets):**

- Drives the responsive layout using media queries, Flexbox, and Grid systems.
- Adds visual appeal through custom themes, transitions, animations, shadows, and hover effects.
- Enables advanced UI designs like rounded cards, sticky headers, scroll effects, and interactive buttons.

### **JavaScript:**

- Acts as the logic engine behind all user interactions.
- Implements key functions such as:
  - Add-to-cart interactivity and dynamic cart updates.
  - Modal control for authentication/profile access.
  - Event-based DOM manipulation and form validation.
- Facilitates real-time UX behavior without page reloads, giving it an SPA-like feel.

### **MODULAR FILE STRUCTURE OVERVIEW**

The project follows a modular HTML-based file structure that divides functionality across multiple pages, improving maintainability and scalability.

<b>File Name</b>	<b>Purpose</b>
Index.html	Home page with animated hero section, intro to products, and navigation.
Products.html	Product catalog with category filtering, price display, and cart controls.
Orders.html	View and filter placed orders by category, date, or status.
AuthPage.html	Login and signup interface for user access control.

Admin Access.html	Backend-like interface for adding/editing products and managing inventory.
-------------------	--

This structure promotes clarity by separating major responsibilities and allowing easy testing and modification.

## **KEY FEATURES IMPLEMENTED**

eComCraft integrates several advanced UI and UX functionalities to simulate a real e-commerce platform. All features were developed manually using HTML/CSS/JS.

### **Authentication & Profile Management:**

- Modal-based login/signup system.
- Supports profile image display and logout options.
- Smooth animations for modal toggling.

### **Cart Functionality:**

- Sidebar cart design with sliding toggle animation.
- “Add to Cart” buttons dynamically update the cart state.
- Items can be added/removed and quantities adjusted on the fly.

### **Responsive Design:**

- Uses media queries to support:
  - Mobile phones
  - Tablets
  - Desktop screens
- The entire UI auto-adjusts layout and font size to improve accessibility and mobile usability.

### **Dynamic Product Updates:**

- Products display real-time stock status.
- "Newly Arrived" badges highlight new products.
- Out-of-stock products are disabled and show “Out of Stock”.

### **Admin Utilities:**

- Admin interface includes:
  - Product addition, removal, and editing.

- "Renew" functionality to restock items.
- Controlled access via a simplified dashboard. Animations and Effects
- Uses CSS transitions for hover, fade-in, and scroll-triggered effects.
- JavaScript triggers class toggles to show/hide elements with smooth motion.

## DEVELOPMENT PHILOSOPHY AND ADVANTAGES

This software project reflects practical design thinking, demonstrating how professional-grade systems can be crafted with fundamental tools—without expensive platforms or pre-built templates.

### Advantages over Wix or CMS Tools:

- **No Vendor Lock-in:** Code is 100% portable and editable.
- **Performance:** Minimal dependencies result in faster page load times.
- **Full Control:** Every design element and behavior can be customized.
- **Educational Value:** Encourages learning real programming rather than relying on black-box tools.
- **Scalability:** Easily extendable by integrating external APIs or backend services.

### Future Integration Ready:

Although currently front-end only, the modular architecture supports backend expansion:

- Integration with Firebase or MongoDB.
- Node.js for backend processing.
- Stripe or Razorpay for payment handling.

## CONCLUSION

The development of eComCraft using pure front-end technologies demonstrates the developer's full-stack potential, even when the backend is simulated. From UI interactivity to real-time state handling, the platform mirrors many real-world e-commerce patterns. This custom approach fosters innovation, ownership, and a deeper understanding of how web systems function at their core.

This software module proves that even without React or Wix, a fully functional, user-centric e-commerce platform is achievable with precision coding, thoughtful design, and modern web standards.

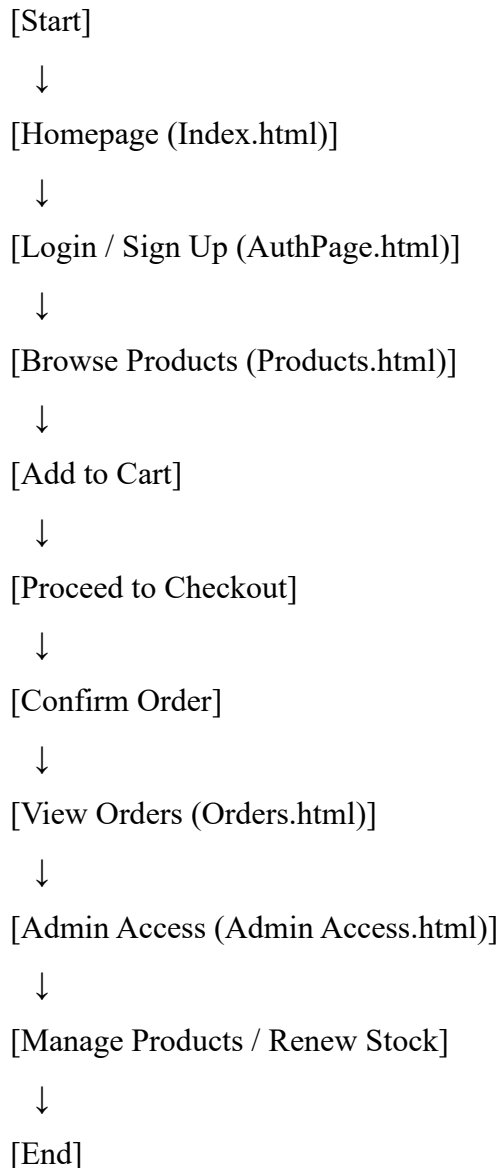
# **SYSTEM DESIGN AND DEVELOPMENT**

## CHAPTER III

### 3. SYSTEM DESIGN AND DEVELOPMENT

#### 3.1 SYSTEM FLOW DIAGRAM

The System Flow Diagram provides a high-level visual representation of how users interact with various modules of the eComCraft platform. It illustrates the step-by-step logical flow that a user or admin follows while using the website.

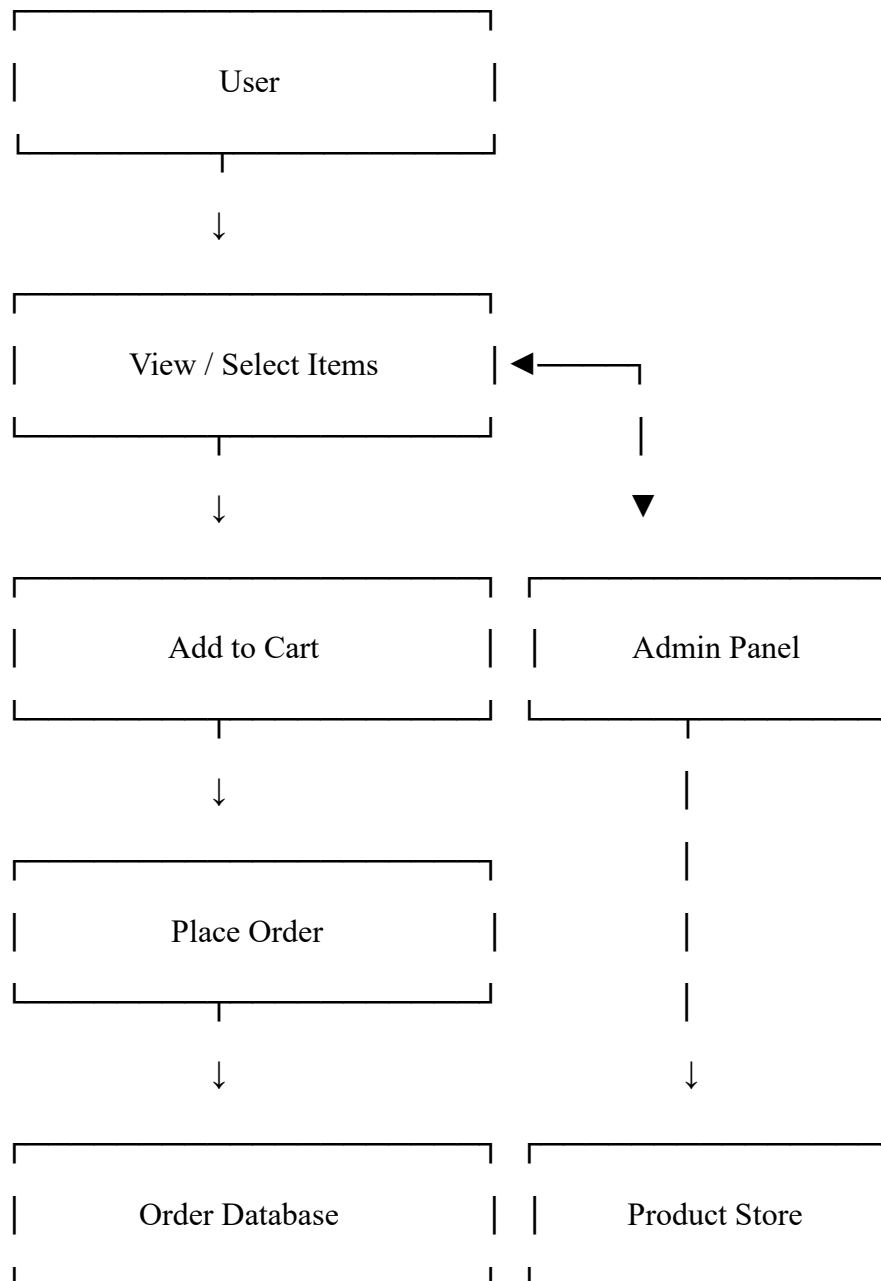


This flow shows a clear separation of user and admin activities. It ensures the design covers both customer-facing and backend management functions.



### 3.2 DATA FLOW DIAGRAM

The Data Flow Diagram (DFD) outlines how information moves through the system. It visualizes the relationship between processes (functions), external entities (users/admin), and data stores (cart, orders, products).



Each box represents a process, data store, or external agent, showing how data such as product selections, orders, and updates are processed and transferred.

### 3.3 MODULE DESCRIPTION

The eComCraft project is composed of multiple modules, each crafted with a specific purpose to reflect how an actual e-commerce platform works. These modules interact cohesively to provide a seamless user experience.

The System consists of the following modules:

- Authentication Module
- Product Browsing Module
- Shopping Cart Module
- Order Tracking Module
- Admin Management Module

#### 1. AUTHENTICATION MODULE

The authentication module is the first point of interaction for users accessing eComCraft. It is implemented using a modal-based login and sign-up system.

##### Functionalities:

- **Login System:** Accepts user email and password, checks format, and displays relevant error messages.
- **Sign-Up System:** Allows new users to create an account with validations for email format, password strength, and matching confirmation.
- **Session Management:** Simulated via client-side logic to represent active user sessions.
- **User Profile Access:** Once logged in, the profile picture and a dropdown for logout become accessible in the header.

##### Enhancements Used:

- Input field toggling.
- Modal animation using CSS transitions.
- Form validation feedback using JavaScript.

#### 2. PRODUCT BROWSING MODULE

This module powers the products.html page and is central to the shopping experience.

##### Functionalities:

- **Dynamic Rendering:** Product cards are dynamically injected based on a dataset of available products.

- **Stock Status Display:** Shows “Out of Stock” for products with zero quantity and disables the button.
- **Newly Arrived Tag:** Recently added items get highlighted automatically.
- **Price and Description:** Each product card includes clear price, short description, and relevant icons.

#### **User Benefits:**

- Easy navigation.
- Visual product categorization.
- Instant interaction without reloads.

#### **Code Structure:**

- Utilizes `forEach()` loop and `createElement()` to append product DOM elements.

### **3. SHOPPING CART MODULE**

The Shopping cart is designed as a right-hand toggle sidebar.

#### **Functionalities:**

- **Add to Cart Button:** Clicking this updates cart state in real-time.
- **Sidebar Toggle:** A hamburger cart icon shows/hides the sidebar.
- **Quantity Management:** Users can update or remove items directly.
- **Cart Total Calculation:** The subtotal updates as changes are made.
- **Visual Feedback:** "In Cart" button state appears after selection.

#### **UX Improvements:**

- Intuitive sidebar animation.
- Alerts for duplicate item addition.
- Responsive design for mobile.

This module showcases the integration of event-driven UI logic and cart state handling using JavaScript arrays and conditional rendering.

### **4. ORDER TRACKING MODULE**

The Orders.html page provides a summary and history of all past orders.

#### **Functionalities:**

- **Order Table:** Structured view with columns for order ID, product name(s), amount, and order date.
- **Order Filters:** Users can filter by order category (e.g., electronics, fashion) or sort by date.
- **Visual Indicators:** Status updates like “Processing,” “Delivered,” or “Cancelled”.

#### **Benefits:**

- Helps users keep track of purchases.
- Transparent order information.
- Easy visual scanning via tabular layout.

This module mimics the real-world structure found in large-scale retail platforms like Amazon.

### **5. ADMIN MANAGEMENT MODULE**

The admin panel (Admin Access.html) allows the administrator to manage the product database manually.

#### **Functionalities:**

- **Add Product:** Input fields for product name, price, stock quantity, and description.
- **Update Product:** Modify existing product details through a controlled interface.
- **Renew Button:** Quickly restocks out-of-stock items with a single click.
- **Product Status Flags:** Visually shows stock status for each product.
- **Limited Access:** This page is styled as an admin-exclusive utility.

#### **Interface Design:**

- Clean, form-based layout.
- Uses JavaScript to handle form submission and real-time UI updates.

### **3.4 INPUT DESIGN**

Input design refers to the system's method of collecting data from users. It is critical for ensuring accuracy, preventing errors, and streamlining interaction.

#### **Input Validation Techniques Used:**

- Required Field Checks
- Email and Password Format Regex
- Password Match Checks

- Live Error Messaging

#### Login Form:

Field	Validation Applied
Email	Valid email format (@, .com)
Password	Minimum 6 Characters, not empty

#### Example:

If email is left blank or typed as "user@", the system alerts with "Please enter a valid email address".

#### Sign-Up Form:

Field	Validation Applied
Name	Required, text-only
Email	Valid format with real-time feedback
Password	Minimum length, includes symbols
Confirm Password	Must match the original password

Includes inline validation and reset button.

#### Product Entry (Admin Panel):

Field	Validation Applied
Name	Text, required
Price	Numeric only, > 0
Stock Quantity	Numeric, non-negative integers
Description	Min character length required

All fields must be filled correctly for successful submission

#### **Cart Checkout:**

- Prevents submission if cart is empty.
- Limits quantity field to a maximum per product.
- Displays alerts if stock limits are exceeded.

### **3.5 OUTPUT DESIGN**

Output design deals **with** how data is presented to users after processing—focusing on clarity, visual hierarchy, and responsiveness.

#### **Products Page:**

- Each product is shown in a responsive card layout.
- Includes:
  - Name
  - Price (bold, color highlighted)
  - Description (shortened)
  - “Newly Arrived” tag
  - Add-to-cart button or “Out of Stock” status

#### **Cart Sidebar:**

- Automatically opens with animation.
- Lists:
  - Item name
  - Price × Quantity
  - Total per item
- Includes:
  - Remove button
  - Update quantity dropdown

Subtotal auto-refreshes as items are added or removed.

#### **Orders Page**

- Table format with:
  - Order ID

- Product Summary
- Total Amount
- Order Date
- Clean headers, zebra stripes for readability.
- Filters at the top for sorting.

### **Admin Panel**

- Lists all products.
- “Renew” buttons next to out-of-stock items.
- Admin sees a preview card for each product being managed.

**After updating stock:** badge updates to “In Stock” immediately.

### **Confirmation Modals & Alerts:**

- Used after login, adding items, or placing orders.
- Includes:
  - Success ("Order placed!")
  - Error ("Please fill out all fields")
- Styled using modal popups and banner alerts.

## **3.6 DATABASE DESIGN**

Designing a database for an e-commerce website requires careful consideration of various factors such as product information, user data, orders, payments, and more. Here's a guide to help you design a database for an e-commerce website using HTML5, CSS3 and JS:

### **SAMPLE DATABASE DESIGN**

#### **User Management:**

#### **User Table:**

Fields: UserID, Username, Email, Password, ShippingAddress, BillingAddress, CreatedAt, LastLoggedIn, etc.

#### **Example Record:**

UserID: 1

Username: johndoe

Email: johndoe@example.com

Password: [hashed password]

ShippingAddress: 123 Main St, City, Country

BillingAddress: 123 Main St, City, Country

CreatedAt: 2024-05-17 10:00:00

LastLoggedIn: 2024-05-17 15:30:00

## **Product Management:**

### **Product Table:**

Fields: ProductID, Name, Description, Price, StockQuantity, CategoryID, ImageURL, CreatedAt, etc.

### **Example Record:**

ProductID: 101

Name: Laptop

Description: High-performance laptop with SSD and 16GB RAM

Price: \$999.99

StockQuantity: 50

CategoryID: 1

ImageURL:/images/laptop.jpg

CreatedAt: 2024-05-15 09:00:00

## **Order Management:**

### **Order Table:**

Fields: OrderID, UserID, OrderDate, TotalAmount, Status, PaymentID, CreatedAt, etc.

### **Order Item Table:**

Fields: OrderItemID, OrderID, ProductID, Quantity, Price, CreatedAt, etc.

### **Example Records:**

Order:

OrderID: 1001

UserID: 1

OrderDate: 2024-05-17 14:30:00

TotalAmount: \$999.99



Status: Pending

PaymentID: 201

CreatedAt: 2024-05-17 14:30:00

Order Items:

OrderItemID: 1

OrderID: 1001

ProductID: 101

Quantity: 1

Price: \$999.99

CreatedAt: 2024-05-17 14:30:00

### **Cart Management:**

#### **Shopping Cart Table:**

Fields: CartID, UserID, ProductID, Quantity, CreatedAt, etc.

#### **Example Record:**

CartID: 201

UserID: 1

ProductID: 101

Quantity: 2

CreatedAt: 2024-05-17 16:00:00

Analytics: (Simplified example)

### **Analytics Table:**

Fields: PageViewID, UserID, PageURL, Timestamp, etc.

#### **Example Record:**

PageViewID: 1001

UserID: 1

PageURL: /products/laptop

Timestamp: 2024-05-17 15:00:00

### 3.7 CODE DESIGN

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>eComCraft | Premium Lifestyle Products</title>
  <link rel="icon" href="/Asset/Images/Favicon.ico" type="image/x-icon">
  <link rel="stylesheet" href="Themes.css">
  <link href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.0.0/css/all.min.css"
rel="stylesheet">
  <link rel="preconnect" href="https://fonts.googleapis.com">
  <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
  <link
href="https://fonts.googleapis.com/css2?family=Montserrat:wght@300;400;500;600;700&fami
ly=Playfair+Display:wght@400;500;600;700&display=swap" rel="stylesheet">
  <style>
    /* Global Styles */
    :root {
      --primary: #f4a460;
      --primary-dark: #e5955b;
      --secondary: #ba55d3;
      --dark: #121212;
      --darker: #0a0a0a;
      --light: #ffffff;
      --gray: #cccccc;
      --dark-gray: #333333;
      --section-padding: 80px 0;
      --transition: all 0.3s cubic-bezier(0.25, 0.8, 0.25, 1);
      --shadow: 0 4px 6px rgba(0, 0, 0, 0.1);
      --shadow-hover: 0 8px 15px rgba(0, 0, 0, 0.2);
    }
  </style>
```

```

* {
  box-sizing: border-box;
  margin: 0;
  padding: 0;
}

body {
  margin: 0;
  font-family: 'Montserrat', sans-serif;
  background-color: var(--dark);
  color: var(--light);
  line-height: 1.6;
  overflow-x: hidden;
}

h1, h2, h3, h4 {
  font-family: 'Playfair Display', serif;
  font-weight: 600;
}

.container {
  width: 90%;
  max-width: 1400px;
  margin: 0 auto;
}

section {
  padding: var(--section-padding);
  position: relative;
}

.section-title {
  text-align: center;
  margin-bottom: 60px;
}

```

```

    position: relative;
}

.section-title h2 {
    font-size: 2.5rem;
    margin-bottom: 15px;
    background: linear-gradient(45deg, var(--primary), var(--secondary));
    background-clip: text;
    -webkit-background-clip: text;
    -webkit-text-fill-color: transparent;
    display: inline-block;
}

.section-title p {
    color: var(--gray);
    max-width: 700px;
    margin: 0 auto;
}

.btn {
    display: inline-block;
    padding: 12px 30px;
    background-color: var(--primary);
    color: var(--light);
    text-decoration: none;
    border-radius: 30px;
    font-weight: 600;
    transition: var(--transition);
    border: none;
    cursor: pointer;
    text-align: center;
    box-shadow: var(--shadow);
}

```

```
.btn:hover {  
  background-color: var(--primary-dark);  
  transform: translateY(-3px);  
  box-shadow: var(--shadow-hover);  
}
```

```
.btn-secondary {  
  background-color: transparent;  
  border: 2px solid var(--primary);  
  color: var(--primary);  
}
```

```
.btn-secondary:hover {  
  background-color: var(--primary);  
  color: var(--light);  
}
```

/\* Navbar Styles \*/

```
.navbar {  
  background-color: transparent;  
  padding: 1.5rem 0;  
  position: fixed;  
  width: 100%;  
  top: 0;  
  left: 0;  
  z-index: 1000;  
  transition: var(--transition);  
}
```

```
.navbar.scrolled {  
  background-color: rgba(10, 10, 10, 0.98);  
  box-shadow: 0 5px 20px rgba(0, 0, 0, 0.2);  
  padding: 1rem 0;  
  backdrop-filter: blur(10px);  
}
```

```

}

.navbar-container {
  display: flex;
  justify-content: space-between;
  align-items: center;
}
nav {
  transition: background-color 0.3s ease;
}

nav.scrolled {
  background-color: rgba(0, 0, 0, 0.9); /* sleek black with transparency */
}

.logo {
  font-size: 1.8rem;
  font-weight: 700;
  text-decoration: none;
  display: flex;
  align-items: center;
  gap: 5px;
}

.logo-icon {
  color: var(--primary);
  font-size: 2rem;
}

.logo-text {
  display: flex;
  flex-direction: column;
  line-height: 1;

```

```
}
```

```
.logo-text span:first-child {  
  color: var(--primary);  
  font-size: 1.2rem;  
}
```

```
.logo-text span:last-child {  
  color: var(--light);  
  font-size: 0.9rem;  
  letter-spacing: 3px;  
  margin-top: 3px;  
}
```

```
.nav-links {  
  display: flex;  
  gap: 2.5rem;  
  list-style: none;  
}
```

```
.nav-links a {  
  text-decoration: none;  
  color: var(--light);  
  font-weight: 500;  
  position: relative;  
  transition: var(--transition);  
  font-size: 1.05rem;  
}
```

```
.nav-links a::after {  
  content: " ";  
  position: absolute;  
  width: 0;  
  height: 2px;
```

```
bottom: -5px;
left: 0;
background-color: var(--primary);
transition: var(--transition);
}
```

```
.nav-links a:hover::after {
  width: 100%;
}
```

```
.nav-links a:hover {
  color: var(--primary);
}
```

```
.nav-actions {
  display: flex;
  align-items: center;
  gap: 1.5rem;
}
```

```
.auth-btn {
  background-color: transparent;
  color: var(--light);
  border: 2px solid var(--primary);
  padding: 8px 20px;
  border-radius: 30px;
  font-weight: 600;
  cursor: pointer;
  transition: var(--transition);
}
```

```
.auth-btn:hover {
  background-color: var(--primary);
}
```



```
.cart-btn {  
  font-size: 1.3rem;  
  color: var(--light);  
  position: relative;  
}
```

```
.cart-count {  
  position: absolute;  
  top: -10px;  
  right: -10px;  
  background-color: var(--secondary);  
  color: white;  
  border-radius: 50%;  
  width: 20px;  
  height: 20px;  
  display: flex;  
  align-items: center;  
  justify-content: center;  
  font-size: 0.7rem;  
  font-weight: bold;  
}
```

```
.profile-btn {  
  display: none; /* Initially hidden */  
  align-items: center;  
  gap: 8px;  
  cursor: pointer;  
  position: relative;  
}
```

```
.profile-img {  
  width: 36px;  
  height: 36px;
```

```

    border-radius: 50%;
    object-fit: cover;
    border: 2px solid var(--primary);
  }

  /* logout*/
  .nav-logout-btn {
display: none; /* Hidden by default */
  }

.logout-btn {
  background: none;
  border: none;
  color: var(--light);
  font-family: 'Montserrat', sans-serif;
  font-weight: 500;
  font-size: 1.05rem;
  cursor: pointer;
  padding: 0;
  display: flex;
  align-items: center;
  gap: 5px;
}

.logout-btn:hover {
  color: var(--primary);
}

@media (max-width: 992px) {
  .nav-links.active .nav-logout-btn {
    display: block;
    width: 100%;
    text-align: center;
  }
}

```

```
.nav-links.active .logout-btn {  
  padding: 10px 0;  
  justify-content: center;  
}  
}
```

```
/* Hero Section */
```

```
.hero {  
  height: 100vh;  
  min-height: 800px;  
  display: flex;  
  align-items: center;  
  position: relative;  
  overflow: hidden;  
}
```

```
.hero::before {  
  content: "";  
  position: absolute;  
  top: 0;  
  left: 0;  
  width: 100%;  
  height: 100%;  
  background: linear-gradient(to bottom, rgba(0,0,0,0.7), rgba(0,0,0,0.3));  
  z-index: 1;  
}
```

```
.hero-video {  
  position: absolute;  
  top: 0;  
  left: 0;  
  width: 100%;  
  height: 100%;
```

```
    object-fit: cover;
    z-index: 0;
}
```

```
.hero-content {
    position: relative;
    z-index: 2;
    max-width: 800px;
    margin-left: 10%;
}
```

```
.hero h1 {
    font-size: 4rem;
    margin-bottom: 1.5rem;
    line-height: 1.2;
}
```

```
.hero p {
    font-size: 1.2rem;
    margin-bottom: 2.5rem;
    opacity: 0.9;
}
```

```
.hero-btns {
    display: flex;
    gap: 1rem;
}
```

```
.scroll-down {
    position: absolute;
    bottom: 30px;
    left: 50%;
    transform: translateX(-50%);
    color: var(--light);
}
```

```
font-size: 1.5rem;
animation: bounce 2s infinite;
cursor: pointer;
z-index: 2;
}
```

```
@keyframes bounce {
  0%, 20%, 50%, 80%, 100% {transform: translateY(0) translateX(-50%);}
  40% {transform: translateY(-20px) translateX(-50%);}
  60% {transform: translateY(-10px) translateX(-50%);}
}
```

```
/* Features Section */
```

```
.features {
  background-color: var(--darker);
  position: relative;
}
```

```
.features::before {
  content: "";
  position: absolute;
  top: 0;
  left: 0;
  width: 100%;
  height: 100%;
  background: url('https://images.unsplash.com/photo-1517705008128-361805f42e86?q=80&w=3000') center/cover;
  opacity: 0.03;
  z-index: 0;
}
```

```
.features-container {
  position: relative;
  z-index: 1;
}
```

```
}
```

```
.features-grid {  
  display: grid;  
  grid-template-columns: repeat(auto-fit, minmax(250px, 1fr));  
  gap: 30px;  
  margin-top: 50px;  
}
```

```
.feature-card {  
  background: rgba(30, 30, 30, 0.7);  
  padding: 40px 30px;  
  border-radius: 10px;  
  text-align: center;  
  transition: var(--transition);  
  backdrop-filter: blur(5px);  
  border: 1px solid rgba(255, 255, 255, 0.05);  
}
```

```
.feature-card:hover {  
  transform: translateY(-10px);  
  box-shadow: 0 15px 30px rgba(0, 0, 0, 0.3);  
  border-color: rgba(244, 164, 96, 0.3);  
}
```

```
.feature-icon {  
  font-size: 2.5rem;  
  color: var(--primary);  
  margin-bottom: 20px;  
}
```

```
.feature-title {  
  font-size: 1.3rem;  
  margin-bottom: 15px;
```

```

    color: var(--light);
}

.feature-description {
    color: var(--gray);
    font-size: 0.95rem;
}
</style>
</head>
<body>
<!-- Navigation -->
<nav class="navbar">
    <div class="container navbar-container">
        <a href="/Index.html" class="logo">
            <i class="fas fa-cube logo-icon"></i>
            <div class="logo-text">
                <span>eCom</span>
                <span>CRAFT</span>
            </div>
        </a>

        <ul class="nav-links">
            <li><a href="/Index.html">Home</a></li>
            <li><a href="/Products.html" class="protected-link">Products</a></li>
            <li><a href="/Orders.html" class="protected-link">Orders</a></li>
        </ul>

        <div class="nav-actions">
            <!-- Add this to your nav-actions div, before the profile button -->
            <div class="theme-switcher" id="theme-switcher" style="display: none;">
                <i class="fas fa-palette"></i>
            </div>
            <!-- Theme Switcher Modal -->
            <div class="theme-modal" id="theme-modal">

```

```

<div class="theme-modal-content">
  <span class="theme-modal-close">&times;</span>
  <h3>Select Theme</h3>
  <div class="theme-options">
    <label class="theme-option">
      <input type="radio" name="theme" value="dark" checked>
      <span class="theme-preview dark-theme"></span>
      Dark Theme
    </label>
    <label class="theme-option">
      <input type="radio" name="theme" value="light">
      <span class="theme-preview light-theme"></span>
      Light Theme
    </label>
  </div>
</div>
</div>
  <a href="/Products.html" class="cart-btn" id="cart-link">
    <i class="fas fa-shopping-cart"></i>
    <span class="cart-count">0</span>
  </a>
  <button class="auth-btn" id="auth-btn">Sign In</button>
  <div class="profile-btn" id="profile-btn">
    
  </div>
  <button class="mobile-menu-btn" id="mobile-menu-btn">
    <i class="fas fa-bars" id="menu-icon"></i>
  </button>
</div>
</div>
</nav>

<!-- Hero Section -->

```



```

<section class="hero">
  <video class="hero-video" autoplay muted loop playsinline>
    <source src="/Asset/Apple.mp4" type="video/mp4">
  </video>

  <div class="hero-content animate-fade">
    <h1>Elevate Your Lifestyle With Modern Design</h1>
    <p class="delay-1">Discover curated collections of premium home decor, fashion, and
lifestyle products that blend functionality with aesthetic appeal.</p>
    <div class="hero-btns delay-2">
      <a href="/Products.html" class="btn protected-link">Shop Now</a>
    </div>
  </div>

  <div class="scroll-down">
    <i class="fas fa-chevron-down"></i>
  </div>
</section>

<script type="module">
  import { initializeApp } from "https://www.gstatic.com/firebasejs/11.0.2/firebase-app.js";
  import { getAuth, onAuthStateChanged, signInOut } from
"https://www.gstatic.com/firebasejs/11.0.2/firebase-auth.js";
  import { getDatabase, ref, set, get } from
"https://www.gstatic.com/firebasejs/11.0.2/firebase-database.js";

  const firebaseConfig = {
    apiKey: "AIzaSyAw-KNsUXJVxqF24qM8U8SJkAbAdcvpq9o",
    authDomain: "ecommerce-609ac.firebaseio.com",
    databaseURL: "https://ecommerce-609ac-default-rtdb.firebaseio.com"
  };

  const app = initializeApp(firebaseConfig);
  const auth = getAuth(app);
  const database = getDatabase(app);

```

```

const sanitizeEmail = (email) => email.replace(/\./g, ',');

const AuthState = {
  isLoggedIn: () => localStorage.getItem('isLoggedIn') === 'true' || !!auth.currentUser,

  login: async (user) => {
    localStorage.setItem('isLoggedIn', 'true');
    const emailKey = sanitizeEmail(user.email);
    const userRef = ref(database, 'users/' + emailKey);

    try {
      const snapshot = await get(userRef);
      let profile;

      if (snapshot.exists()) {
        profile = snapshot.val();
      } else {
        profile = {
          name: user?.displayName || user?.email?.split('@')[0] || 'New User',
          email: user?.email || '',
          phone: '',
          avatar: profile?.avatar || 'Asset/Images/profile.jpeg'
        };
        await set(userRef, profile);
      }

      localStorage.setItem('userProfile', JSON.stringify(profile));
      updateProfileUI();
      updateUI();
    } catch (err) {
      console.error("Error fetching profile:", err);
    }
  },

```

```

logout: () => {
  localStorage.removeItem('isLoggedIn');
  localStorage.removeItem('userProfile');
  signOut(auth).then(() => {
    updateUI();
    window.location.href = '/Index.html';
  });
},

setProfile: (profile) => {
  const user = auth.currentUser;
  if (user) {
    const emailKey = sanitizeEmail(user.email);
    set(ref(database, 'users/' + emailKey), profile)
      .then(() => console.log("Profile saved to Realtime DB"))
      .catch((err) => console.error("Error saving to DB:", err));
  }
  localStorage.setItem('userProfile', JSON.stringify(profile));
  updateProfileUI();
  const profileImg = document.getElementById('profile-img');
  if (profileImg) profileImg.src = profile.avatar;
},

getProfile: () => {
  const profile = localStorage.getItem('userProfile');
  return profile ? JSON.parse(profile) : {};
}
};

const DOM = {
  authBtn: document.getElementById('auth-btn'),
  profileBtn: document.getElementById('profile-btn'),
  profileImg: document.getElementById('profile-img'),

```

```

protectedLinks: document.querySelectorAll('.protected-link'),
navLogoutBtn: document.getElementById('nav-logout-btn'),
profileForm: document.getElementById('profile-form'),
profileModal: document.getElementById('profile-modal'),
profileModalClose: document.getElementById('profile-modal-close'),
avatarUpload: document.getElementById('avatar-upload'),
avatarOptionsGrid: document.getElementById('avatar-options-grid'),
chooseAvatarBtn: document.getElementById('choose-avatar-btn'),
profileAvatarImg: document.getElementById('profile-avatar-img')
};

```

```

const PROTECTED_PAGES = ['Products.html', 'Orders.html'];
const currentPage = window.location.pathname.split('/').pop();
const cartLink = document.getElementById('cart-link');

```

```

if (cartLink) {
  cartLink.addEventListener('click', (e) => {
    e.preventDefault();
    const user = auth.currentUser;
    if (user) {
      localStorage.setItem('openCartOnProducts', 'true');
      window.location.href = '/Products.html';
    } else {
      localStorage.setItem('redirectAfterLogin', 'Products.html');
      localStorage.setItem('openCartOnProducts', 'true');
      window.location.href = '/AuthPage.html';
    }
  });
}

```

```

function init() {
  if (PROTECTED_PAGES.includes(currentPage)) checkAuthBeforeNavigation();
  setupAuthListener();
  setupEventListeners();
}

```

```
    updateUI();  
  }  
}
```

```
function checkAuthBeforeNavigation() {  
  if (!AuthState.isLoggedIn()) {  
    localStorage.setItem('redirectAfterLogin', currentPage);  
    window.location.href = '/AuthPage.html';  
  }  
}
```

```
function setupAuthListener() {  
  onAuthStateChanged(auth, (user) => {  
    if (user) {  
      AuthState.login(user);  
      if (window.location.pathname.includes('AuthPage.html')) {  
        const redirectUrl = localStorage.getItem('redirectAfterLogin') || 'Index.html';  
        localStorage.removeItem('redirectAfterLogin');  
        window.location.href = redirectUrl;  
      }  
    } else {  
      if (AuthState.isLoggedIn()) AuthState.logout();  
    }  
  });  
}
```

```
function setupEventListeners() {  
  // Scroll navbar background  
  window.addEventListener('scroll', () => {  
    const nav = document.querySelector('nav');  
    if (window.scrollY > 10) {  
      nav.classList.add('scrolled');  
    } else {  
      nav.classList.remove('scrolled');  
    }  
  })  
}
```

```
});
```

```
DOM.profileBtn?.addEventListener('click', () => {  
  DOM.profileModal?.classList.add('active');  
  updateProfileUI(); // make sure data is shown in modal  
});
```

```
DOM.profileModalClose?.addEventListener('click', () => {  
  DOM.profileModal?.classList.remove('active');  
});
```

```
const mobileMenuBtn = document.getElementById('mobile-menu-btn');  
const navLinks = document.querySelector('.nav-links');  
const menuIcon = document.getElementById('menu-icon');  
// Toggle between bars and times (X) icon  
if (navLinks.classList.contains('active')) {  
  menuIcon.classList.remove('fa-bars');  
  menuIcon.classList.add('fa-times');  
} else {  
  menuIcon.classList.remove('fa-times');  
  menuIcon.classList.add('fa-bars');  
}
```

```
DOM.authBtn?.addEventListener('click', (e) => {  
  e.preventDefault();  
  localStorage.setItem('redirectAfterLogin', currentPage);  
  window.location.href = '/AuthPage.html';  
});
```

```
DOM.protectedLinks?.forEach(link => {  
  link.addEventListener('click', function (e) {  
    if (!AuthState.isLoggedIn()) {  
      e.preventDefault();
```

```

        localStorage.setItem('redirectAfterLogin', this.getAttribute('href').split('/').pop());
        window.location.href = '/AuthPage.html';
    }
});
});

document.getElementById('logout-btn')?.addEventListener('click', (e) => {
    e.preventDefault();
    AuthState.logout();
    DOM.profileModal?.classList.remove('active');
});

option.addEventListener('change', (e) => {
    const selectedTheme = e.target.value;
    document.documentElement.classList.toggle('light-theme', selectedTheme === 'light');
    localStorage.setItem('theme', selectedTheme);
    themeModal.classList.remove('active');
});
});

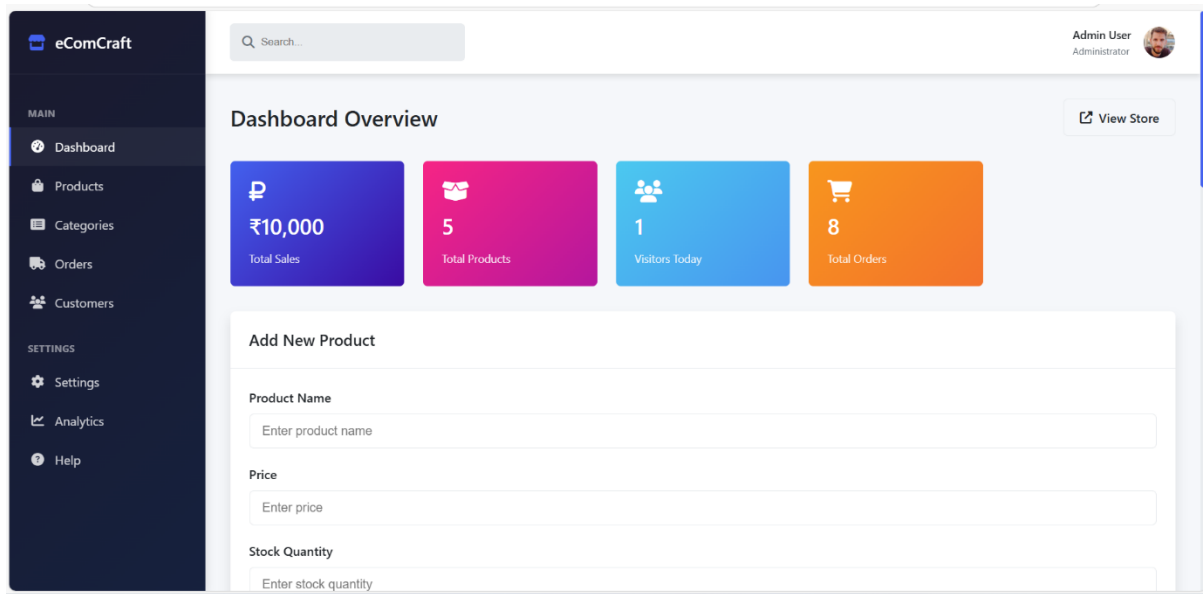
themeModal.addEventListener('click', (e) => {
    if (e.target === themeModal) {
        themeModal.classList.remove('active');
    }
});

const video = document.querySelector('.hero-video');
if (video) video.play().catch(console.error);
init();
});
</script>
</body>
</html>

```

**Etc.....**

### 3.8 REPORT DESIGN



**Figure 3.8.1:** *Dashboard of eCom Craft*

#### **Admin Dashboard Overview – eComCraft:**

The screenshot displays the admin dashboard of the eComCraft eCommerce platform hosted at <https://monumental-dragon-eeb854.netlify.app>. The dashboard features a clean and modern interface, providing a summary of key business metrics:

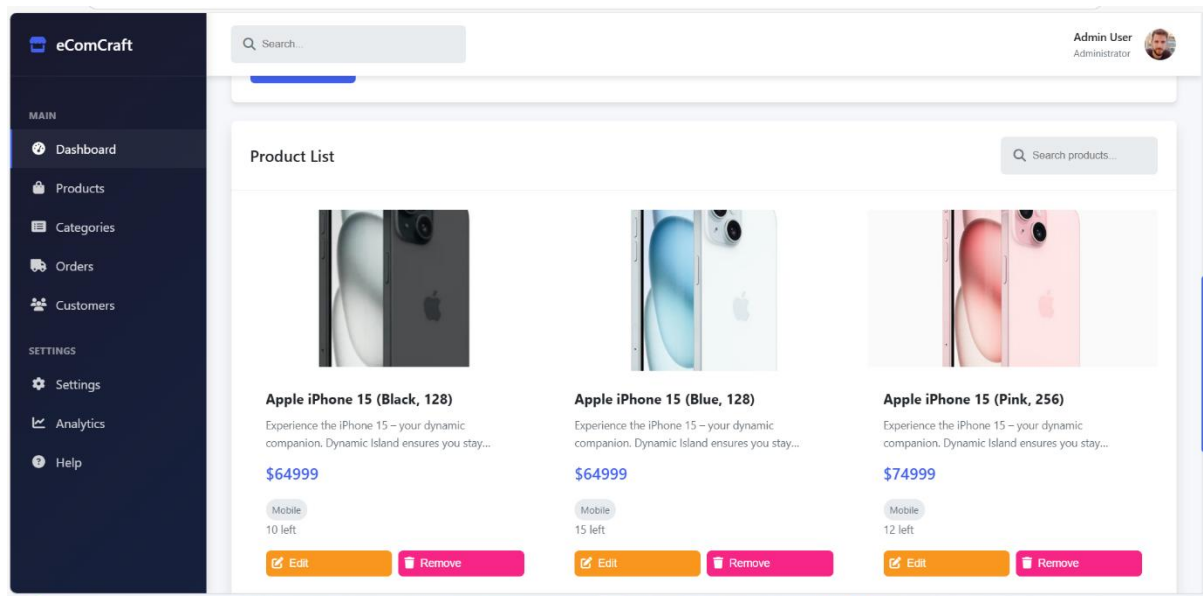
- Total Sales: ₹10,000
- Total Products: 5
- Visitors Today: 1
- Total Orders: 8

The left sidebar provides navigation links to various admin functionalities including:

- Dashboard
- Products
- Categories
- Orders
- Customers
- Settings
- Analytics
- Help



Additionally, there's an “Add New Product” form section where the admin can enter details like product name, price, and stock quantity. A user profile section appears at the top right, showing the current admin user ("Admin User").



**Figure 3.8.2:** *Adding and Removing the stock from the website*

# **TESTING AND IMPLEMENTATION**

## **CHAPTER IV**

### **4. TESTING AND IMPLEMENTATION**

#### **4.1 TESTING**

Testing is a crucial phase in software development that ensures the system functions as expected, is free from critical bugs, and delivers a smooth user experience. For eComCraft, comprehensive testing was conducted across various levels, including unit testing, integration testing, UI testing, and user acceptance testing.

##### **1. BLACK BOX TESTING**

Black Box Testing is a technique where the tester checks the system's functionality without knowing its internal code or structure. It focuses on validating inputs, outputs, and user interactions based on system requirements. This method helps ensure the application behaves correctly for end-users and meets usability, security, and performance expectations.

##### **Key characteristics:**

- No need for knowledge of internal code.
- Focuses on inputs, outputs, and system behavior.
- Tests functionality, usability, security, and user experience.

##### **2. WHITE BOX TESTING**

White Box Testing is a method where the internal code, structure, and logic of the system are tested. It validates the flow of inputs and outputs, checks code conditions, loops, and paths, and ensures software correctness at a deeper level. This approach helps optimize code quality, performance, and security.

##### **Key characteristics:**

- Requires knowledge of the internal code structure.
- Focuses on code paths, conditions, and data flow.
- Improves software quality, efficiency, and security.

##### **3. SYSTEM TESTING**

System Testing is a high-level testing phase where the entire integrated system is tested to verify that it meets the specified requirements. It evaluates both functional and non-functional

aspects without focusing on internal code, simulating real-world usage to ensure the product works end-to-end.

**Key characteristics:**

- Tests the complete system as a whole.
- Validates functionality, performance, security, and usability.
- Simulates real user workflows and interactions.

#### **4. UNIT TESTING**

Unit Testing involves testing individual components or modules of an application in isolation to ensure each unit functions correctly. It helps catch bugs early, simplifies debugging, and ensures code reliability during development.

**Key characteristics:**

- Focuses on testing small, isolated units.
- Performed by developers to validate functionality early.
- Uses manual or automated tests to check scenarios.

#### **5. INTEGRATION TESTING**

Integration Testing involves testing the interaction between different components or modules of an application to ensure they work together as expected. It helps identify issues in the interaction and integration of components that might not be apparent in unit testing

**Key characteristics:**

- Focuses on testing how different components interact.
- Performed after unit testing to validate the combined behavior.
- Uses automated or manual tests to verify data flow and communication between modules.
- Identifies issues such as data mismatches, improper interactions, and dependency failures.

##### **4.1.1 TESTING OBJECTIVES**

- To verify the accuracy and functionality of all features (cart, login, admin, etc.).
- To ensure the system works smoothly on different devices and browsers.
- To identify and fix logical, functional, or design errors before deployment.
- To validate responsiveness, performance, and user input handling.

## 4.2 TEST REPORTS

### 1. Unit Testing:

Each module was tested independently to ensure correctness.

Module	Test Case	Expected Output	Result
Cart Add/Remove	Add same product twice	Increments quantity, not duplicate	Pass
Login Validation	Blank email or invalid format	Shows error message	Pass
Auth Modal	Close button on modal	Hides modal and disables background scroll	Pass
Quantity Dropdown	Increase quantity beyond stock	Triggers alert or disables button	Pass

### 2. Integration Testing:

Integration tests ensure different modules work together correctly.

#### Examples:

- **Login + Cart:** Verify cart persists only during active session.
- **Admin Panel + Product Page:** Adding new products updates the public product list.
- **Order + Product Stock:** Placing order reduces available stock in product card.

All integration tests were successful, confirming **inter-module communication works properly**.

### 3. UI / UX Testing:

Conducted using multiple screen sizes and browsers (Chrome, Edge, Firefox, Android Browser) to ensure consistent responsiveness and optimal user experience across platforms. Identified and resolved cross-browser compatibility issues during testing,

Device	Layout	Issue Found	Status
Mobile (Android)	1-column responsive	Navbar needed spacing	Fixed
iPad	2-column grid	Cart sidebar overflowing	Fixed
Desktop	3-column layout	No issues	Pass

#### 4. Functional Testing:

Verified each user-facing function behaves correctly.

Function	Steps Tested	Result
Add to Cart	Click → Sidebar opens → Item appears	Pass
Checkout Process	Summary → Place order → Confirmation	Pass
Sign-Up	All fields filled incorrectly → blocked	Pass
Renew Button (Admin)	Click → Product restocks → Button becomes hidden	Pass

#### 5. Compatibility Testing:

Browser	Test Result
Google Chrome	Fully compatible
Microsoft Edge	Fully compatible
Firefox	Compatible, minor style shift

Safari (Mac)	Not tested
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Tested resolution range: 320px – 1920px

## 6. Performance Testing:

Basic performance was tested using:

- Lighthouse in Chrome DevTools.
- Measured page load speed, accessibility, and best practices.

### Average Results:

- Load Time (First Paint): 1.2 – 1.8 seconds.
- Accessibility Score: 95+
- SEO Score: 90+
- Largest Contentful Paint: < 2 seconds

## 7. Regression Testing:

After each update (specially to cart logic, product renewal, and modal triggers),

- All related features were re-tested to ensure no new bugs were introduced.
- Focus on cart state persistence, modal interaction, and price updates.

### SAMPLE TEST REPORT FORMAT

Test Case ID	Description	Expected Result	Actual Result	Status
TC001	Login with empty fields	Error Message	Error Displayed	Pass
TC002	Add To Cart	Product appears in cart sidebar	Success	Pass
TC003	Out-of-Stock product	Add-to-cart disabled	Button disabled	Pass

TC004	Admin adds a product	New product appears on user view	Success	Pass
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### 4.3 SYSTEM IMPLEMENTATION

The implementation phase involved deploying the eComCraft website on a local system for demonstration and testing. While there is no live domain in this version, all core functionalities are fully operational via HTML files and browser rendering.

#### STEPS FOLLOWED FOR IMPLEMENTATION

##### 1. Code Finalization:

- All HTML, CSS, and JS files reviewed and formatted.
- Commenting added for maintainability.
- Media queries verified for responsiveness.

##### 2. Directory Setup:

Project folder contains:

- Index.html
- Products.html
- Orders.html
- AuthPage.html
- Admin Access.html
- css/ (style files)
- js/ (all logic)
- assets/ (images/icons)

##### 3. Admin & User Flow Testing:

- Simulated role-based flow:
  - Admin updates products.
  - User browses and places order.
- All workflows tested in sequence.

##### 4. Demo Readiness:

- Pages opened locally via browser.



- Modal toggles, add-to-cart, and dynamic updates checked.
- Folder zipped for submission and review.

## DEPLOYMENT CONSIDERATIONS

If this project is extended to a hosted version:

- Use Firebase Hosting or GitHub Pages.
- Add backend database (e.g., Firebase Realtime DB or MongoDB Atlas).
- Integrate Stripe API for real payments.
- Add auth tokens for secure admin access.

## USER GUIDE AND TRAINING

The user interface is **intuitive**, but documentation is available for:

User Role	Training Description
Customer	How to sign in, browse, add to cart, and view orders
Admin	Steps to add/edit products, renew out-of-stock items
Both	How to navigate, reset passwords, and get support

## IMPLEMENTATION SUMMARY

Activity	Description
Code Completion	Finalized all modules and tested locally
Integration Testing	Ensured inter-page data consistency
Deployment (Local)	Opened in Chrome with live preview
Training Provided	Documentation of user flows included

Final Verification	Reviewed by project guide and peer-reviewed
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# CONCLUSION

## CHAPTER V

### 5. CONCLUSION

The eComCraft project successfully demonstrates how a fully functional, aesthetically pleasing, and interactive e-commerce website can be built entirely using core web technologies **like** HTML5, CSS3, and JavaScript—without relying on proprietary platforms such as Wix Studio.

This project not only fulfills academic expectations but also simulates real-world development challenges and practices. It showcases the importance of writing optimized, scalable, and reusable code even in front-end-only systems.

The eComCraft project has provided a comprehensive learning experience in full-cycle web development. It demonstrates that robust web applications can be built without relying on drag-and-drop tools, and encourages deeper exploration of manual coding practices.

“Code gives you freedom—freedom to create, control, and customize.”

With its clean design, modular build, and real-world logic simulation, eComCraft stands as a strong academic and professional portfolio piece that reflects not just technical skill but thoughtful design and execution.

**FUTURE ENHANCEMENT**

## CHAPTER VI

### 6. FUTURE ENHANCEMENT

As eComCraft already supports real-time data synchronization through Firebase, the platform is well-positioned for advanced enhancements that will further strengthen its capabilities and user experience. One of the key future improvements is the integration of an advanced analytics dashboard that will display interactive visualizations of sales performance, customer activity, product popularity, and traffic trends using tools like Chart.js or Recharts. This will enable the admin to make informed decisions based on live business insights. To deepen understanding of user behavior, the platform will incorporate location tracking and device fingerprinting, allowing administrators to view visitor distribution by region and analyze the types of devices used to access the store. Role-Based Access Control (RBAC) will be implemented to provide multi-level admin access, where specific permissions can be assigned to roles such as Super Admin, Inventory Manager, and Customer Support Staff—ensuring both flexibility and data security.

To increase customer satisfaction and engagement, a product review and rating system will be introduced, giving customers the ability to provide feedback and helping future buyers make informed choices. The addition of a dynamic coupon and discount system will allow admins to run seasonal offers, promo codes, and loyalty rewards to boost conversions. Automated email alerts will enhance communication by notifying users of order status, shipping updates, abandoned carts, and exclusive deals. The inventory management system will be expanded to include low-stock notifications and options for automated restocking, ensuring product availability and reducing administrative overhead.

In terms of user reach and personalization, eComCraft aims to support multi-language and multi-currency features, enabling a tailored shopping experience based on the user's location and preferences. Moreover, an AI-powered recommendation engine will be developed to suggest products based on each customer's browsing and purchase history, increasing upsell opportunities and user satisfaction. While real-time data syncing is already in place, future updates will include enhanced mobile responsiveness and the development of a dedicated mobile application for Android and iOS, providing a seamless and accessible experience for both customers and administrators. Collectively, these enhancements will help transform eComCraft into a fully scalable, intelligent, and globally competitive eCommerce platform.

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## **CHAPTER VII**

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# APPENDIX

## 8. APPENDIX

### 8.1 SCREEN LAYOUTS

Figure 8.1.1 to 8.1.4: *Home Page*

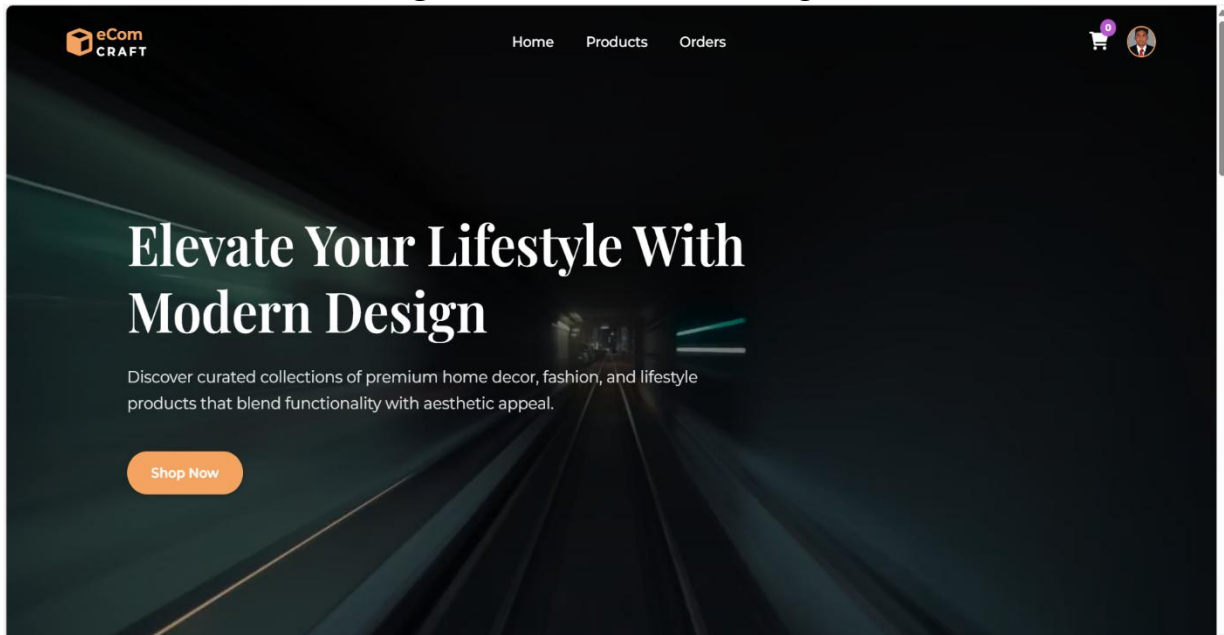


Figure 8.1.1

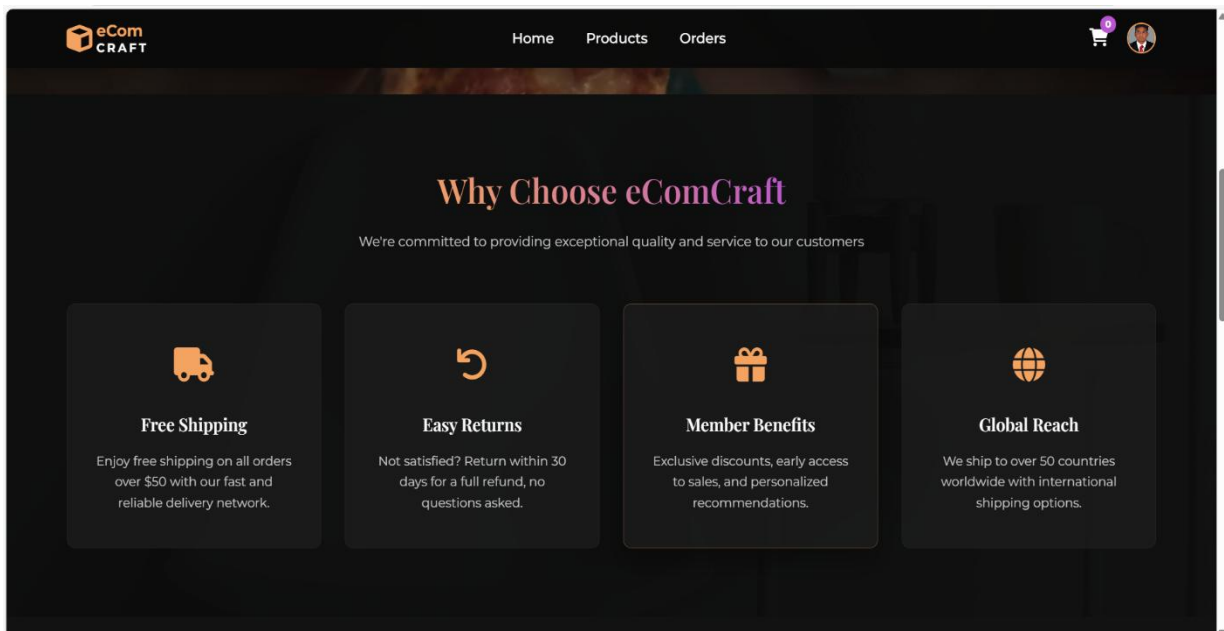


Figure 8.1.2

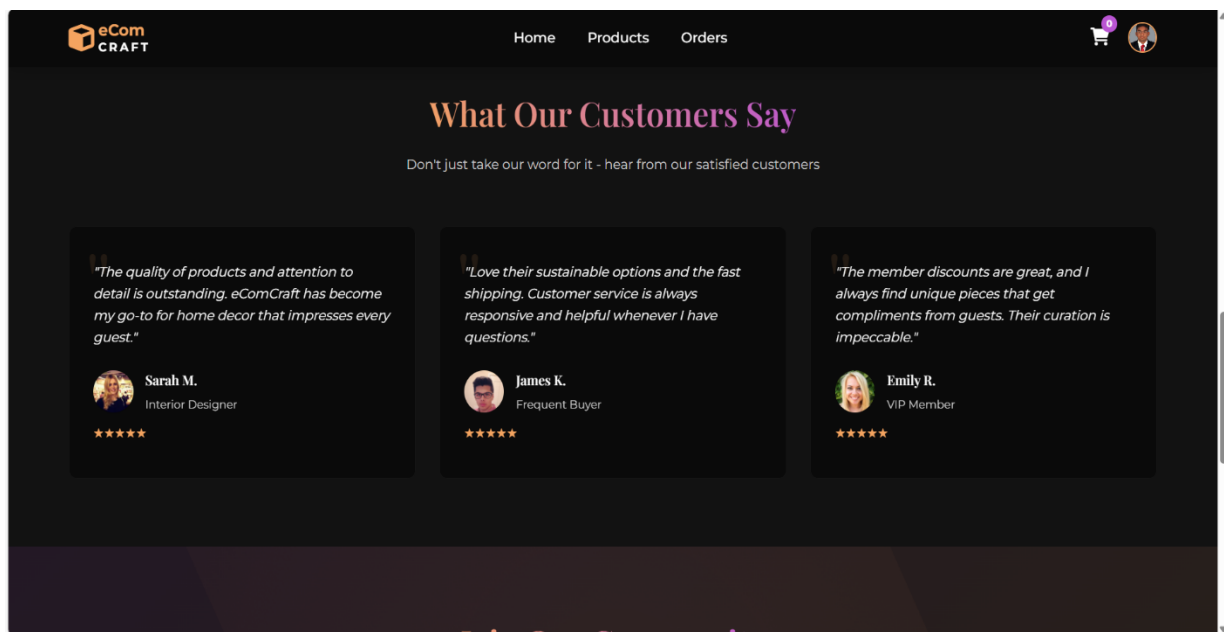


Figure 8.1.3

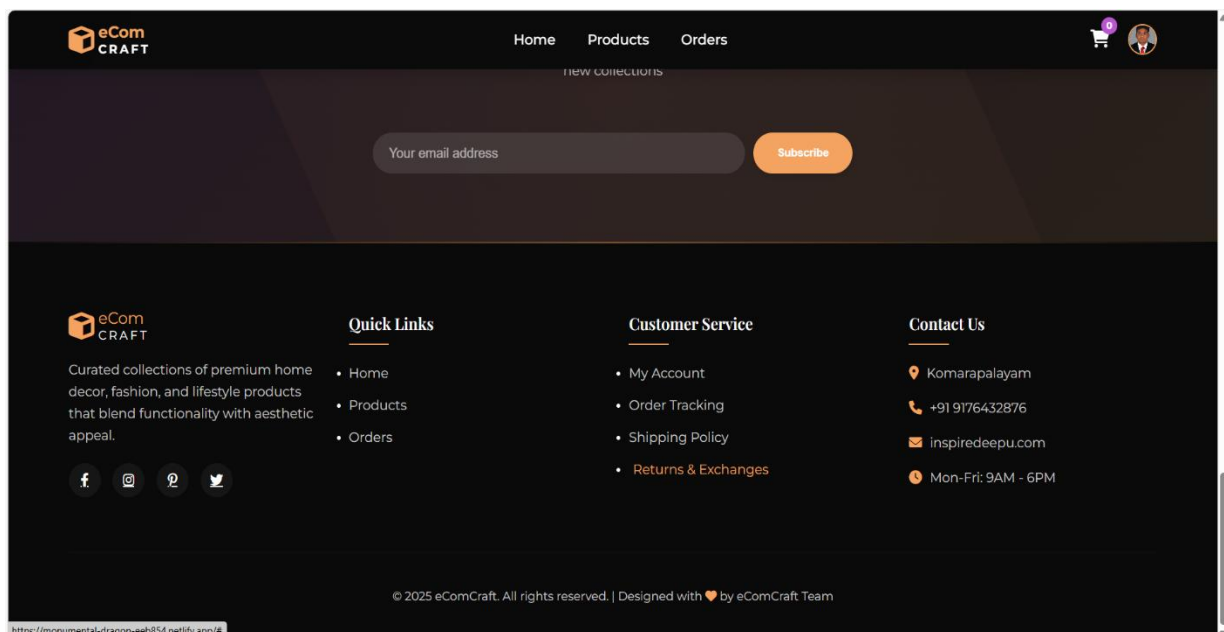
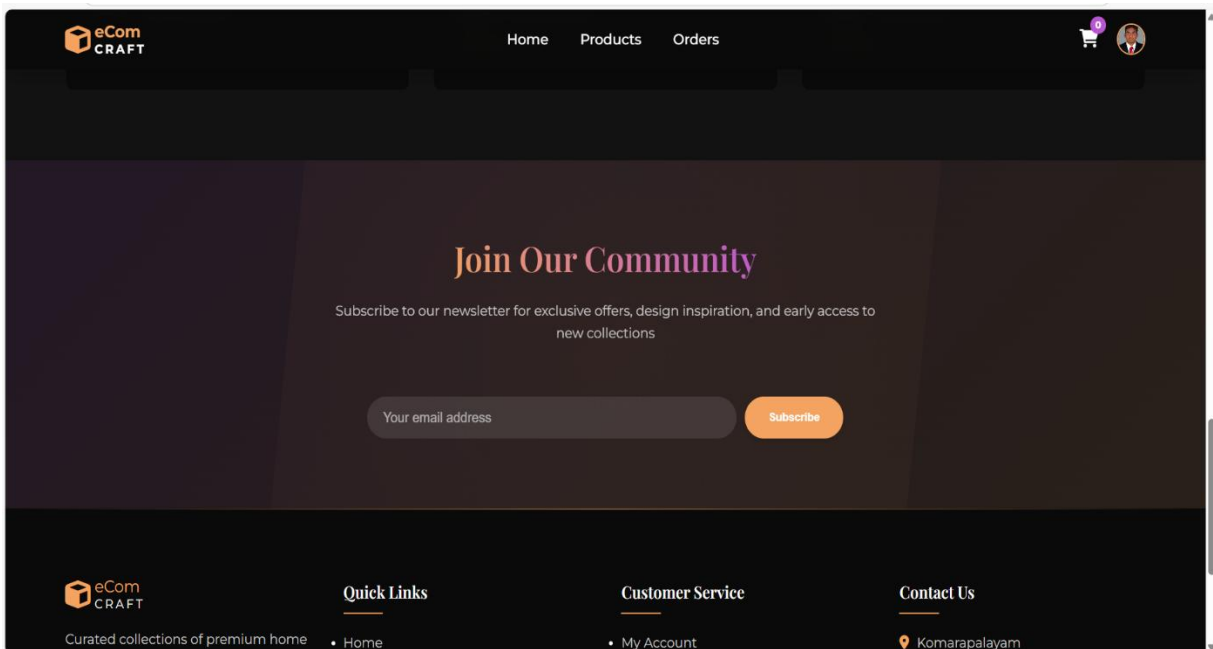
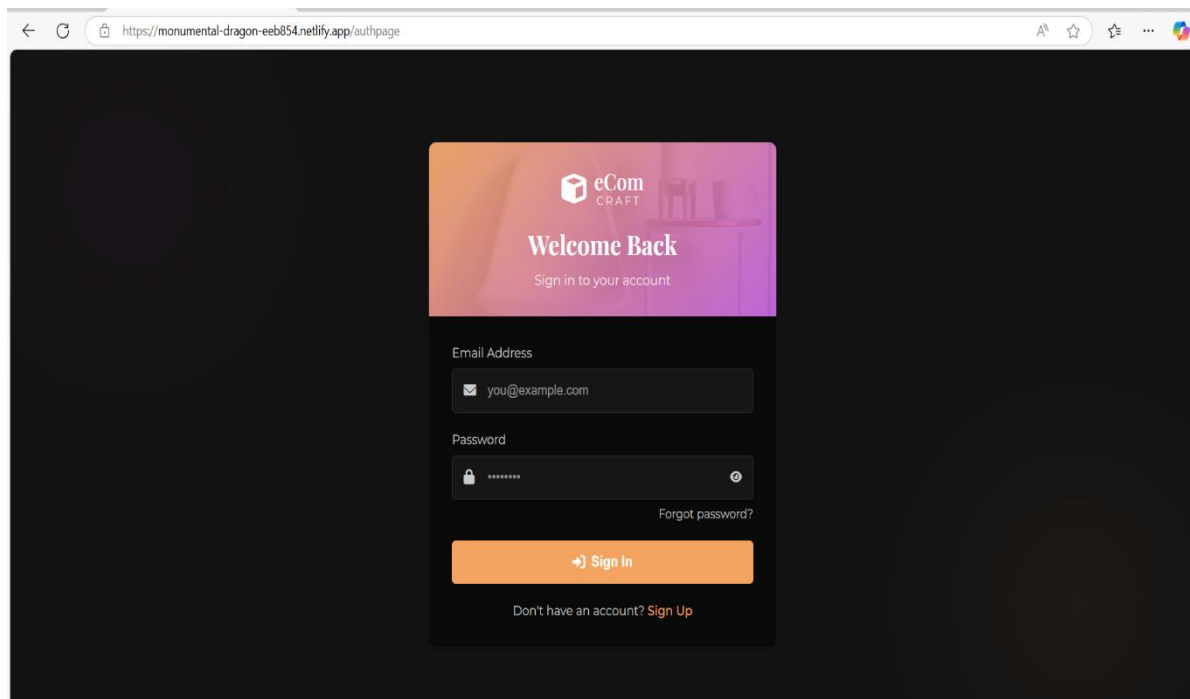


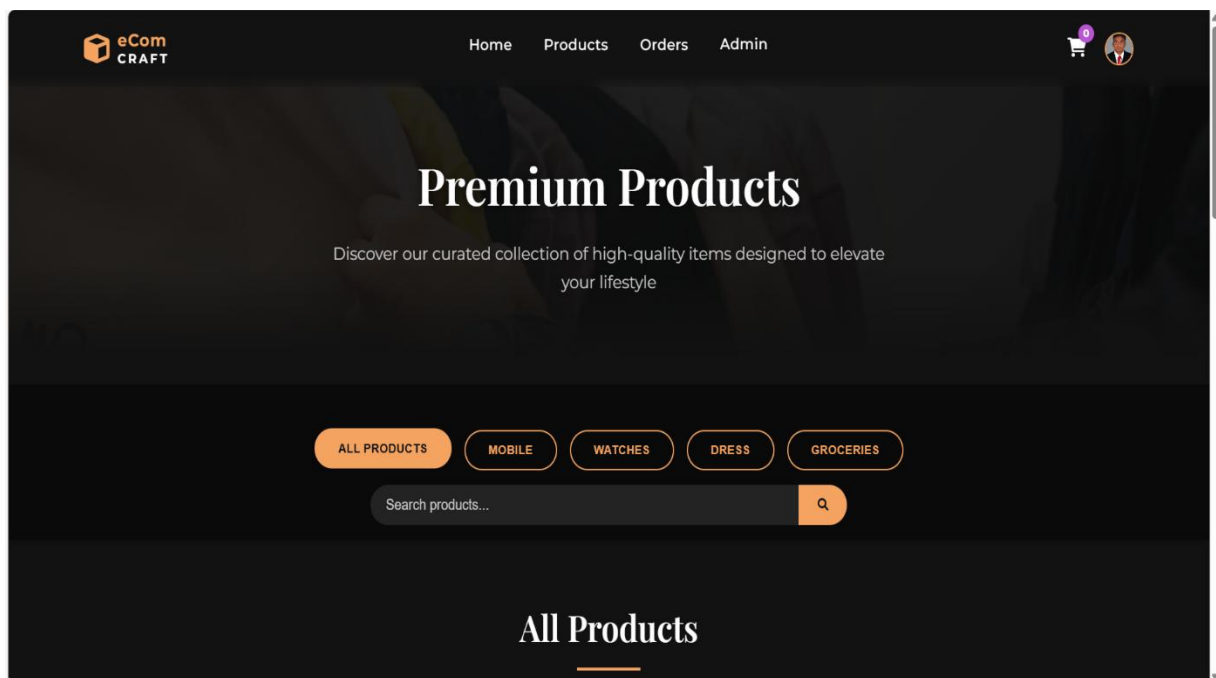
Figure 8.1.4: Footer Page



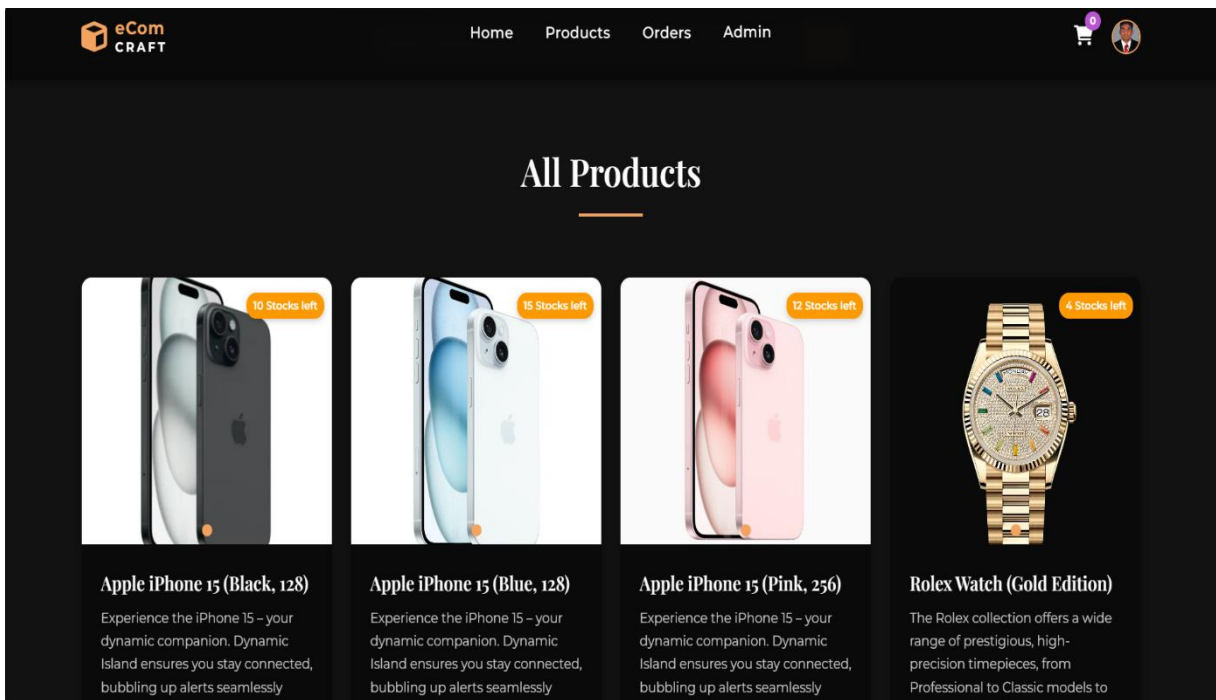
**Figure 8.1.5: Newsletter**



**Figure 8.1.6: Sign up/ Log in page**



**Figure 8.1.7:** *Category Page with search bar*



**Figure 8.1.8:** *Product Page*

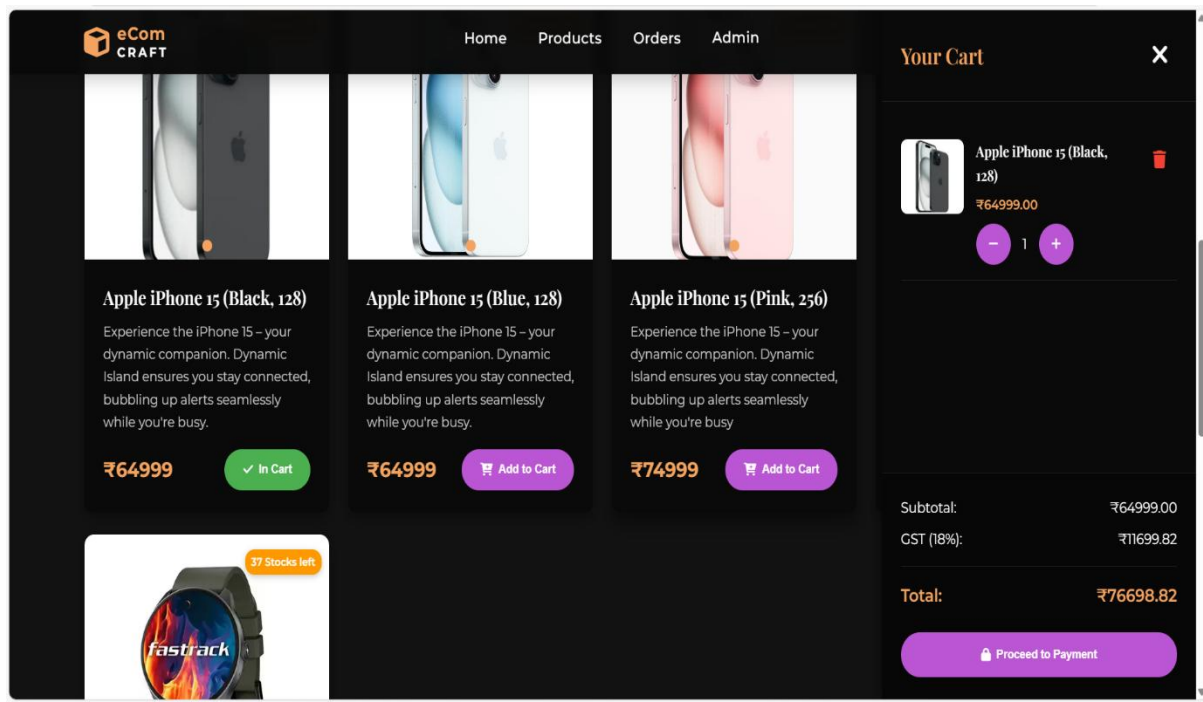


Figure 8.1.9: Side cart

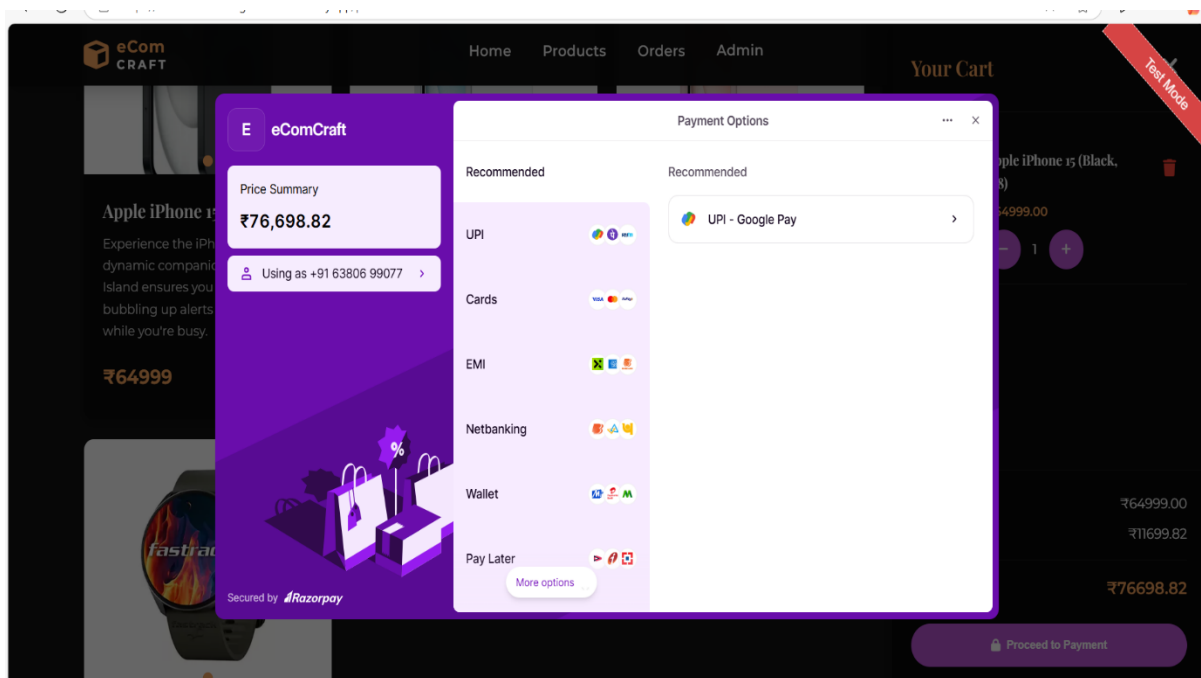


Figure 8.1.10: Address and Delivery page

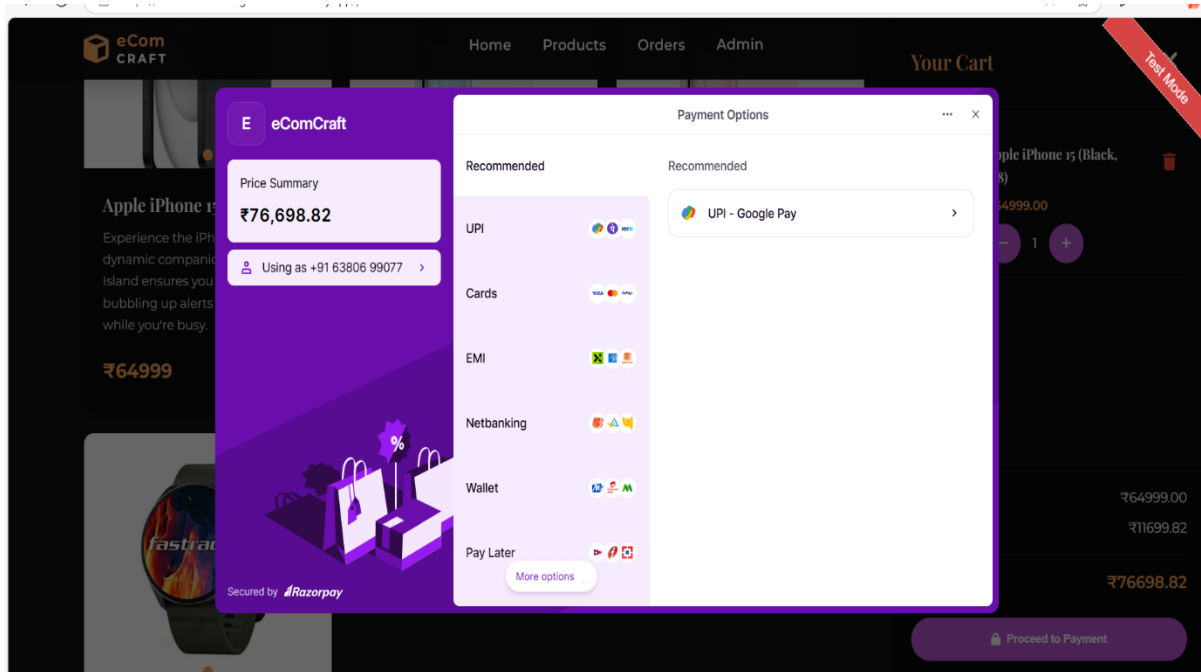


Figure 8.1.11: *Payment portal*

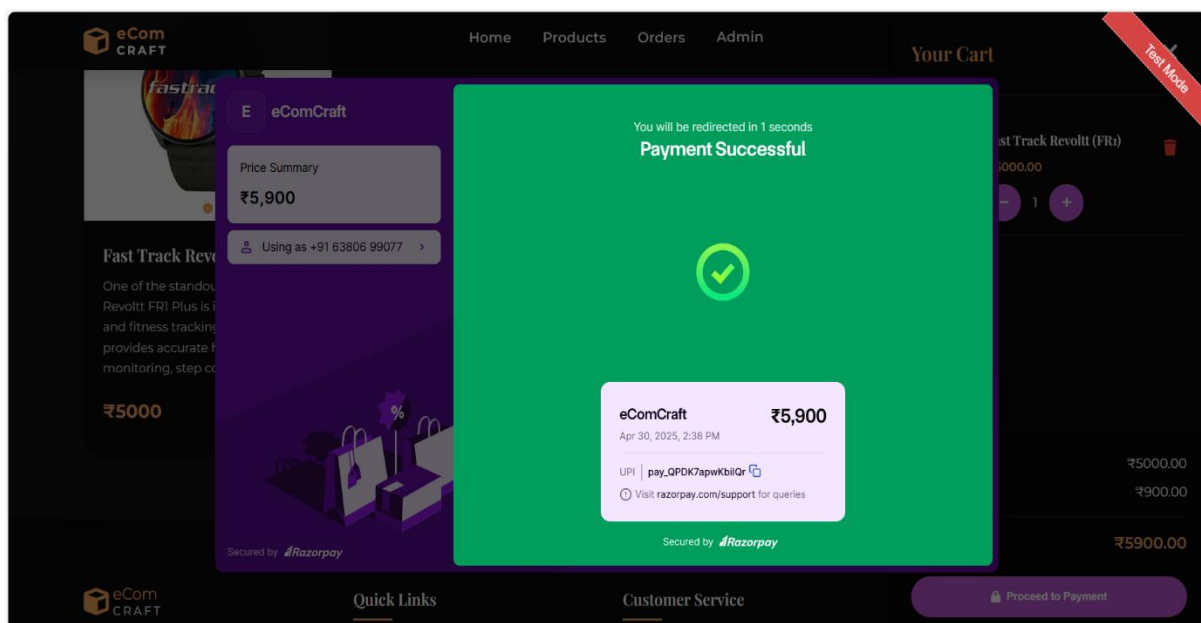


Figure 8.1.12: Payment Successful in test mode



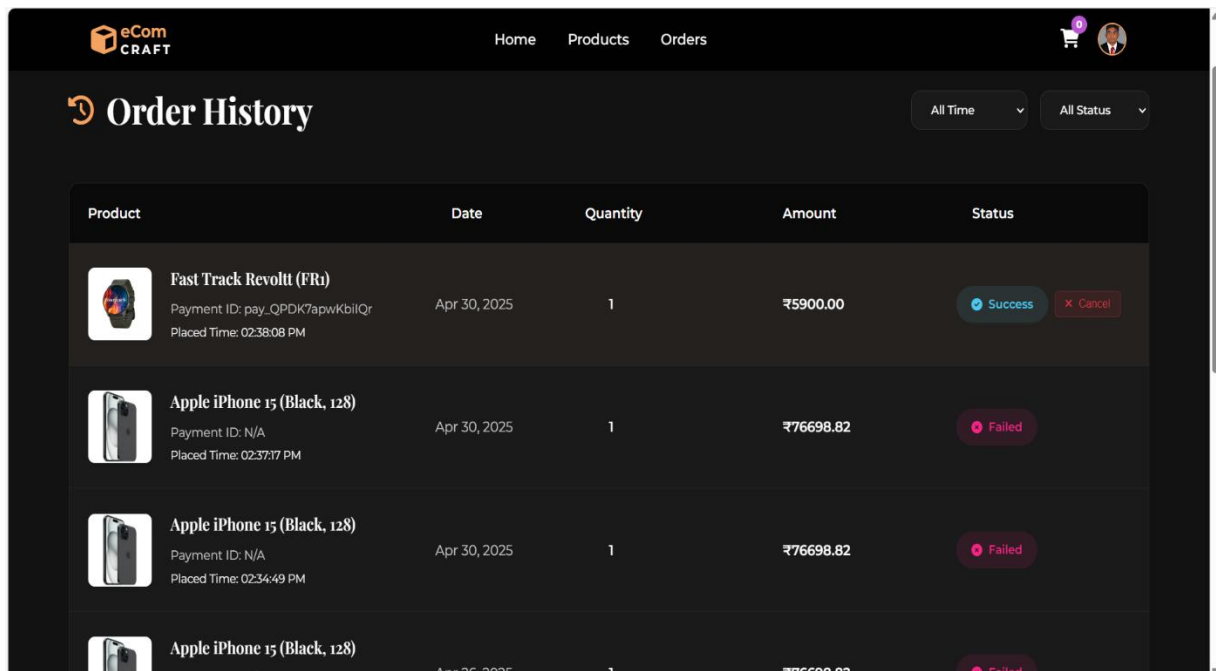


Figure 8.1.13: Order page of customer

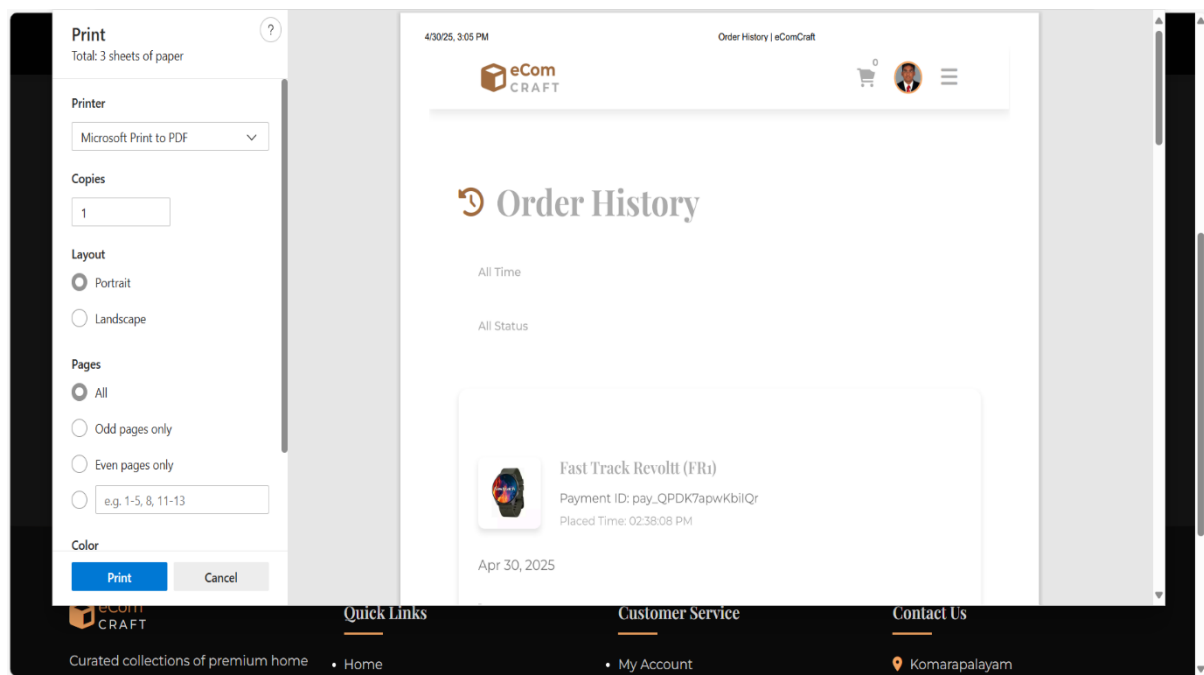


Figure 8.1.14: Order history printing page

**eComCraft**

Search...

Admin User  
Administrator

MAIN

- Dashboard
- Products
- Categories
- Orders
- Customers

SETTINGS

- Settings
- Analytics
- Help

Price

3500

Stock Quantity

5

Product Image

Choose File | 570xN.2601472343\_3heu.webp

Description

Royal Wedding Lehenga  
Grace your big day with this stunning silk lehenga featuring intricate hand embroidery, shimmering sequins, and a beautifully detailed dupatta. Perfect blend of tradition and elegance for the modern bride.

Category

Dress

Add Product

G

**Figure 8.1.15:** Adding new products to the site by owner

**eComCraft**

Search...

Admin User  
Administrator

MAIN

- Dashboard
- Products
- Categories
- Orders
- Customers

SETTINGS

- Settings
- Analytics
- Help

Price

Enter price

Stock Quantity

Enter stock quantity

Product Image

Choose File | No file chosen

Description

Enter product description

Category

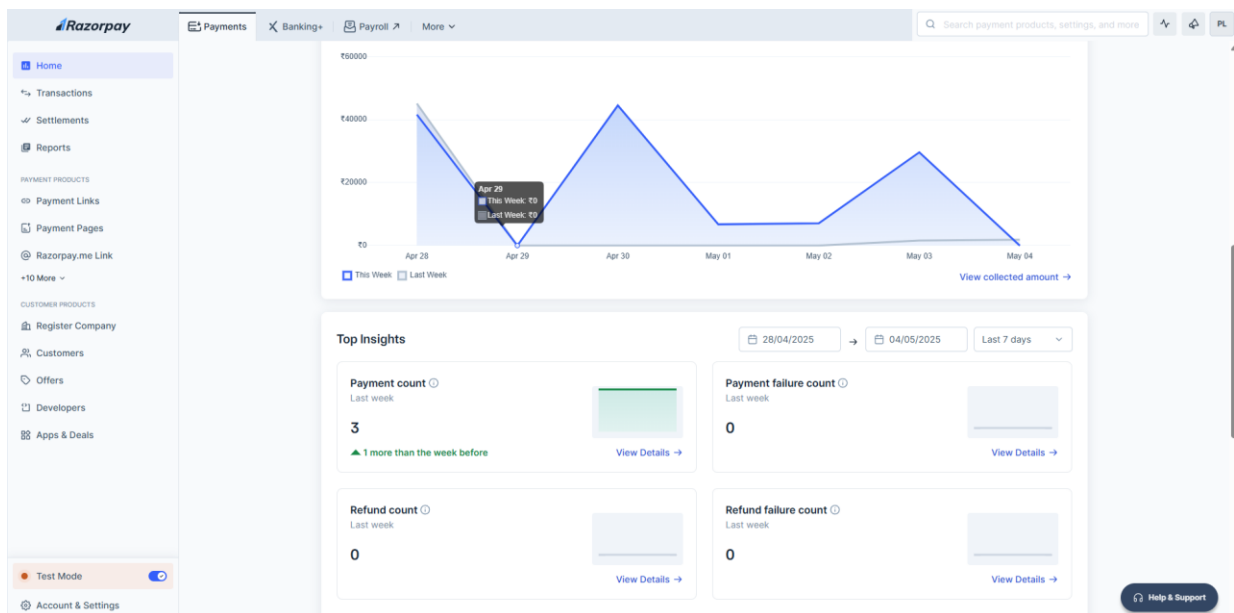
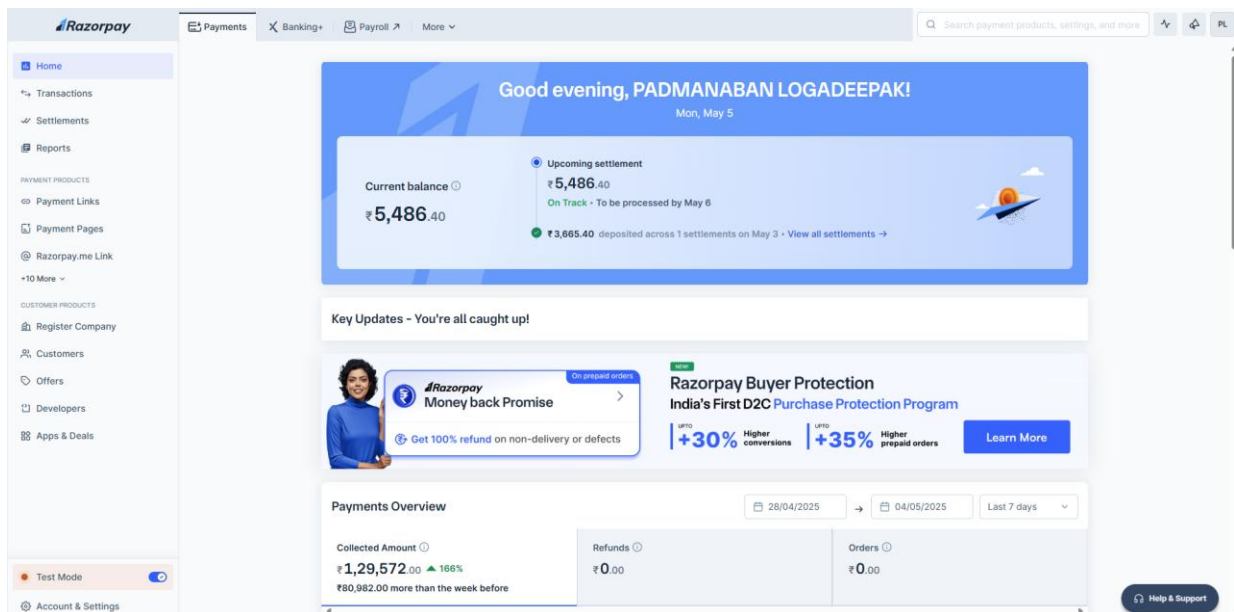
Select Category

Add Product

Product added successfully

**Figure 8.1.16:** Product added successfully by the owner

## 8.2 REPORTS



Razorpay

PaymentsBankingPayrollMore

Search payment products, settings, and more

HomeTransactionsSettlementsReports

PAYMENT PRODUCTSPayment LinksPayment PagesRazorpay.me Link+10 More

CUSTOMER PRODUCTSRegister CompanyCustomersOffersDevelopersApps & Deals

Test ModeAccount & Settings

CustomersNew Customer

You are in Test Mode, so only test data is shown. Switch to Live mode to see real transaction data.

Customer Id	Customer Name	Email	Contact	Action
cust_QQW35wigVpv17z		kmsundareswaransim@gmail.com	8668078489	Edit
cust_QPbpyKp0bh85Pc		yasminfathima004@gmail.com	6380699077	Edit
cust_QQ6RMThxgApvet		karthick@gmail.com	1234567890	Edit
cust_QNem7R1A67VWKY		inspiredeepu@gmail.com	09176432876	Edit
cust_QNeejunKOOHtm0		coolyasmin@gmail.com	9176432876	Edit

Showing 1 - 5

Help & Support

Razorpay

PaymentsBankingPayrollMore

Search payment products, settings, and more

HomeTransactionsSettlementsReports

PAYMENT PRODUCTSPayment LinksPayment PagesRazorpay.me Link+10 More

CUSTOMER PRODUCTSRegister CompanyCustomersOffersDevelopersApps & Deals

Test ModeAccount & Settings

Payment ID	Bank RRN	Customer detail	Created on	Amount	Status	
pay_QQW9bqmaXkzwdz	519115900696UPI	+91 8668 078489kmsundareswaransim@gmail.com	Sat May 3, 9:42pm	₹ 5,619.00	Captured	Details >
pay_QQOav5NTI7CIBJ	114197146407UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 2:18pm	₹ 2,000.00	Authorized	Details >
pay_QQOFpNhAJSPaq	931971614066UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 1:58pm	₹ 2,700.00	Authorized	Details >
pay_QQOEJChTLmwsc	979963453275UPI	+91 9715 670599poyamozhisedhu@gmail.com	Sat May 3, 1:57pm	₹ 2,000.00	Authorized	Details >
pay_QQNrgI0ZVtcB5F	633443055630UPI	+91 9715 670599poyamozhisedhu@gmail.com	Sat May 3, 1:35pm	₹ 2,900.00	Authorized	Details >
pay_QQNItwZWPieMIL	770358373268UPI	+91 9715 670599bravetoyabhi005@gmail.com	Sat May 3, 1:30pm	₹ 1,700.00	Authorized	Details >
pay_QQNbkx7UkFZUN4	204911983847UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 1:20pm	₹ 1,700.00	Authorized	Details >
pay_QQNRMasOIVoPy	938582664779UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 1:10pm	₹ 1,700.00	Authorized	Details >
pay_QQNAOG255AyUOb	383917074536UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 12:54pm	₹ 1,700.00	Authorized	Details >
pay_QQN8vYt9LIpVQ1	484422369594UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 12:53pm	₹ 2,900.00	Authorized	Details >
pay_QQMpF8Y0nSJ3t	211404385861UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 12:34pm	₹ 1,700.00	Authorized	Details >
pay_QQMf6Wopbd2BL	756036681231UPI	+91 8148 119749traibiazeeah@gmail.com	Sat May 3, 12:25pm	₹ 3,000.00	Authorized	Details >
pay_QQ6y8ZwXQ3txay	841384151341UPI	+91 9715 670599bravetoyabhi005@gmail.com	Fri May 2, 9:03pm	₹ 2,700.00	Authorized	Details >
pay_QQ6cV1MmfzSUox	757999154231UPI	+91 8148 119749traibiazeeah@gmail.com	Fri May 2, 8:43pm	₹ 4,400.00	Authorized	Details >
pay_QPjeTTTH74bS	843413165278UPI	+91 8148 119749traibiazeeah@gmail.com	Thu May 1, 10:19pm	₹ 3,000.00	Authorized	Details >
pay_QPbqAL5Jy8ODrk	513266289882UPI	+91 6380 699077yasminfathima004@gmail.com	Thu May 1, 2:36pm	₹ 3,754.00	Captured	Details >
pay_QPDK7apwKblQr	651389908455UPI	+91 6380 699077inspiredeepu@gmail.com	Wed Apr 30, 2:37pm	₹ 5,900.00	Authorized	Details >

Help & Support

