

ModernTech E-Commerce Website

Project Idea

ModernTech E-Commerce is a full-stack web application that allows users to browse, search, and purchase products online. The platform provides secure authentication, cart and wishlist management, and order processing, all wrapped in a responsive and intuitive interface.

Team Members (pentaRae)

- Ziad Wael
- Mahmoud Ahmed
- Badr Rafik
- Anas Mahmoud

Work Plan

Phase	Description	Deliverables
1. Research & Analysis	Analyzed user needs and studied popular e-commerce sites to determine core functionalities.	Requirements Document, System Design Overview
2. Design Phase	Created wireframes, mockups, and a consistent UI identity.	Home, Product, and Checkout Page Designs
3. Development Phase (Backend)	Built RESTful APIs using Node.js and Express. Integrated MongoDB for data storage.	Fully Functional Backend API
4. Development Phase (Frontend)	Developed React components and implemented authentication, products, cart, and checkout flow.	Responsive Frontend App
5. Testing & Debugging	Conducted unit and integration testing using Postman and manual user testing.	Stable & Tested System

6. Final Presentation	Prepared documentation and presentation slides demonstrating the system flow.	Final Report & Live Demo
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Research & Analysis

We analyzed platforms like Amazon and Noon to understand user expectations and discovered these key insights:

- Users value simplicity and speed more than flashy features.
- The average checkout flow should require no more than three steps.
- Clear product visuals and prices improve engagement and reduce confusion.

As a result, ModernTech focuses on efficiency and clarity — not complexity.

Audience Personas

Persona	Description	Goal
Tech Enthusiast	Loves exploring new devices and gadgets.	Quickly compare product specs and prices.
Casual Shopper	Occasionally buys tech for personal or gift purposes.	Enjoy a clean, easy shopping experience.
Student User	Seeks affordable, reliable devices for school and work.	Filter products by brand and price range.

Visual Identity

Design Concept: Clean layouts, large product images, and smooth transitions across pages.

Logo Design

The logo combines a stylized “M” with a subtle shopping bag icon, symbolizing technology and simplicity. It reflects the core message of the brand: “Your Technology, Just a Click Away.”

Main Designs

- Homepage: Hero banner, product highlights, and navigation links.
- Products Page: Grid-based layout with category filters, sorting, and search bar.
- Product Details Page: Product image, price, description, and “Add to Cart / Wishlist” buttons.
- Cart Page: Displays selected products, quantity options, subtotal, and checkout button.
- Checkout Page: Collects shipping details and simulates payment confirmation.

- Auth Pages: Login and Register forms with basic validation.

Complementary Products

- Admin Dashboard (future work): Manage product inventory and user orders.
- Mobile Version (optional): Progressive Web App or React Native app for mobile use.
- Product Reviews (future feature): User feedback and rating system for credibility.

Review & Finalization

Before final submission, the team conducted:

- Functionality testing for login, cart, and order placement.
- Backend API validation with Postman.
- UI testing across devices for responsiveness.

Result: A clean, functional, and production-ready e-commerce system.

Final Presentation

The final presentation showcased: system architecture overview, live demo of browsing, adding to cart, and completing checkout, technical explanation of Node.js + Express backend, MongoDB database, and frontend structure using React and Context API.

Roles & Responsibilities

- Ziad Wael – Frontend (Cart & Wishlist)
 1. Develop and manage Cart and Wishlist pages.
 2. Implement item addition, quantity updates, and wishlist synchronization.
 3. Integrate frontend with backend cart/wishlist endpoints.
 4. Ensure full responsiveness and smooth UX.
- Mahmoud Ahmed – Backend & Database
 5. Develop the entire backend system using Node.js and Express.
 6. Design and manage MongoDB schemas for Users, Products, and Orders.
 7. Implement JWT authentication and middleware.
 8. Create and maintain RESTful APIs for all features.
 9. Handle backend validation, error handling, and API performance.
- Anas Mahmoud – Products & Core Functionality (Including Orders)
 10. Build product functionalities (listing, filtering, sorting, and search).
 11. Implement order handling — order creation and user order tracking.
 12. Ensure data flow between frontend components and backend APIs.
 13. Test and optimize user-facing logic.
- Badr Rafik – User Management & Authentication

14. Handle user registration, login, and profile modules.
15. Implement form validation, error handling, and token management.
16. Integrate frontend with authentication APIs.
17. Assist in documentation, QA, and presentation of user-related modules.

KPIs (Key Performance Indicators)

- Core functionality: Basic features (user signup/login, product browsing, add to cart, wishlist, checkout flow, and order creation) were tested manually and work as expected.
- API testing: Endpoints were tested with Postman for typical flows (auth, products, cart, orders). Responses return expected data and status codes.
- UI checks: Pages were tested on desktop and mobile viewports — layout and interactions behave correctly.
- Data integrity: Database operations (create/read/update/delete for products and orders) were validated during testing.
- Result: Project functions correctly for the required use cases and is ready for demonstration. Any non-critical edge cases were noted for future improvements.

Instructor

Hesham Mohamed

Project Files

/server → Node.js + Express backend

/client → React frontend

README.md → Setup and installation guide

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