Full Stack Development with MERN

Shopez – MERN Full Stack E-Commerce

1. Introduction

- **Project Title:** Shopez – MERN Full Stack E-Commerce

  Shopez is a full-stack e-commerce application developed using the MERN stack (MongoDB, Express.js, React.js, and Node.js). The project aims to deliver a complete online shopping experience with modern UI/UX, fast performance, and secure backend architecture. The application supports customer shopping activities such as browsing products, adding items to the cart, placing orders, and tracking purchases. Additionally, ShopEZ includes a powerful admin dashboard for managing products, categories, orders, and user accounts. The platform is fully responsive, offering a seamless experience across desktop, tablet, and mobile devices.

2. Project Overview

- **Purpose:** The purpose of Shopez is to create an efficient, secure, and user-friendly online marketplace. It aims to simplify product discovery, streamline ordering, and offer a centralized platform for both buyers and sellers. The goal is to provide a fast-loading, responsive platform where users can shop with confidence while sellers manage their business effortlessly.

3. Architecture

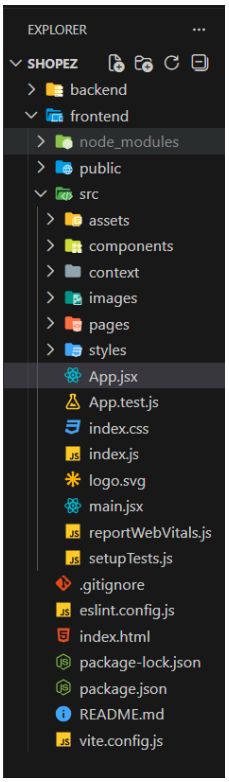
- **Frontend (React.js):** The frontend is built with React.js and follows a component-based architecture for reusability. React Router handles navigation, while Redux or Context API manages global state such as user login, cart data, and orders. The UI is built using clean layouts and TailwindCSS for faster styling. API interactions are handled with Axios.
- **Backend (Node.js + Express.js):** The backend follows RESTful API architecture. Express.js provides route management for authentication, products, cart, orders, and admin functionalities. Middleware handles error control, JWT authentication, and request validation. The backend is modular with controllers, routes, and models separated cleanly.

4. Setup Instructions

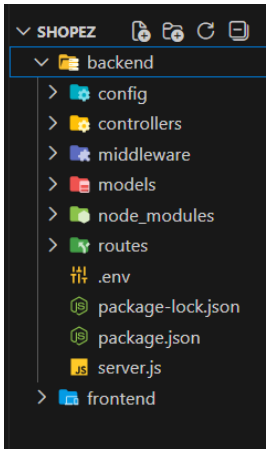
- **Prerequisites:**
  - Node.js (v16+ recommended)
  - npm or yarn
  - MongoDB Atlas or local MongoDB installation
  - Visual Studio Code
  - Postman (for API testing)
  - Git
- **Installation:**
  - cd frontend
  - npm install
  - cd ../backend
  - npm install

5. Folder Structure

- **Client:** React frontend.



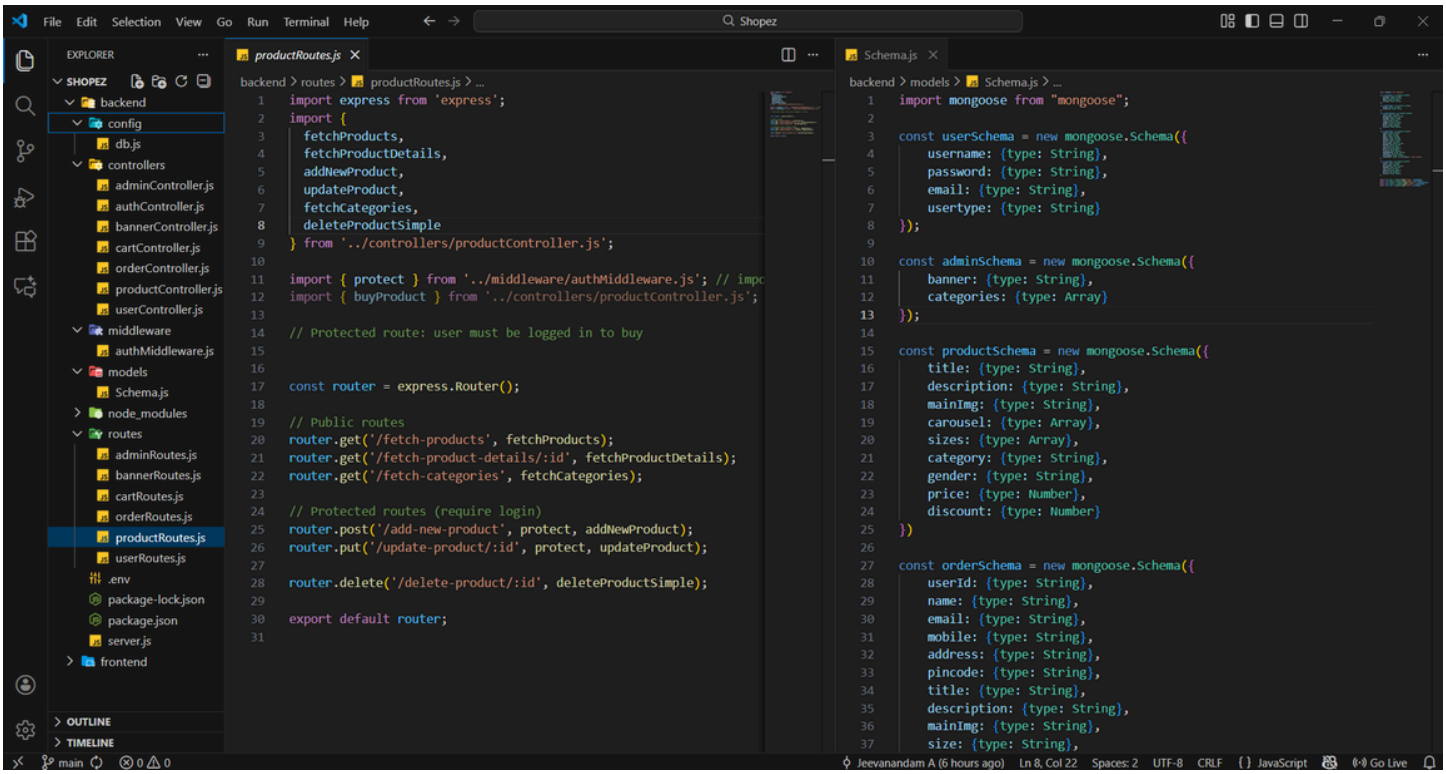
- **Server:** Node.js backend.



6. Running the Application

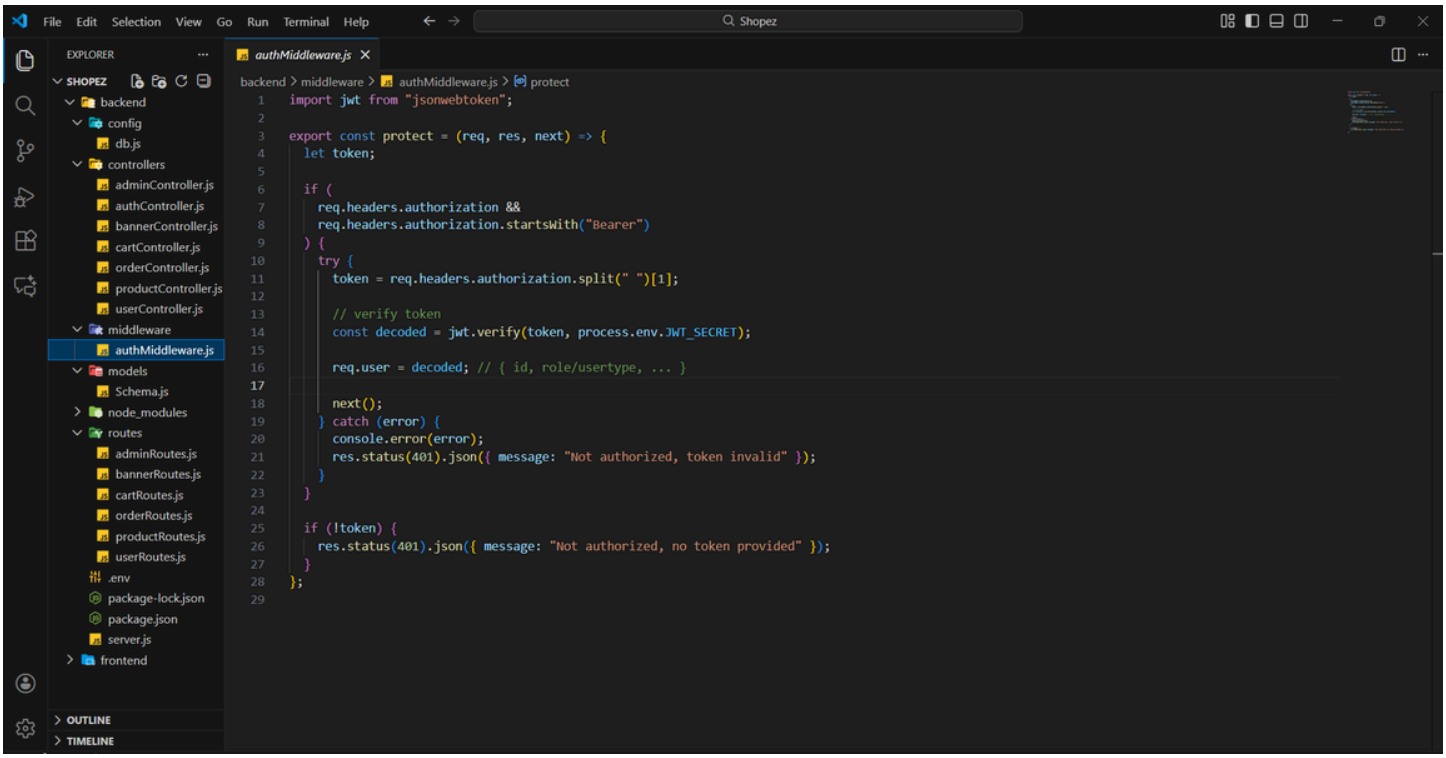
- **Frontend:** `npm start` in the client directory.
  - cd frontend
  - npm start
- **Backend:** `npm start` in the server directory.
  - cd frontend
  - npm start

7. API Documentation



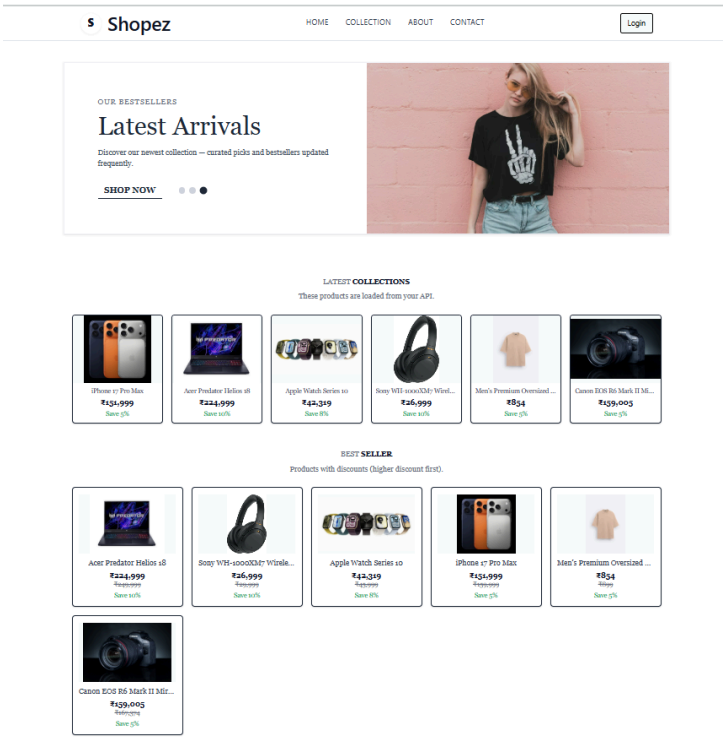
8. Authentication

Authentication uses JWT stored in cookies for secure sessions. Authorization ensures only logged-in users can access protected routes while admin routes require an admin role. Passwords are securely hashed using bcrypt. Middleware validates tokens, checks user roles, and prevents unauthorized access.



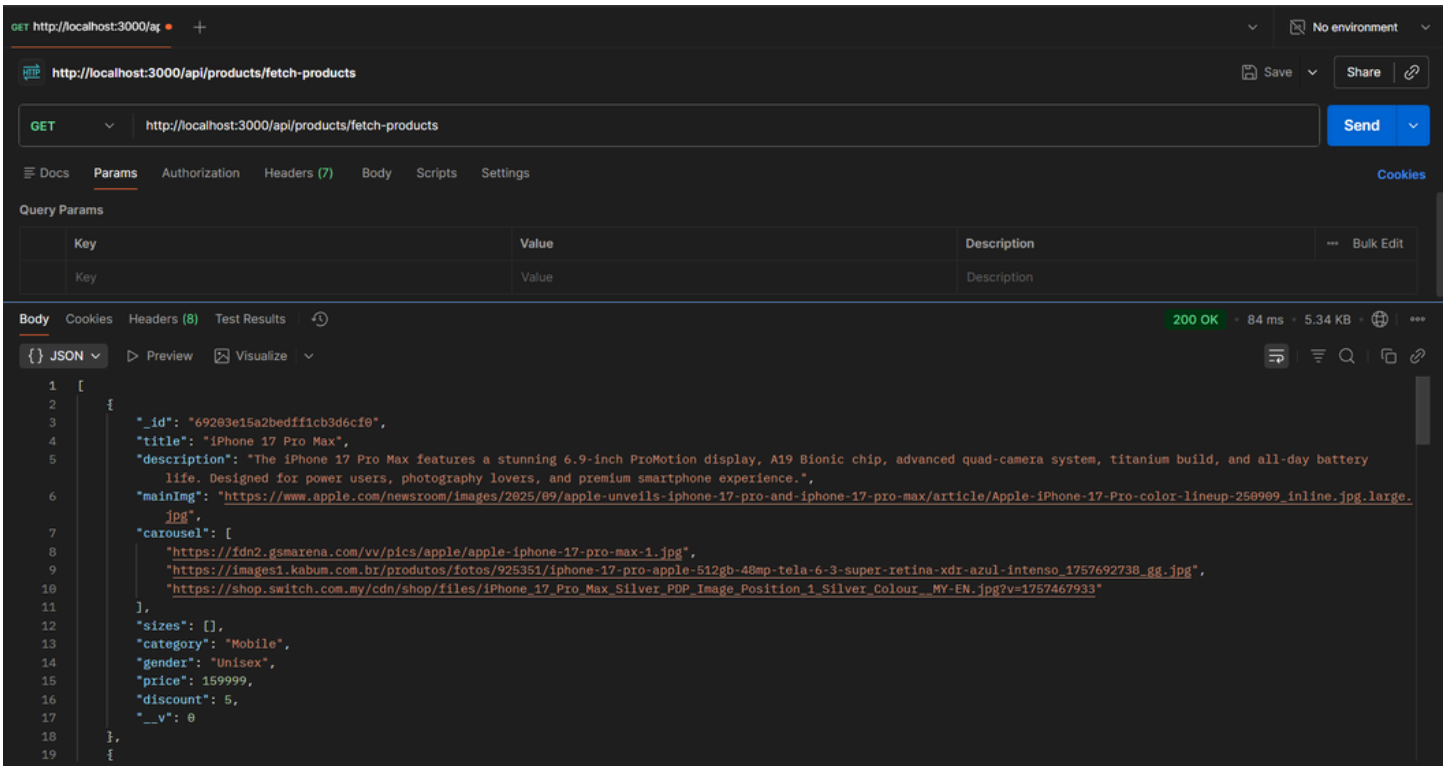
9. User Interface

The UI is designed with React and styled using TailwindCSS for clean, modern visuals. Components include product cards, navigation bars, hero banners, filters, cart UI, checkout forms, and admin dashboards. The design is fully responsive for smooth mobile and desktop use.

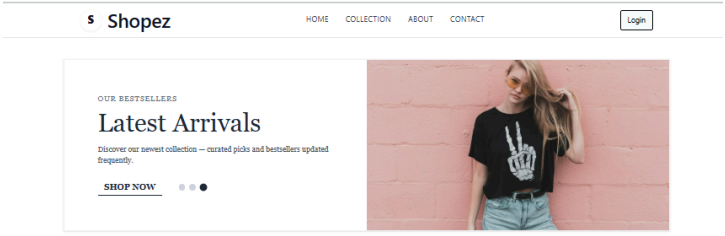


10. Testing

Testing is done using Postman for backend APIs and browser dev tools for frontend validation. Console logs, error boundaries, and custom middleware help identify issues. Manual testing ensures function reliability and user experience.



11. Screenshots or Demo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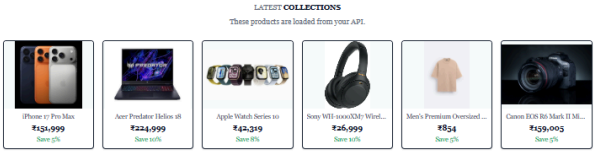
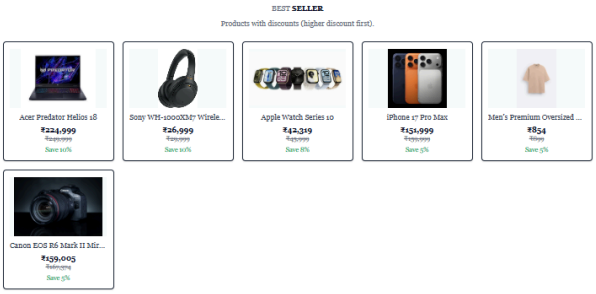
OUR BESTSELLERS
Latest Arrivals
Discover our newest collection — curated picks and bestsellers updated frequently.
SHOP NOW


LATEST COLLECTIONS
These products are loaded from your API.
iPhone 17 Pro Max
₹151,999
Save 5%
Acer Predator Helios 18
₹224,999
Save 10%
Apple Watch Series 10
₹42,319
Save 8%
Sony WH-1000XM7 Wirel...
₹26,999
Save 10%
Men's Premium Oversized ...
₹854
Save 5%
Canon EOS R6 Mark II Mi...
₹159,005
Save 5%


BEST SELLER
Products with discounts (higher discount first).
Acer Predator Helios 18
₹224,999
Save 10%
Sony WH-1000XM7 Wirele...
₹26,999
Save 10%
Apple Watch Series 10
₹42,319
Save 8%
iPhone 17 Pro Max
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Men's Premium Oversized ...
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Save 5%
Canon EOS R6 Mark II Mir...
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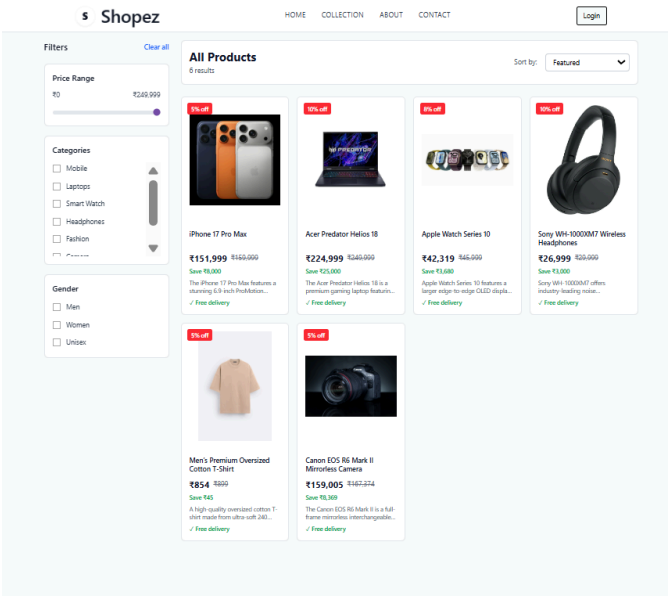
Save 5%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Price Range
₹0
₹249,999
Categories
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Laptops
Smart Watch
Headphones
Fashion
Gender
Men
Women
Unisex
All Products
6 results
Sort by:
Featured
5% off
iPhone 17 Pro Max
₹151,999 ₹159,999
Save ₹8,000
✓ Free delivery
10% off
Acer Predator Helios 18
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Save ₹25,000
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✓ Free delivery
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Save ₹3,000
✓ Free delivery
5% off
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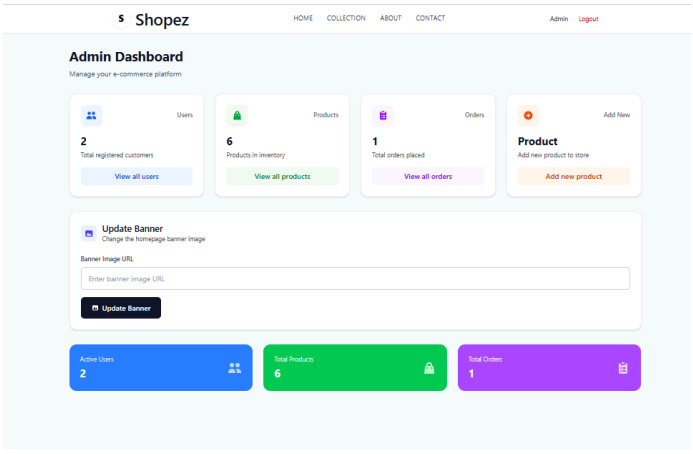
₹854 ₹899
Save ₹45
✓ Free delivery
5% off
Canon EOS R6 Mark II Mirrorless Camera
₹159,005 ₹167,374
Save ₹8,369
✓ Free delivery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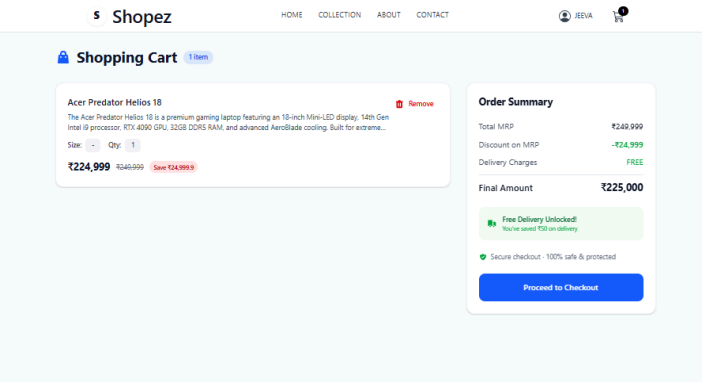
Logout
Admin Dashboard
Manage your e-commerce platform
Users
2
Total registered customers
View all users
Products
6
Products in inventory
View all products
Orders
1
Total orders placed
View all orders
Add New
Product
Add new product to store
Add new product
Update Banner
Change the homepage banner image
Banner Image URL
Enter banner image URL
Update Banner
Active Users
2
Total Products
6
Total Orders
1



12. Known Issues

- •Payment gateway not integrated yet
- Email notifications pending
- Pagination for admin dashboard can be improved
- UI optimization needed for very small screens

13. Future Enhancements

- Add online payment gateway (Razorpay/Stripe)
- Add wishlist feature
- Add delivery tracking
- Add analytics dashboard for admin
- Add email + SMS notifications
- Add product comparison
- Add AI-based product recommendations