

Full Stack Development with MERN

Shopez – MERN Full Stack E-Commerce

1. Introduction

- **Project Title:** Shoppez – 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 Shoppez 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

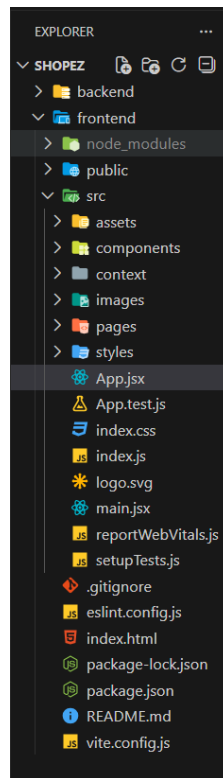
- **Frontend (React.js):** The frontend is built with React.js and follows a component-based architecture for reusability. React Router handles navigation, while Redux or Context API manages global state such as user login, cart data, and orders. The UI is built using clean layouts and TailwindCSS for 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

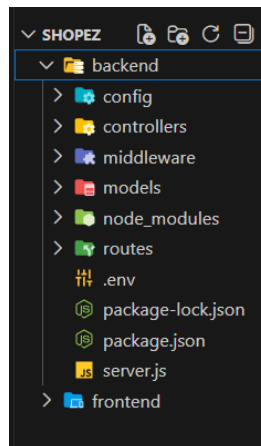
- **Prerequisites:**
 - Node.js (v16+ recommended)
 - npm or yarn
 - MongoDB Atlas or local MongoDB installation
 - Visual Studio Code
 - Postman (for API testing)
 - Git
- **Installation:**
 - `cd frontend`
 - `npm install`
 - `cd ../backend`
 - `npm install`

5. Folder Structure

- **Client:** React frontend.



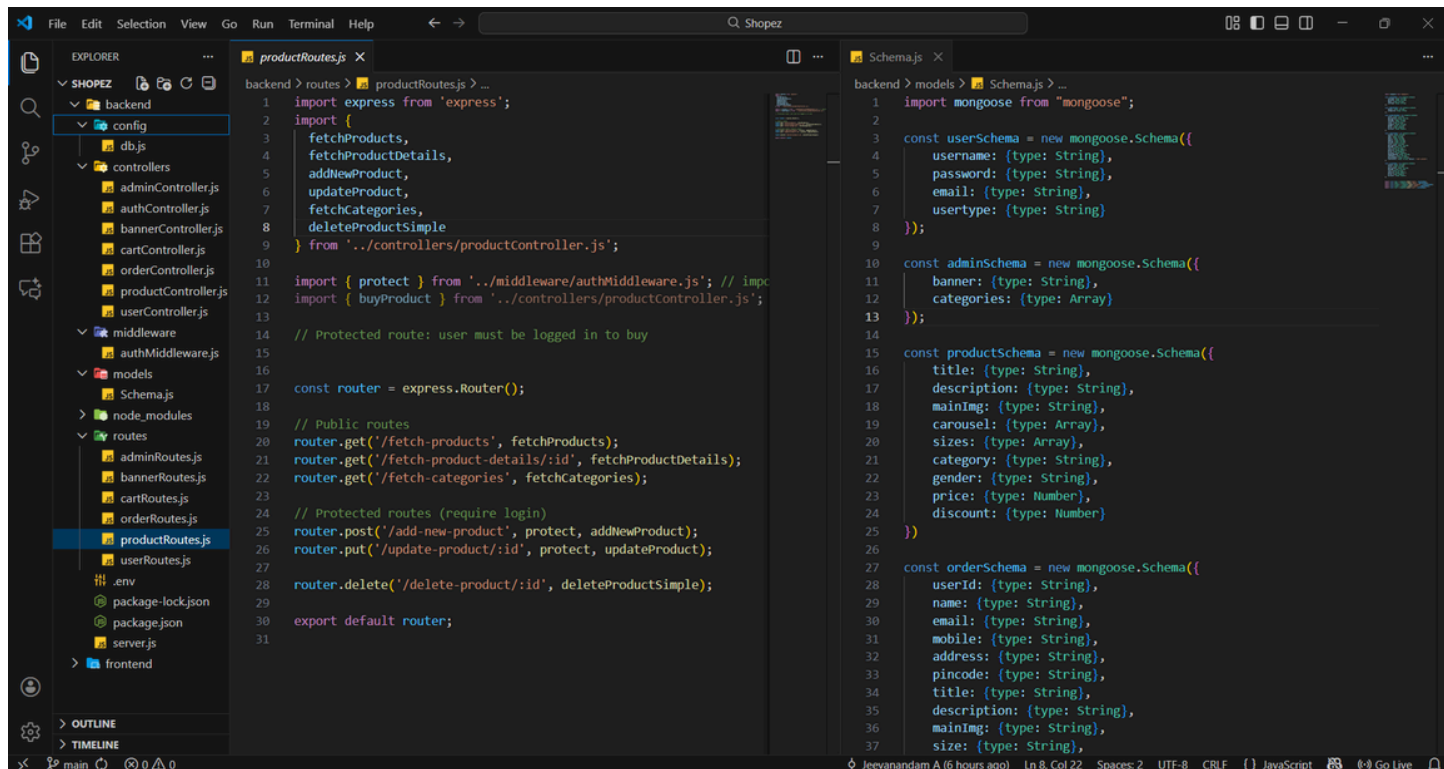
- **Server:** Node.js backend.



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`

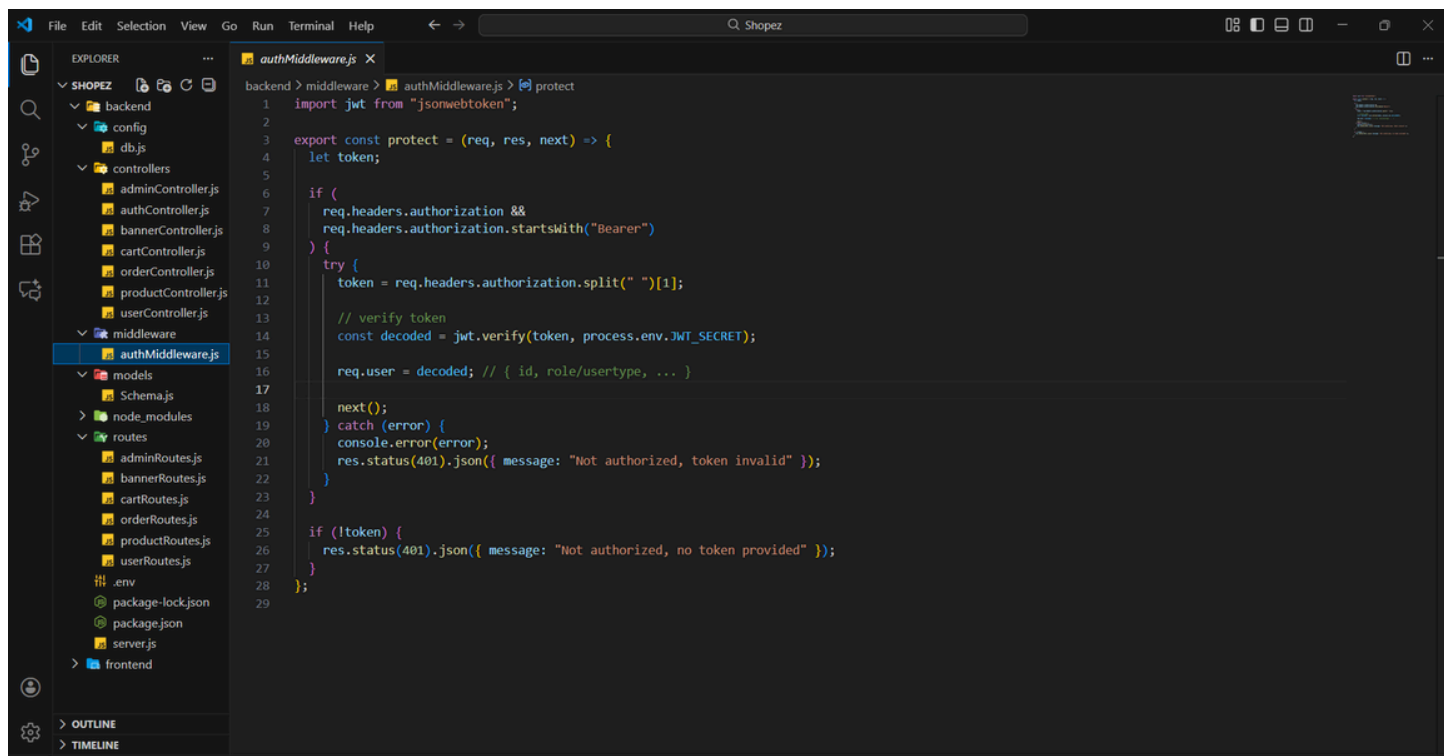
7. API Documentation



The screenshot shows a VS Code editor with two files open: `productRoutes.js` and `Schema.js`. The `productRoutes.js` file defines routes for a product management system, including endpoints for fetching products, adding new products, updating products, and deleting products. It uses Express.js for routing and includes a protected route for adding new products. The `Schema.js` file defines Mongoose schemas for user, admin, product, and order. The `userSchema` includes fields for username, password, email, and user type. The `adminSchema` includes banner and categories. The `productSchema` includes title, description, main image, carousel, sizes, category, gender, price, and discount. The `orderSchema` includes user ID, name, email, mobile, address, pincode, title, description, main image, and size.

8. Authentication

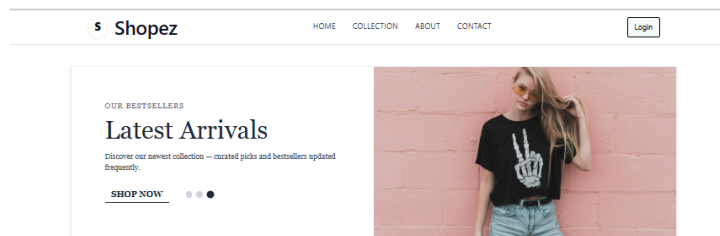
Authentication uses JWT stored in cookies for secure sessions. Authorization ensures only logged-in users can access protected routes while admin routes require an admin role. Passwords are securely hashed using bcrypt. Middleware validates tokens, checks user roles, and prevents unauthorized access.



The screenshot shows a VS Code editor with the `authMiddleware.js` file open. The file defines a `protect` middleware function that checks for a valid JWT token in the request headers. If the token is present and valid, the user is decoded and the request is passed to the next handler. If the token is missing or invalid, a 401 status is returned with an appropriate message. The `protect` function uses `jsonwebtoken` for token verification and `process.env.JWT_SECRET` for the secret key.

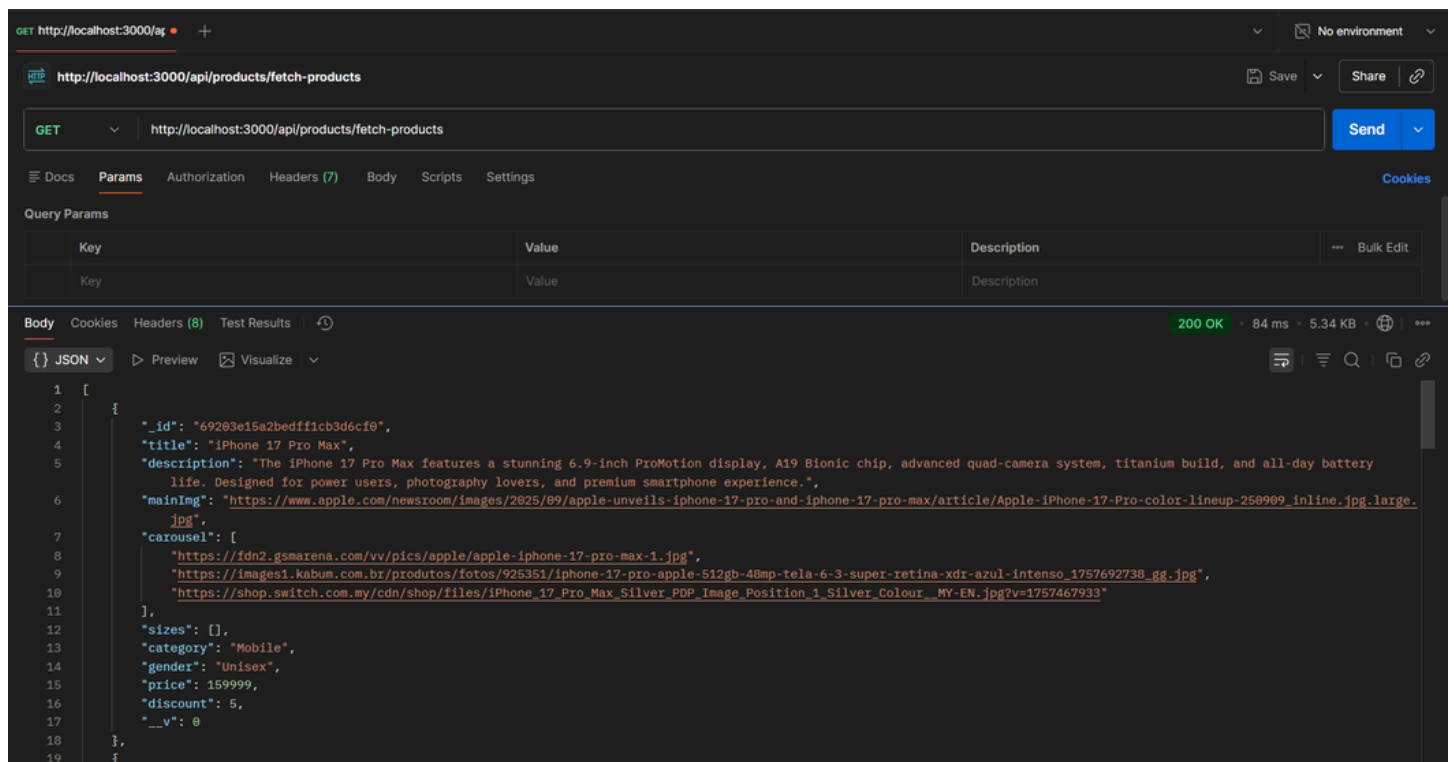
9. User Interface

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

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
₹131,999
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 Mir...
₹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
₹131,999
Save 5%

Men's Premium Oversized ...
₹854
Save 5%

Canon EOS R6 Mark II Mir...
₹159,005
Save 5%

Shopez

HOMECOLLECTIONABOUTCONTACT

Login

Filters

Clear all

Price Range

₹0 ₹2,69,999

Categories

☐ Mobile

☐ Laptops

☐ Smart Watch

☐ Headphones

☐ Fashion

Gender

☐ Men

☐ Women

☐ Unisex

All Products

6 Results

Sort by: Featured

25% off

iPhone 17 Pro Max

₹151,999 ₹202,666

Save ₹50,667

The iPhone 17 Pro Max features a stunning 6.9-inch ProMotion...
✓ Free delivery

10% off

Acer Predator Helios 18

₹224,999 ₹249,999

Save ₹25,000

The Acer Predator Helios 18 is a premium gaming laptop featur...
✓ Free delivery

8% off

Apple Watch Series 10

₹42,319 ₹45,666

Save ₹3,347

Apple Watch Series 10 features a larger edge-to-edge OLED displa...
✓ Free delivery

10% off

Sony WH-1000XM7 Wireless Headphones

₹26,999 ₹29,999

Save ₹3,000

Sony WH-1000XM7 offers industry-leading noise...
✓ Free delivery

25% off

Men's Premium Oversized Cotton T-Shirt

₹854 ₹1,139

Save ₹285

A high quality oversized cotton T-shirt made from ultra-soft 280...
✓ Free delivery

5% off

Canon EOS R6 Mark II Mirrorless Camera

₹159,005 ₹167,374

Save ₹8,369

The Canon EOS R6 Mark II is a full-frame mirrorless interchangeable...
✓ Free delivery

Shopez

HOMECOLLECTIONABOUTCONTACT

Admin 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

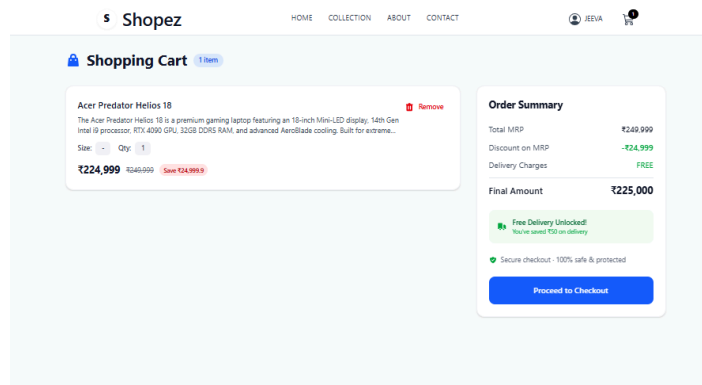
2

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