

# Shopez – MERN Full Stack E-Commerce

## 1. Introduction

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

Shopez is a full-stack e-commerce web application developed using the MERN stack (MongoDB, Express.js, React.js, and Node.js). The project provides a complete online shopping platform with secure authentication, product browsing, cart management, order processing, and an admin dashboard.

## 2. Project Overview

The Shopez application follows a modular and scalable technical architecture to ensure high performance, security, and ease of maintenance.

## 3. Technical Architecture

The Shopez application follows a scalable and modular architecture to ensure performance, security, and maintainability. The system is divided into frontend, backend, API services, and database layers.

### User Interface (UI) :

The frontend is built using React.js and styled with Tailwind CSS. Users can browse products, search by category, view product details, add items to cart, and place orders. The UI is fully responsive and optimized for all devices.

### Web Server :

The backend server is built using Node.js and Express.js to handle HTTP requests and business logic.

### Authentication Service

Authentication is implemented using JWT (JSON Web Tokens). Passwords are encrypted using bcrypt, ensuring secure access.

### Database :

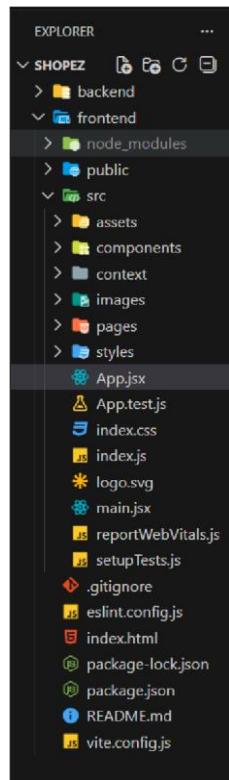
MongoDB stores user information, product details, cart items, and order data.

## 4. Features

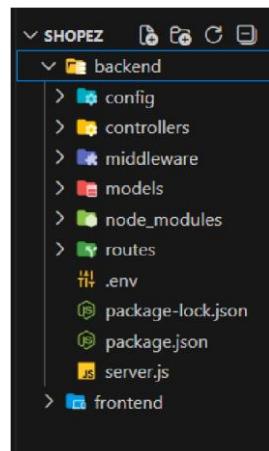
- User registration and secure login
- Product browsing with category filtering
- Add to cart and checkout functionality
- Order placement and order tracking
- Admin dashboard for managing products and orders
- Role-based authentication
- Responsive UI design

## 5.Folder Structure

**Client:** React frontend.



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



## 6. API Documentation

The screenshot shows a Visual Studio Code interface with two code files open:

- productRoutes.js** (Left Panel): A file under the `backend` directory. It contains routes for fetching products, product details, adding new products, updating products, and deleting products. It also includes protected routes for adding and updating products.
- Schema.js** (Right Panel): A file under the `models` directory. It defines several mongoose schemas: `userSchema` for user authentication, `adminSchema` for administrator roles, `productSchema` for product details, and `orderSchema` for order management.

## 7.Authentication

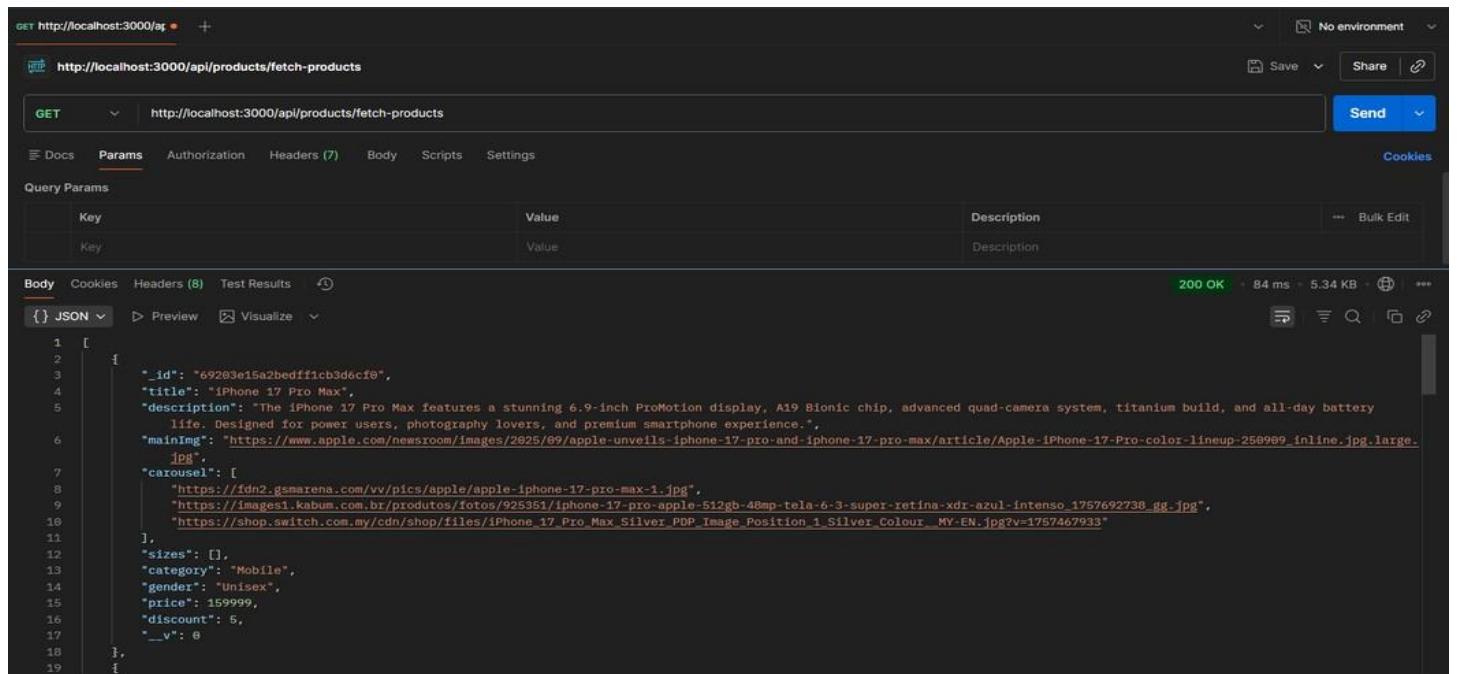
Authentication uses JWT stored in cookies for secure sessions. Authorization ensures only logged-in users can access protected routes while admin routes require an admin role. Passwords are securely hashed using bcrypt. Middleware validates tokens, checks user roles, and prevents unauthorized access.

The screenshot shows the Visual Studio Code interface with the following details:

- File Menu:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Toolbar:** Back, Forward, Search bar (Shopez).
- Explorer Sidebar:** Shows the project structure:
  - SHOPEE
  - backend
    - config
      - db.js
    - controllers
      - adminController.js
      - authController.js
      - bannerController.js
      - cartController.js
      - orderController.js
      - productController.js
      - userController.js
    - middleware
      - authMiddleware.js
    - models
      - Schema.js
    - node\_modules
    - routes
      - adminRoutes.js
      - bannerRoutes.js
      - cartRoutes.js
      - orderRoutes.js
      - productRoutes.js
      - userRoutes.js
    - .env
    - package-lock.json
    - package.json
    - server.js
  - frontend
- Editor Area:** The authMiddleware.js file is open, displaying code for a JWT-based authentication middleware. The code imports jwt from jsonwebtoken, defines a protect function, and handles token verification and authorization headers.
- Bottom Bar:** Outline and Timeline tabs.

## 8. 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.



```
GET http://localhost:3000/api/products/fetch-products
```

http://localhost:3000/api/products/fetch-products

GET http://localhost:3000/api/products/fetch-products

Params

Query Params

Body

200 OK 84 ms 5.34 KB

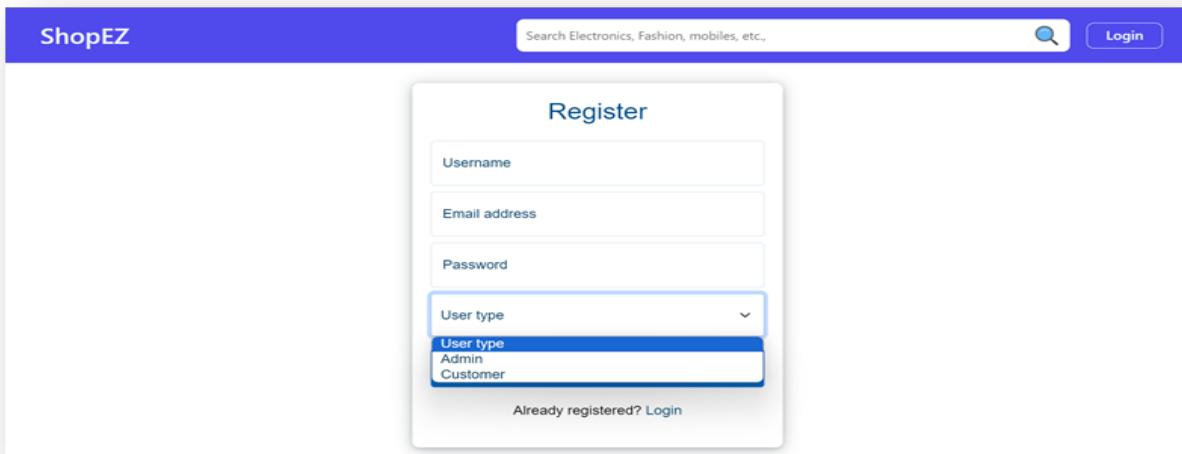
```
[{"_id": "69283e15e2bedff1cb3d6cf0", "title": "iPhone 17 Pro Max", "description": "The iPhone 17 Pro Max features a stunning 6.9-inch ProMotion display, A19 Bionic chip, advanced quad-camera system, titanium build, and all-day battery life. Designed for power users, photography lovers, and premium smartphone experience.", "mainImg": "https://www.apple.com/newsroom/images/2025/09/apple-unveils-iphone-17-pro-and-iphone-17-pro-max/article/Apple-iPhone-17-Pro-color-lineup-250909_inline.jpg.large.jpg", "carousel": [{"https://fdn2.gsmarena.com/vv/pics/apple/apple-iphone-17-pro-max-1.jpg", "https://images1.kabum.com.br/produtos/fotos/925351/iphone-17-pro-apple-512gb-48mp-tela-6-3-super-retina-xdr-azul-intenso_1757692738_gg.jpg", "https://shop.switch.com.my/cdn/shop/files/ iPhone_17_Pro_Max_Silver_PDP_Image_Position_1_Silver_Colour_MV-EN.jpg?v=1757467933"}], "sizes": [], "category": "Mobile", "gender": "Unisex", "price": 159999, "discount": 5, "_v": 0}
```

## 9. Screenshots or Demo

### Admin dashboard



### Authentication Page



ShopEZ

Search Electronics, Fashion, mobiles, etc.

Login

Register

Username

Email address

Password

User type

User type

Admin

Customer

Already registered? [Login](#)

## All Products Page

ShopEZ (admin)

Home Users Orders Products New Product Logout

**Filters**

Sort By

- Popularity
- Price (low to high)
- Price (high to low)
- Discount

Categories

- mobiles
- Electronics
- Sports-Equipment
- Fashion
- Groceries

Gender

- Men
- Women
- Unisex

### All Products



**Iphone 12**  
Apple iPhone with 8GB ram and ...  
₹ 67999 ~~79999~~ (15% off)

[Update](#)



**Realme buds**  
TWS buds with 10.2mm drivers g...  
₹ 2599 ~~3999~~ (35% off)

[Update](#)



**MRF cricket bat**  
Popular willow wood cricket ba...  
₹ 1308 ~~1699~~ (23% off)

[Update](#)

## Cart Page

ShopEZ (admin)

Home Users Orders Products New Product Logout

### Orders



**Carrom board**  
Quality carrom board along with necessary equipment to make your free time more joyful  
Size: M Quantity: 2 Price: ₹ 1838 Payment method: netbanking  
UserId: 64edcfad3631d148df3ce2e1 Name: Simon Email: simon@gmail.com Mobile: 8798790898  
Ordered on: 2023-08-30 Address: Vizag Pincode: 502132

Order status: In-transit [Update order status](#) [Update](#) [Cancel](#)



**MRF cricket bat**  
Popular willow wood cricket bat from MRF. Suitable for your all format plays in all conditions.  
Size: M Quantity: 1 Price: ₹ 1308 Payment method: netbanking  
UserId: 64edcfad3631d148df3ce2e1 Name: Simon Email: simon@gmail.com Mobile: 8798790898  
Ordered on: 2023-08-30 Address: Vizag Pincode: 502132

## Orders Page

The screenshot shows the ShopEZ website's orders page. At the top, there is a search bar with the placeholder "Search Electronics, Fashion, mobiles, etc." and a user icon labeled "holo". A shopping cart icon indicates 2 items.

**Carrom board**  
Quality carrom board along with necessary equipment to make your free time more joyful.  
Size: L      Quantity: 1  
Price: ₹ 919  
Remove

**Kokobura cricket bat**  
Imported cricket bat made with English willow wood. Premium bat to enhance your playing experience.  
Size: M      Quantity: 1  
Price: ₹ 2355  
Remove

**Price Details**

Total MRP:	₹ 4798
Discount on MRP:	- ₹ 1523
Delivery Charges:	+ ₹ 0

**Final Price:** ₹ 3275

**Place order**

## Admin page

The screenshot shows the ShopEZ admin dashboard. At the top, there is a navigation bar with links for Home, Users, Orders, Products, New Product, and Logout.

**Total users**: 1 [View all](#)

**All Products**: 14 [View all](#)

**All Orders**: 6 [View all](#)

**Add Product** (new) [Add now](#)

**Update banner**

Banner url:

[Update](#)

## **10.Known Issues**

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

## **11.Future Enhancements**

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

## **12.Conclusion**

Shopez demonstrates a real-world implementation of a MERN stack e-commerce application. The project highlights secure authentication, responsive UI design, and efficient backend architecture, making it suitable for academic submission.