

Full Stack Development with MERN

Project Documentation

1. Introduction

- **Project Title:** ShopEZ E-Commerce application
 - **Team Members:**
 - Sai Ganesh D - Frontend Developer
 - Jeevan Ralph - Backend Developer
 - Kishore - Database Manager
 - Rakesh - Project Manager
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2. Project Overview

- **Purpose:**

This project aims to provide users with an intuitive and secure online shopping experience. It allows vendors to list products and customers to browse, search, and purchase items seamlessly.
 - **Key Features:**
 - User authentication with role-based access (Admin, Vendor, Customer).
 - Product catalog with categories and search functionality.
 - Shopping cart and checkout system.
 - Payment gateway integration.
 - Admin dashboard for managing users, orders, and products.
 - Responsive and mobile-friendly design.
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3. Architecture

- **Frontend:**
 - Developed using React.
 - Folder structure includes:
 - **/components:** Houses reusable UI components like Navbar, Footer, ProductCard, etc.
 - **/pages:** Contains page-level components like Home, Product Details, Cart, and Login.
 - **/redux or /context:** Manages application state for authentication, cart, and product listings.

- **Backend:**
 - Built with Node.js and Express.js.
 - Includes middleware for request validation, error handling, and authentication.
 - Organized with /routes for endpoints and /controllers for business logic.
 - **Database:**
 - MongoDB stores user data, product details, and order history.
 - Schema design includes collections for:
 - Users: Stores user profiles, hashed passwords, and roles.
 - Products: Details such as name, price, category, stock, and images.
 - Orders: Tracks user orders, payment status, and shipping details.
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4. Setup Instructions

- **Prerequisites:**
 - Node.js (v16 or higher).
 - MongoDB (local or cloud-based).
 - IDE (e.g., VS Code).
 - NPM or Yarn.
 - **Installation:**
 - Clone the repository :
git clone <https://github.com/Saiganesh-2705/shopEZ-Ecommerce.git>
 - Navigate to the project directory.
 - Install dependencies for both frontend and backend :
cd client && npm install
cd ../server && npm install
 - Configure environment variables in .env files for both client and server (e.g., API keys, database URLs).
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5. Folder Structure

- **Client (Frontend):**
 - /src/components: Contains reusable UI elements (e.g., Button, Modal).
 - /src/pages: Page-specific components like LoginPage, ProductPage.

- **/src/redux:** Redux store configuration and slices for cart and user states.
 - **Server (Backend):**
 - **/routes:** API routes for authentication, products, and orders.
 - **/models:** MongoDB schemas for users, products, and orders.
 - **/controllers:** Implements logic for CRUD operations.
 - **/middleware:** Middleware for authentication and error handling.
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6. Running the Application

- **Frontend:**
 - **Start the development server:**
`cd client`
`npm start`
 - **Backend:**
 - **Start the backend server:**
`cd server`
`npm start`
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7. API Documentation

Example:

- **Get All Products**
 - **Method:** GET
 - **URL:** /api/products
 - **Description:** Fetches a list of all available products.
 - **Response:**

```
[  
  {  
    "id": "123",  
    "name": "Product A",  
    "price": 50.0,  
    "category": "Electronics"  
  }  
]
```

]

- **Create Order**
 - **Method:** POST
 - **URL:** /api/orders
 - **Body:**

```
{  
  "userId": "user123",  
  "products": [  
    { "productId": "prod123", "quantity": 2 }  
  ]  
  "totalPrice": 100.0  
}
```
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8. Authentication

- **Method:**
 - JWT-based authentication for session management.
 - Passwords are hashed using bcrypt.
 - **Roles:**
 - **Admins:** Manage users, products, and orders.
 - **Vendors:** Add and manage their product listings.
 - **Customers:** Browse and purchase products.
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9. User Interface

- **Features Highlighted:**
 - Navigation bar with search and category filters.
 - Dynamic product display grid.
 - Checkout and payment flow.
 - Admin panel for managing site content.
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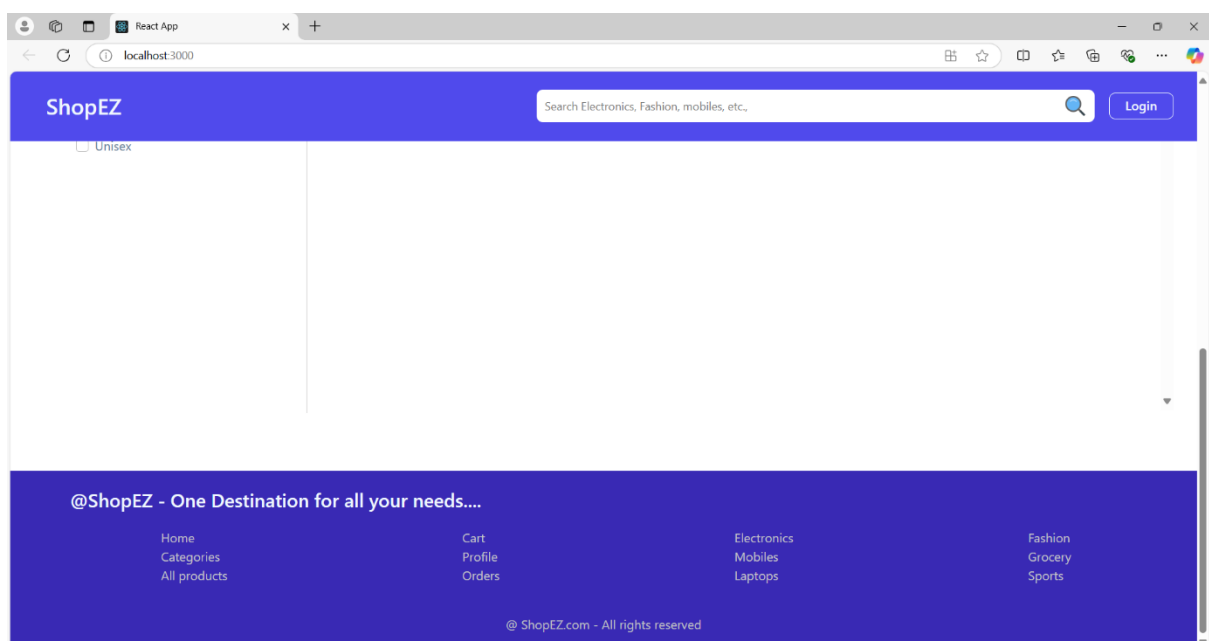
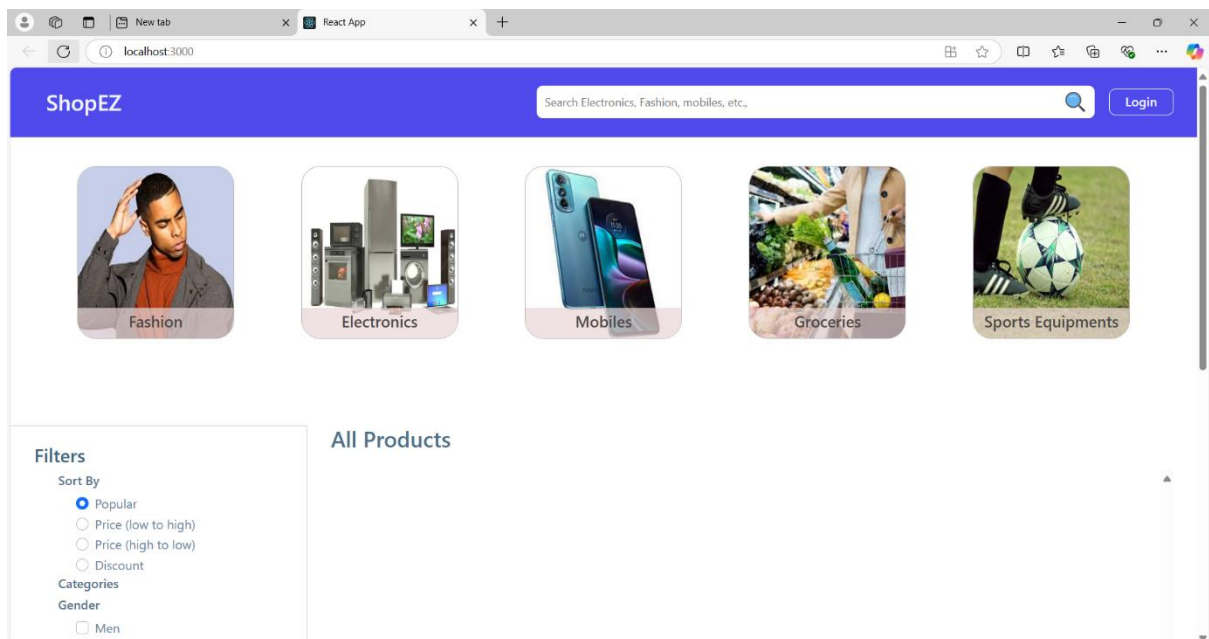
10. Testing

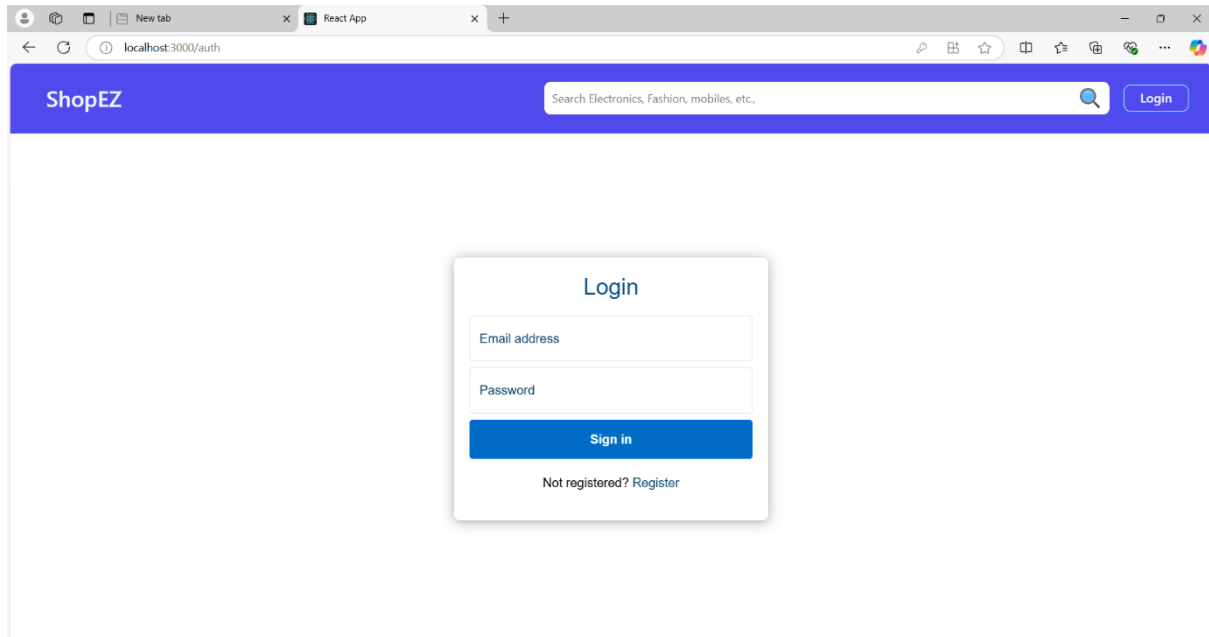
- **Tools:**

- **Unit Tests: Jest for frontend components.**
- **Integration Tests: Postman for API testing.**
- **End-to-End Tests: Cypress for testing workflows like login and checkout.**

11. Screenshot or demo link :

- **Screenshot**





- **Demo video link**

https://drive.google.com/file/d/1tJFcNiogY9cRrbOyQn17dj6kZ_mx65Bg/view?usp=drivesdk

12. Known Issues

- **The cart does not update in real-time after product removal.**
- **Limited error handling in payment gateway integration.**

13. Future Enhancements

- **Add product review and rating system.**
 - **Integrate multiple payment options.**
 - **Optimize database queries for better performance.**
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