

MERN stack powered by MongoDB

Naan Mudhalvan – Project Documentation

Introduction

Project Title: ShopEZ (E-Commerce Platform) **College:** Adhi College of Engineering and Technology.

Department: B.Tech Artificial Intelligence and Data Science.

Team Members:

S.no	Student Name	Register No	Naan Muthalvan ID	Role
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Project Overview

Purpose: Our E-Commerce Platform is designed to provide a seamless and engaging shopping experience for users, along with a comprehensive and efficient management interface for administrators. It offers customers a wide range of products, while enabling administrators to manage inventory, track orders, and analyze sales data.

Features:

Customer/User:

Signup/Login:

- User registration with email.
- Login with email and password, with a “Remember Me” option.

Product Browsing and Filtering:

- View all available products with filter, and sorting capabilities by category, price, popularity.
- View detailed product information, including images, descriptions, specifications, and reviews.

Wishlist and Cart Management:

- Add products to the wishlist for future reference.
- Add products to the cart, view, and modify quantities.
- Save items in the cart for later, with cart persistence across sessions.

Order Placement and Tracking:

- Secure checkout process with address input, order summary, and delivery options.
- Order tracking with status updates and estimated delivery times.

User Profile:

- Editable profile information except for email (name, contact, address, etc.).
- Order history view with downloadable receipts.

Admin:

User and Product Management:

- View, add, edit, and delete products and categories.
- Manage users, with the ability to view user profiles and delete users if needed.

Order Management:

- View and update order statuses, including processing, shipping, and delivery.
- Generate invoices and send order notifications.

Inventory and Sales Analytics:

- Track inventory levels, set low-stock alerts, and restock products as necessary.
- View sales data, including sales volume, top products, revenue trends, and customer purchase behavior.

Promotions and Discounts:

- Create, update, and manage discount codes, sales events, and promotional offers.

Architecture

Frontend:

- **Developed using React** with responsive design and user-friendly interface, optimized for smooth navigation.
- **Bootstrap for styling** and layout, enhancing mobile and tablet responsiveness.

Backend:

- **Node.js and Express.js** to handle business logic and manage API endpoints for product listing, user actions, and order processing.

Middleware includes:

- **Bcrypt.js** for secure password hashing.
- **jsonwebtoken** for user authentication and authorization.
- **Multer** for managing image uploads and handling product image files.

Database:

- **MongoDB** serves as the database solution for storing all data, including user profiles, product listings, orders, and reviews.
- **Mongoose** ORM (Object-Relational Mapping) is used for defining schemas and handling data interactions efficiently.

This architecture and feature set ensure a robust, flexible, and scalable platform that caters to customer needs and streamlines administrative tasks, with a responsive, high-performance user experience.

Setup Instructions

Prerequisites:

- Node.js
- MongoDB Atlas Account.

Installation:

Clone the repository:

- `git clone cd online-learning-platform`

Install dependencies:

Frontend:

```
cd client  
npm install
```

Backend:

```
cd server
npm install
```

Set up environment variables:

- Create **.env** file in the **server** folder with the following:

MONGODB_URI='mongodb://localhost:27017/shopEZ'

JWT_SECRET='t9843yt8hg0h8y834th893hy89h'

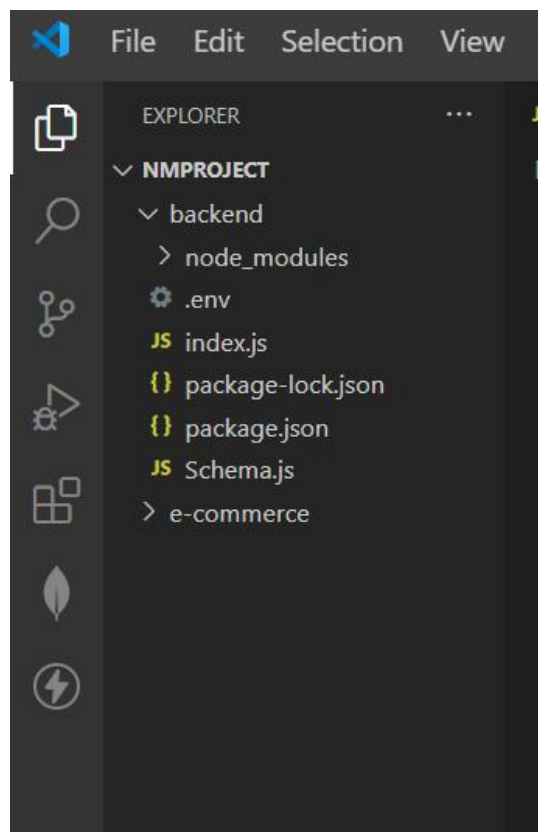
- Create **.env.local** file in the **client** folder with the following:

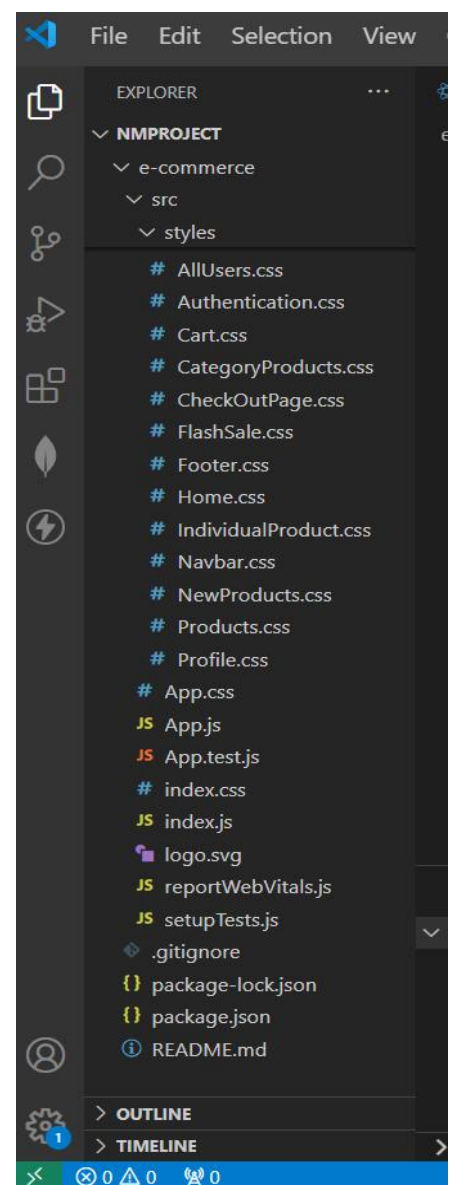
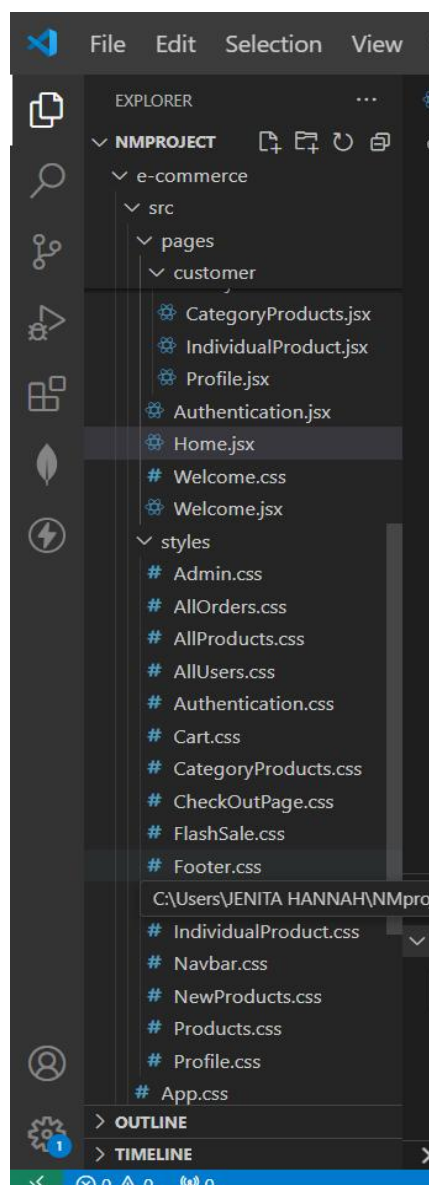
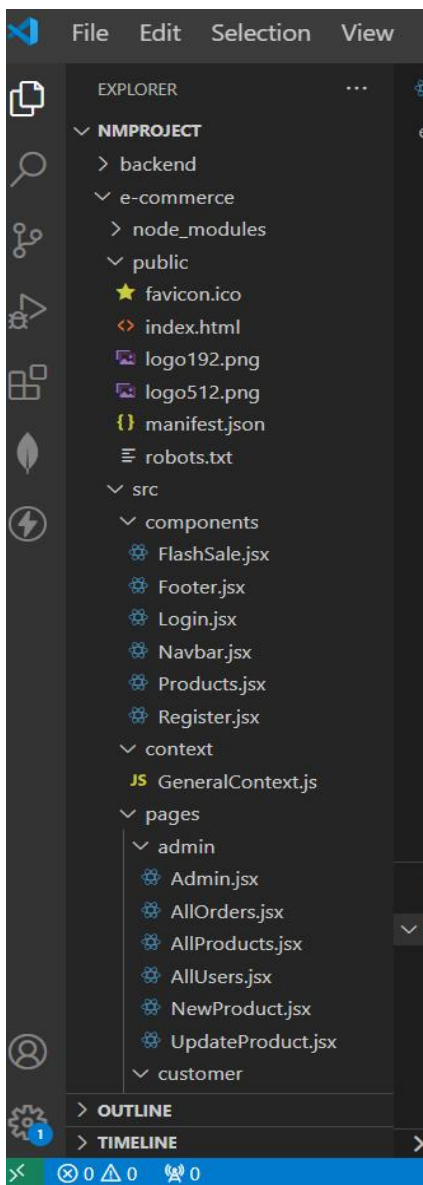
BACKEND_BASEURL=http://localhost:5000

Folder Structure

Client (Frontend):

- **src/**: Contains all React components, pages, and assets.
- **Components/**: Reusable UI components such as Footer, Header, HeaderStudent and SideBar
- **Pages/**: Folders such as Admin, User, Instructor and Navs containing Pages for different aspects of the application.





Server (Backend):

- **routes/**: Defines API routes for users, instructors, forums, and admin.
- **models/**: MongoDB schemas for Users, Courses, Instructor, Thread and OTP.
- **middleware/**: Authentication using jwt token.

Running the Application

- **Frontend:**
cd client
npm start
- **Backend:**
 - cd server
node index.js

User Routes:

POST /register: Register a new user.

POST /login: Login an existing user.

GET /fetch-users: Fetch all registered users.

Admin Routes:

GET /fetch-banner: Fetch the banner content.

POST /update-banner: Update the banner content.

GET /fetch-categories: Fetch all categories.

POST /add-new-product: Add a new product.

PUT /update-product/:id: Update an existing product by ID.

Product Routes:

GET /fetch-products: Fetch all products.

GET /fetch-product-details/:id: Fetch details of a specific product by ID.

Order Routes:

GET /fetch-orders: Fetch all orders.

POST /buy-product: Place an order for a specific product. **PUT** /cancel-order: Cancel an order.

PUT /update-order-status: Update the status of an order. **POST** /place-cart-order: Place orders for all items in the cart.

Cart Routes:

GET /fetch-cart: Fetch all items in the cart.

POST /add-to-cart: Add a new item to the cart.

PUT /increase-cart-quantity: Increase the quantity of a cart item by ID.

PUT /decrease-cart-quantity: Decrease the quantity of a cart item by ID.

PUT /remove-item: Remove a specific item from the cart by ID.

Authentication:

JWT (JSON Web Tokens):

- **Token Generation:** Tokens are generated upon successful login, allowing secure access to user-specific features.
- **Middleware Validation:** Middleware checks token validity for protected routes, ensuring secure access control.

Email Verification:

- During signup, a verification link is sent to the user's email using **Nodemailer** to verify the account.

User Interface

Customer Dashboard:

- A personalized dashboard where users can view their profile, order history, and wishlist.
- Accessible options to update profile details (excluding email) and manage orders.
- View cart items, track orders, and add products to the wishlist for future purchases.

Admin Dashboard:

- A streamlined interface that enables admin users to manage all products, orders, categories, and users.
- Tools to add, edit, and delete products and categories, monitor stock levels, and view user profiles.
- Admin-specific reports on sales, inventory, and user activity.

Testing

Manual Testing:

- Verified all major functionalities, including user signup/login, product search and filtering, cartmanagement, order placement, and order tracking.

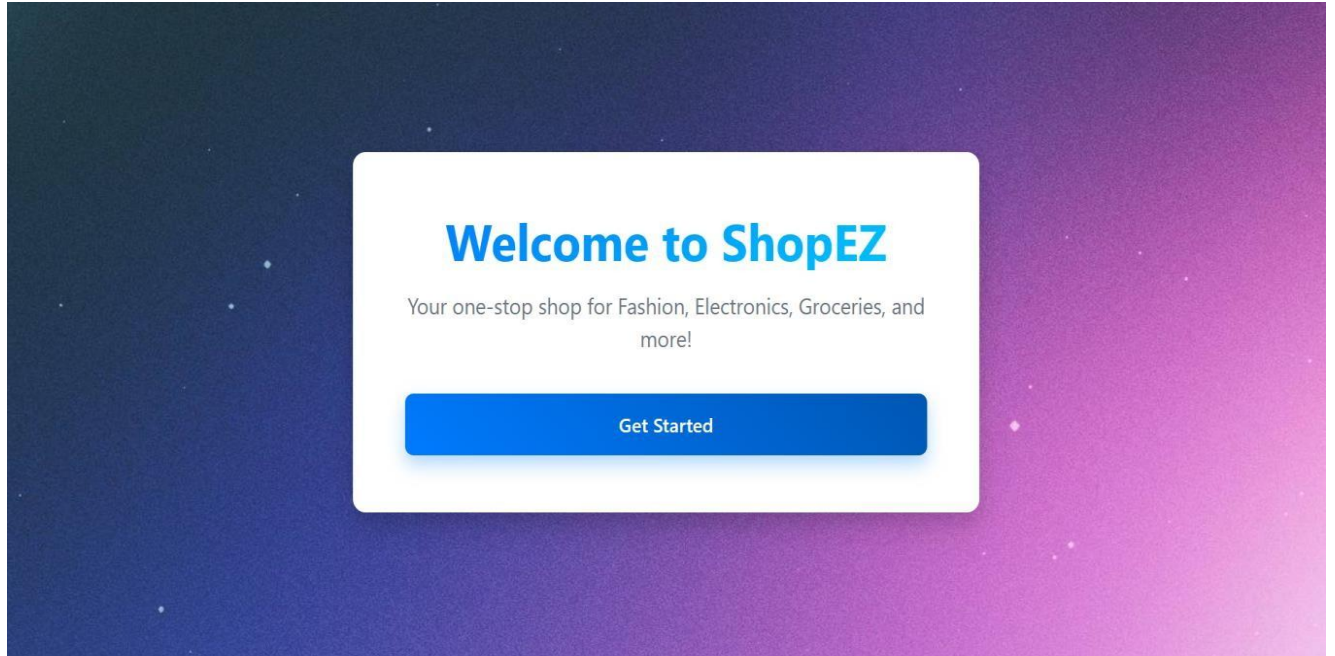
Postman Testing:

- Used for API endpoint testing, covering essential operations such as signup/login, product CRUDoperations, cart updates, and order handling.

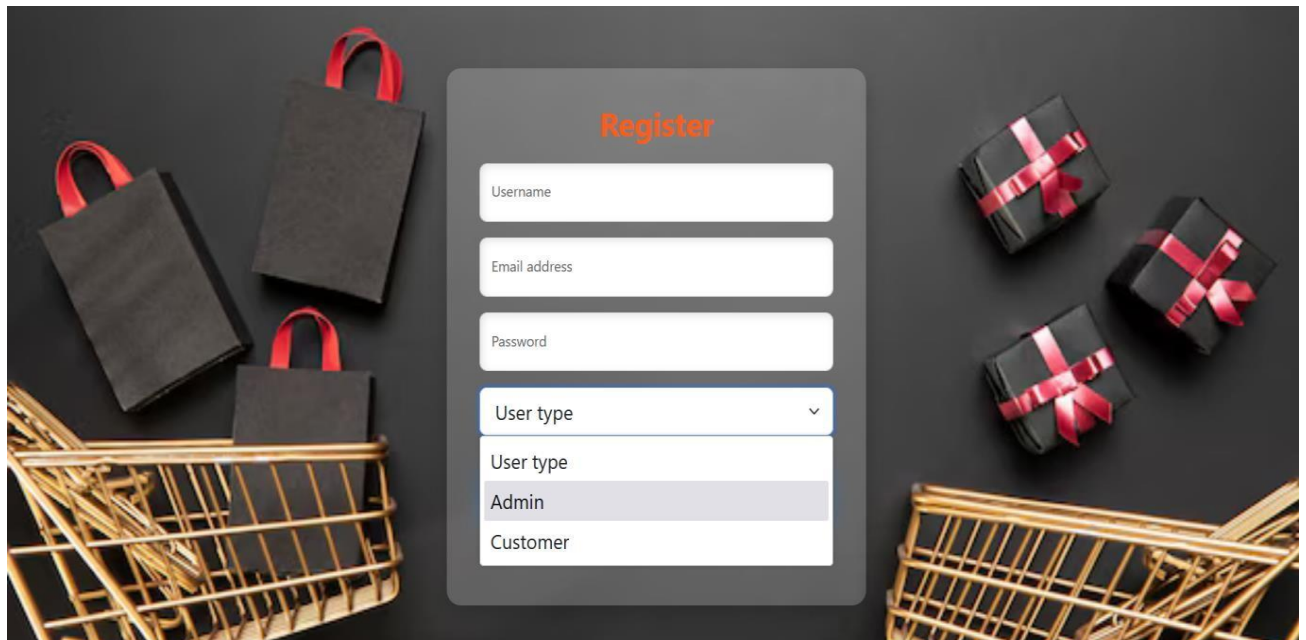
Screenshots or Demo

- **Demo Link:** <https://drive.google.com/file/d/1N5bPxj-MqrXLimCW7aogCm69awX7DS5z/view?usp=drivesdk>
- **Screenshots:**

1. Landing Page



2. Register (customer and admin)

The background of the page features a dark surface with several black shopping bags and three wrapped gifts with red ribbons. Two gold-colored shopping carts are visible, one on the left and one on the right. A semi-transparent gray rectangular box is centered on the page, containing the registration form. The form has a title 'Register' in orange. It includes four input fields: 'Username', 'Email address', 'Password', and 'User type'. The 'User type' field is a dropdown menu with a downward arrow. Below the dropdown, the selected option 'User type' is displayed, followed by two options: 'Admin' and 'Customer'.

Register

Username

Email address

Password

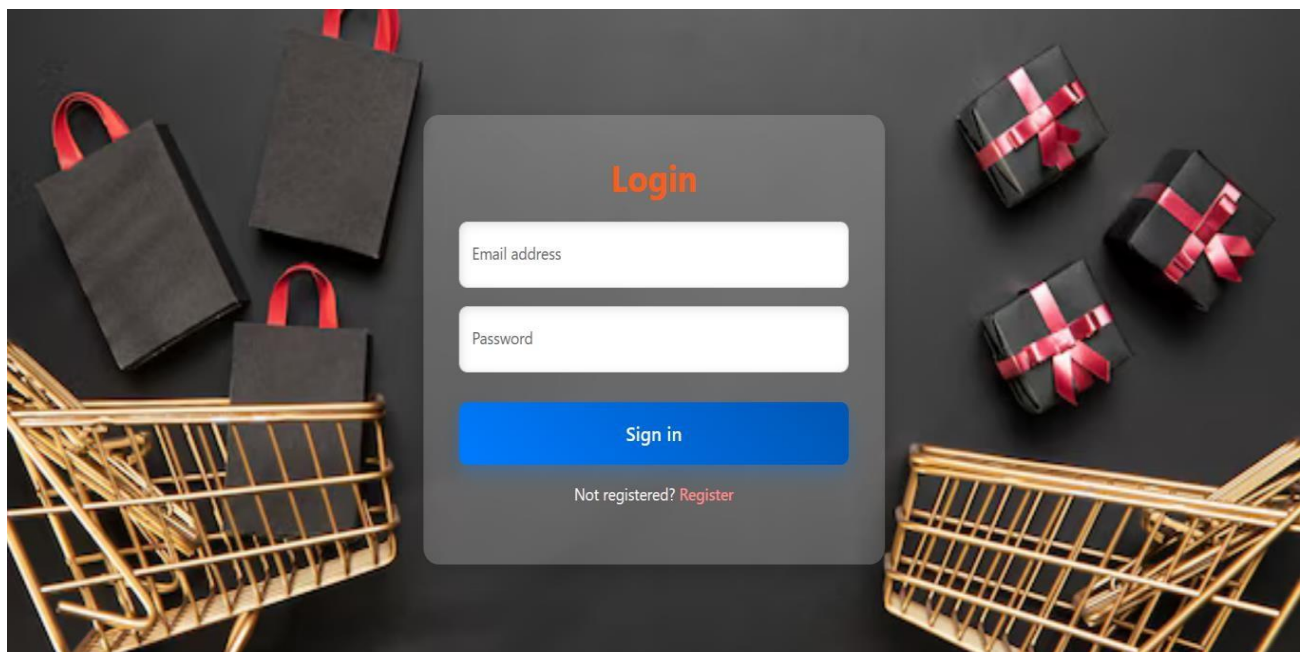
User type ▼

User type

Admin

Customer

3. User Login

The background of the page is identical to the previous one, showing shopping bags, gifts, and shopping carts. A semi-transparent gray rectangular box is centered on the page, containing the login form. The form has a title 'Login' in orange. It includes two input fields: 'Email address' and 'Password'. Below these fields is a blue button with the text 'Sign in'. At the bottom of the form, there is a link that says 'Not registered? Register' in red text.

Login

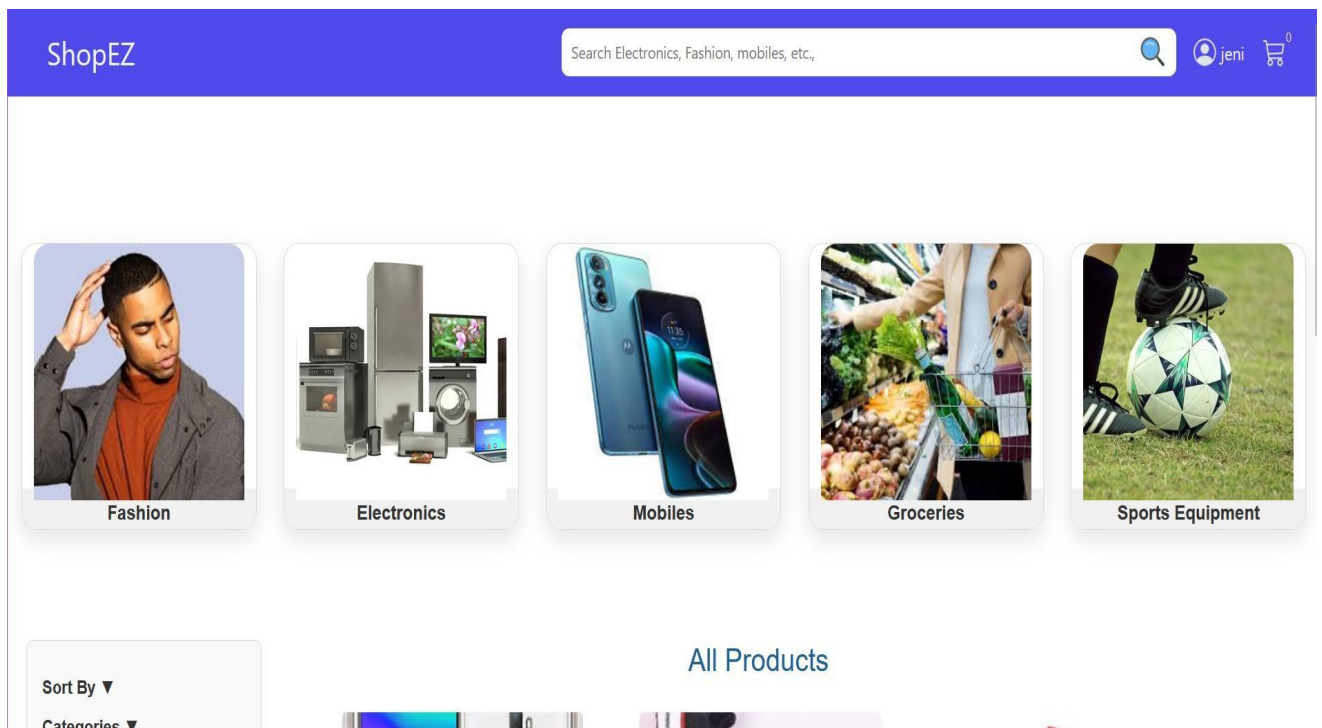
Email address

Password

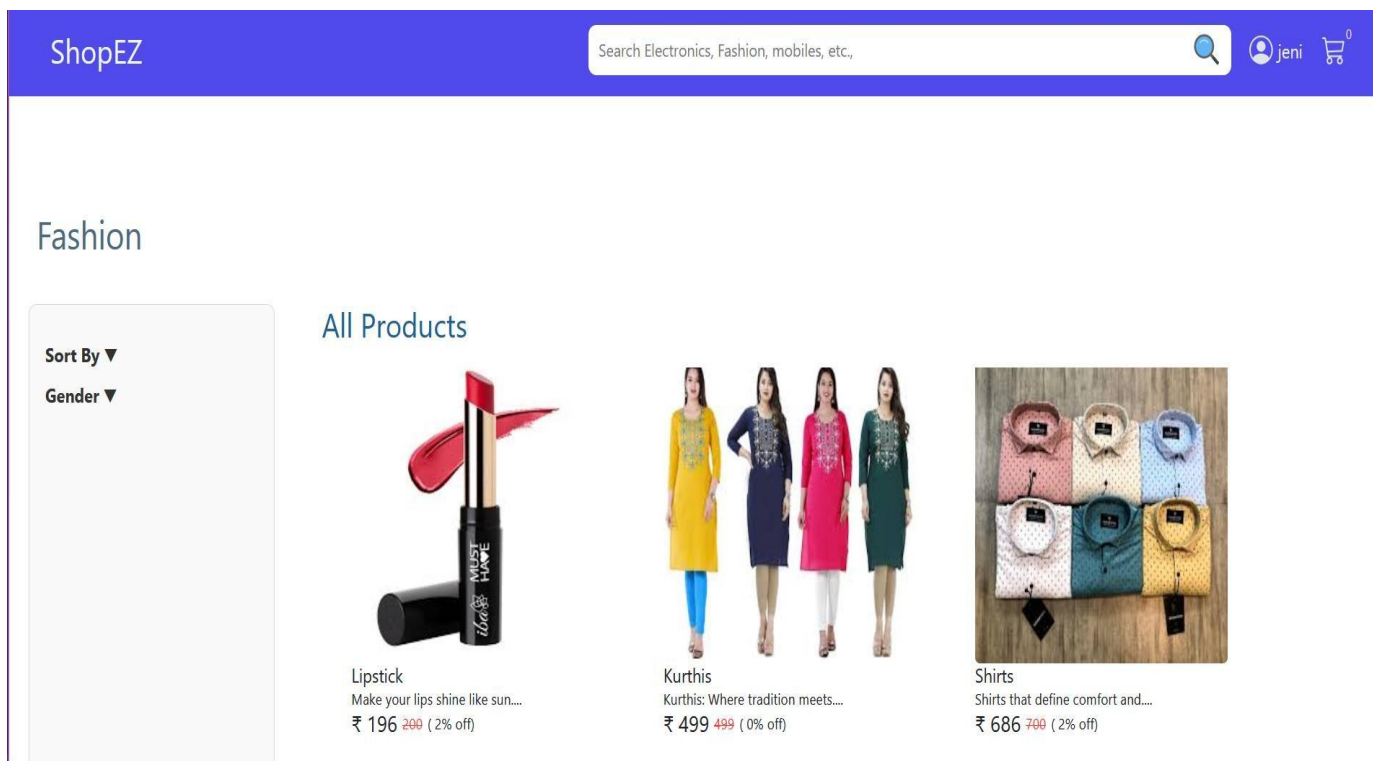
Sign in

Not registered? [Register](#)

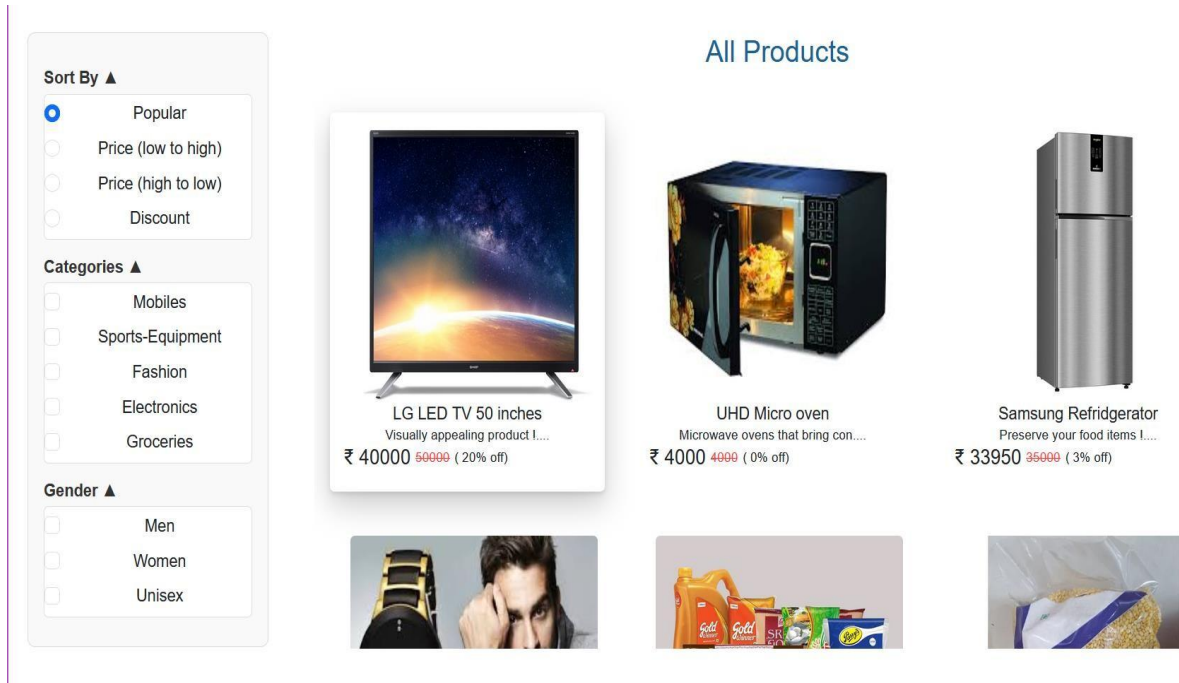
4. User Dashboard



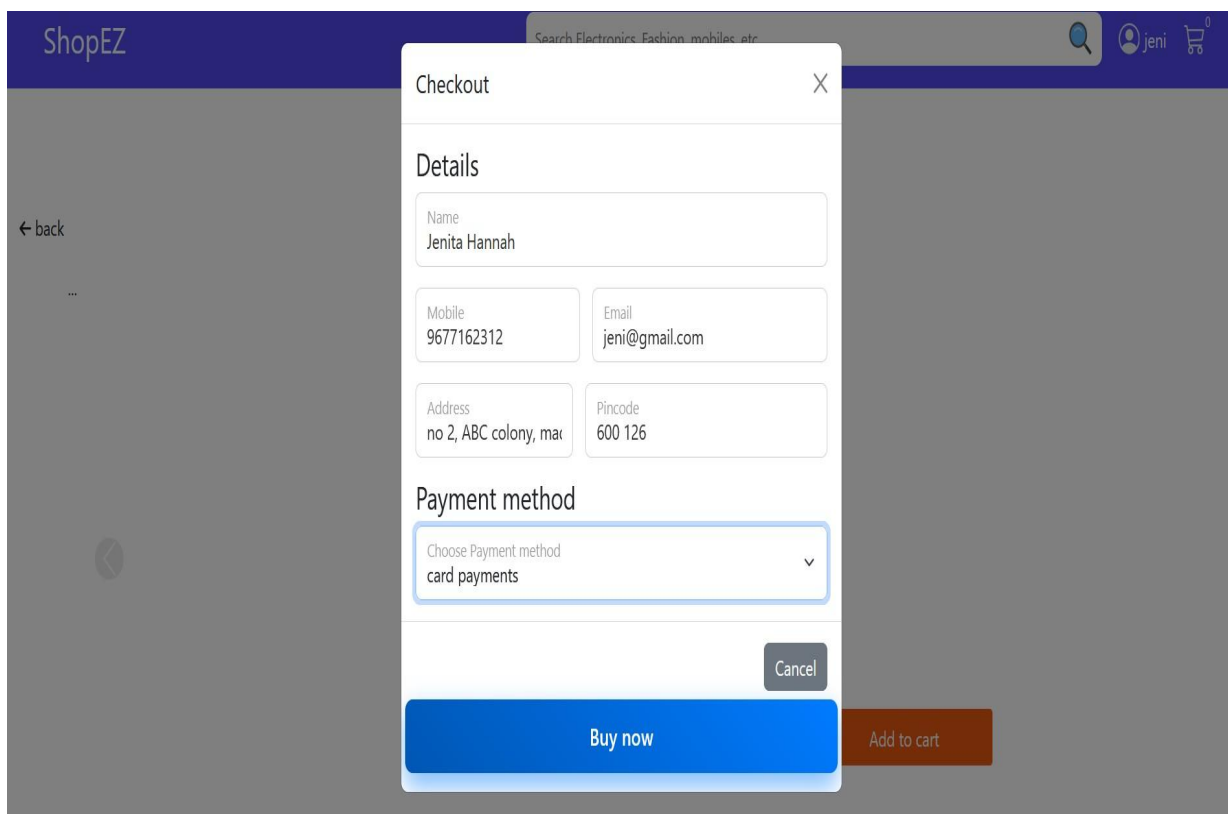
5. Product categorization



6. 'All Products' section with categorizing options



7. Placing Order



[← back](#)

...

LG LED TV 50 inches

Visually appealing product !

Choose size Quantity Price: ₹ 40000 ~~50000~~ (20% off)

Rating: 3.4/5

Free delivery in 5 days

Buy now

Add to cart



LG LED TV 50 inches

localhost:3000

Order placed!!

OK

Price: ₹ 40000 ~~50000~~ (20% off)

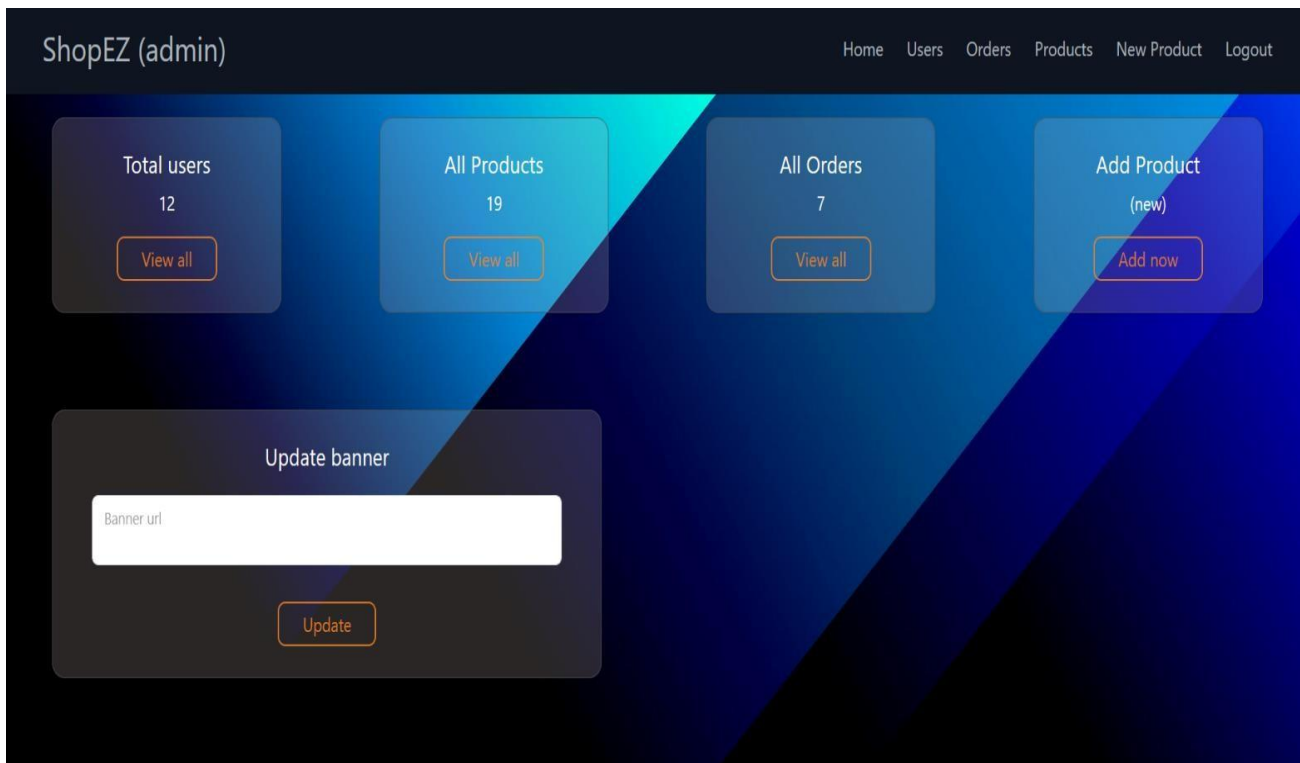
Rating: 3.4/5

Free delivery in 5 days

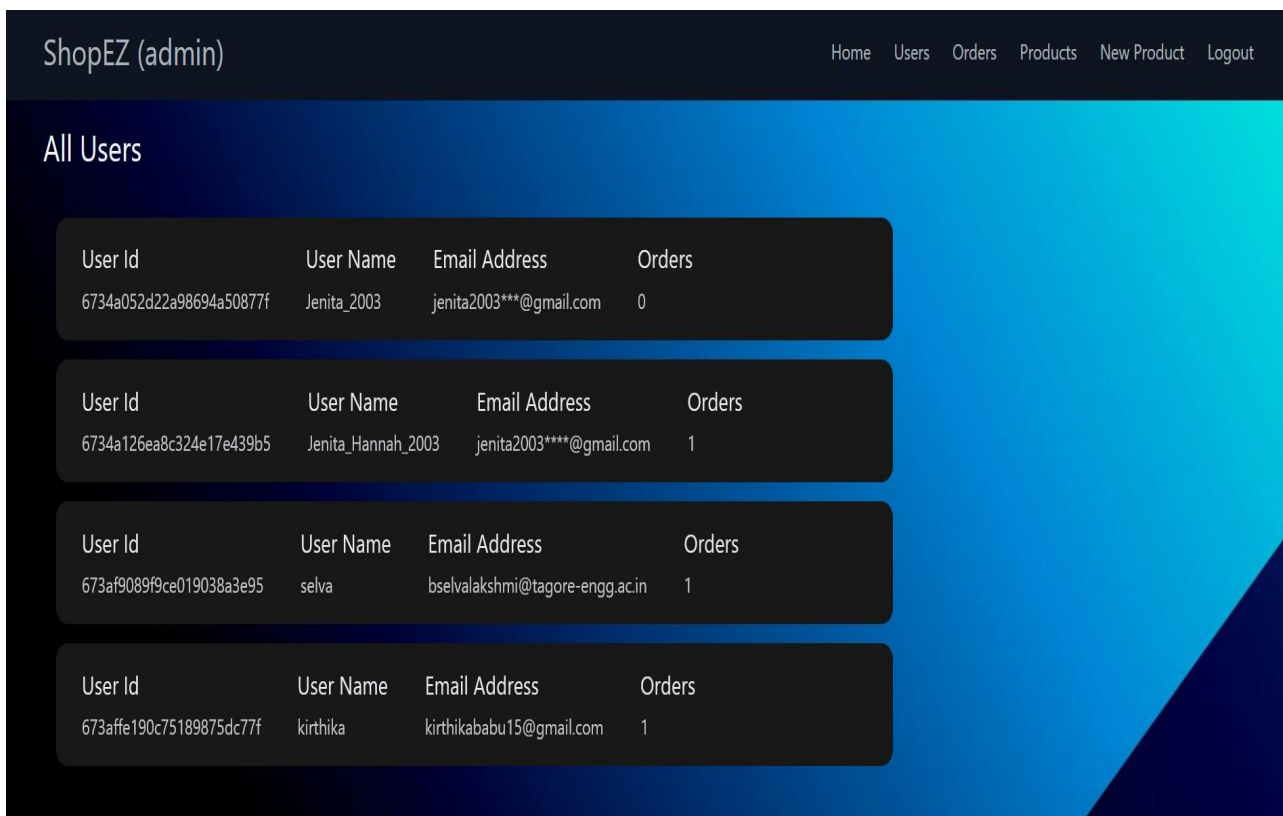
Buy now

Add to cart

8. Admin Dashboard



- **View of users' login details**



- Adding a new product from Admin side

ShopEZ (admin) Home Users Orders Products New Product Logout

New Product

Product name

Product Description

Thumbnail img url

Add on img1 url Add on img2 url Add on img3 url

Available Size ☐ S ☐ M ☐ L ☐ XL

Gender ☐ Men ☐ Women ☐ Unisex

ShopEZ (admin) Home Users Orders Products New Product Logout

New Product

Product name

Product Description

Thumbnail
localhost:3000
product added

Add on img1 url Add on img2 url Add on img3 url

Available Size ☐ S ☐ M ☐ L ☐ XL

Gender ☐ Men ☐ Women ☒ Unisex

OK

Known Issues

- **Admin Login:** Currently, the admin panel lacks a dedicated login system, accessed only through a protected route.
- **Error Handling for File Uploads:** There is limited error handling for invalid product image or document uploads.
- **No Payment Gateway:** Due to project requirements, the platform currently lacks a real payment gateway, and checkout is replaced with a mock payment process.
- **Profile and Product Editing Limitations:** When editing product details or user profiles, the platform doesn't automatically fetch the previously uploaded images or documents, requiring users to re-upload them.

Future Enhancements

- **Payment Gateway Integration:** Implement a secure payment gateway (e.g., Stripe, PayPal) to facilitate actual transactions during checkout.
- **Advanced Analytics for Admin:** Add in-depth analytics and reporting for the admin, including sales metrics, product performance, and customer insights.
- **Recommendation Engine:** Incorporate machine learning algorithms to recommend products based on user preferences, browsing history, and purchase patterns.
- **Live Customer Support via WebRTC:** Integrate WebRTC to enable live chat or video support for customers seeking assistance in real time.