

Problem Statement: JWT-Based RBAC in MERN Paginated Product App

This MERN stack application demonstrates a product management system with:

- JWT-based authentication
- Role-Based Access Control (RBAC)
- Paginated product listings
- Search, edit, and delete capabilities based on user role

There are two roles supported:

1. Admin: Can view, edit, delete, and manage all products.
2. Consumer: Can only view paginated product listings.

Authentication is handled using JWT tokens stored in `localStorage`. Based on the user's role, the UI dynamically enables or disables edit/delete actions.

MongoDB Collection Schemas

User Schema:

```
{
  username: String,
  password: String (hashed with bcrypt),
  role: { type: String, enum: ['admin', 'consumer'] }
}
```

Product Schema:

```
{
  name: String,
  price: Number,
  category: String,
  inStock: Boolean
}
```

Response Messages

Register:

- Success: 'Registration successful. You can now login.'
- Failure: 'Registration failed: <error message>'

Login:

- Success: Stores JWT and role in localStorage
- Failure: 'Login failed. Please try again.'

LocalStorage Structure (auth)

Structure of the `auth` item in localStorage:

```
{  
  "token": "<JWT_TOKEN>",  
  "role": "admin" or "consumer"  
}
```

Application Screenshots

Register Page (Role selection dropdown)

Product App LOGIN REGISTER

Register

Username

Password

Role
Admin

REGISTER

Login Page (username/password fields)

React App

MERN Pagination Table

10.11.18.76:3000

Product App

LOGINREGISTER

Login

Username

Password

LOGIN

Product List for Admin (with Edit & Delete actions)

React App

MERN Pagination Table

localhost:3000

Product App

LOGOUT

Product List

Search Products by Name

Name	Price	Category	In Stock	Actions
Gaming Laptop	\$1194.62	Electronics	No	<div>EDITDELETE</div>
Bluetooth Keyboard	\$1063.61	Electronics	Yes	<div>EDITDELETE</div>
Wireless Mouse	\$1491.15	Electronics	No	<div>EDITDELETE</div>
4K Smart TV	\$518.1	Accessories	Yes	<div>EDITDELETE</div>
Portable SSD	\$391.7	Appliances	No	<div>EDITDELETE</div>
USB-C Hub	\$774.24	Wearables	Yes	<div>EDITDELETE</div>
Smartphone Stand	\$162.13	Appliances	No	<div>EDITDELETE</div>
Noise Cancelling Headphones	\$654.95	Appliances	Yes	<div>EDITDELETE</div>

Product List for Consumer (read-only view)

React App

MERN Pagination Table

MERN_Pagination_JWT_RBAC_P

localhost:3000

Product App

LOGOUT

Product List

Search Products by Name

Name	Price	Category	In Stock
Gaming Laptop	\$1194.62	Electronics	No
Bluetooth Keyboard	\$1063.61	Electronics	Yes
Wireless Mouse	\$1491.15	Electronics	No
4K Smart TV	\$518.1	Accessories	Yes
Portable SSD	\$391.7	Appliances	No
USB-C Hub	\$774.24	Wearables	Yes
Smartphone Stand	\$162.13	Appliances	No
Noise Cancelling Headphones	\$654.95	Appliances	Yes
Smart Lightbulb	\$445.92	Accessories	No
Portable Projector	\$638.31	Electronics	Yes