FULL STACK DEVELOPMENT WITH MERN
BOOK STORE

INTRODUCTION:

- Project Title: Book Store
- Team Members: Individual project

PROJECT OVERVIEW:

Purpose

The Book Store MERN project aims to develop a full-stack web application for an online bookstore, enabling users to browse, search, and purchase books. The application will feature user authentication, book catalog management, and secure payment processing. The project will utilize the MERN stack (MongoDB, Express, React, Node.js) for a scalable and efficient solution. The goal is to create a user-friendly platform for book enthusiasts to discover and purchase their favorite titles.

Features:

1. **Comprehensive Product Catalog:**
   The Book Store offers a wide collection of books including fiction, non-fiction, academic, and competitive exam books with details such as author name, price, description, ratings, and availability.

2. **Buy Now Button:**
   Each book includes a **"Buy Now"** button that allows users to quickly proceed with the purchase.

3. **Order Details Page:**
   After clicking **Buy Now**, users are redirected to the order details page where they can enter delivery address, payment details, and confirm the selected book.

4. **Secure & Efficient Checkout:**
   The application ensures secure handling of user data and provides a fast and reliable checkout process.

5. **Order Confirmation & Review:**
   After placing an order, users receive confirmation and can view complete order details including book information, payment status, and delivery address.

ARCHITECTURE

- **Frontend (React JS)**

  The frontend is developed using **React JS** and includes components for **user authentication, book listings, cart management, user profile, and admin dashboard**. **React Router** is used for navigation and **Context API** is used for state management.

- **Backend (Node.js + Express.js)**

  The backend is built using **Node.js and Express.js** and provides **RESTful APIs** for managing **users, books, cart, and orders**. It handles authentication, business logic, and admin operations.

- **Database (MongoDB)**
  MongoDB is used to store application data, including **Users, Books, Cart, and Orders** collections. **Mongoose** is used for schema definition and database interactions.

SETUP INSTRUCTIONS

Prerequisites

- Node.js
- MongoDB (Local or MongoDB Atlas)
- Git

Installation

1. Clone the repository
   git clone [your_repo_link]

2. Install backend dependencies
   cd server
   npm install

3. Install frontend dependencies
   cd ../client
   npm install

4. Create .env file in the /server folder
   PORT=4000
   MONGO_URI=your_connection_string
   JWT_SECRET=your_secret_key

FOLDER STRUCTURE

Client (React Frontend)

```
client/
├── public/              # Static assets
├── src/                 # Main source code
|   ├── components/      # Reusable UI components
|   ├── context/         # Global state management
|   ├── image/           # Images and icons
|   ├── pages/           # Application pages/screens
|   ├── styles/          # CSS files (App.css, etc.)
|   ├── App.js           # Root component
|   ├── index.js         # Entry point
|   ├── index.css        # Global styles
|   ├── App.test.js      # App tests
|   ├── reportWebVitals.js  # Performance metrics
|   └── setupTests.js    # Test configuration
|
├── .gitignore
├── package-lock.json
└── README.md
```

Server (node.js + express.js)

```
server/
|  package.json
|  package-lock.json
|  index.js
|  server.js
|  .env
|
├– controllers/
├– models/
├– routes/
├– middleware/
└– config/
```

RUNNING THE APPLICATION

Frontend

- cd client
- npm start

Backend

- cd server
- npm start

API DOCUMENTATION

User APIs

- **POST /api/auth/register** – Register a new user
- **POST /api/auth/login** – User login
- **GET /api/auth/profile** – Get logged-in user profile *(protected)*

Product APIs

- **GET /api/books** – Get all books
- **GET /api/books/:id** – Get a single book by ID
- **POST /api/books** – Add a book *(seller only)*
- **PUT /api/books/:id** – Update a book *(seller only)*
- **DELETE /api/books/:id** – Delete a book *(seller only)*

Cart APIs

- **POST /api/cart/add** – Add a book to cart
- **GET /api/cart/:userId** – Get user cart
- **DELETE /api/cart/:itemId** – Remove a book from cart

Order APIs

- **POST /api/orders** – Place a new order
- **GET /api/orders/:userId** – Get orders of a user
- **GET /api/orders/details/:orderId** – Get order details

Admin APIs

- **POST /api/admin/login** – Admin login
- **GET /api/admin/users** – Get all users
- **GET /api/admin/orders** – Get all orders

AUTHENTICATION

- **JWT Generation:**
  When a user logs in, the backend verifies the credentials and generates a JWT token.

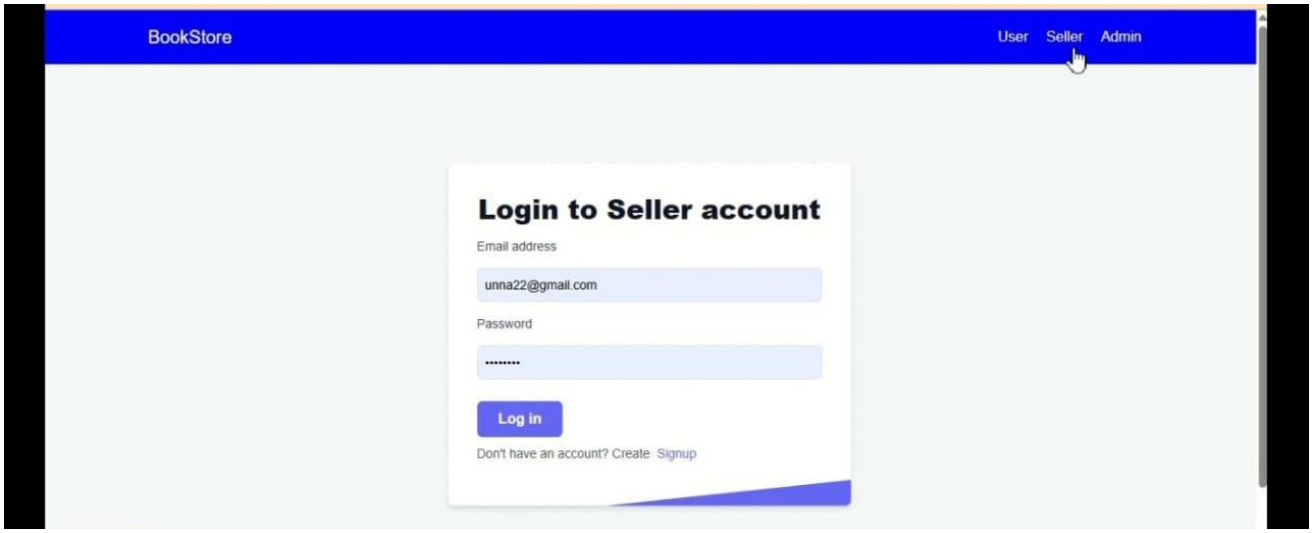
- **Token Storage:**
  The JWT token is stored on the frontend using **localStorage** or **sessionStorage**.

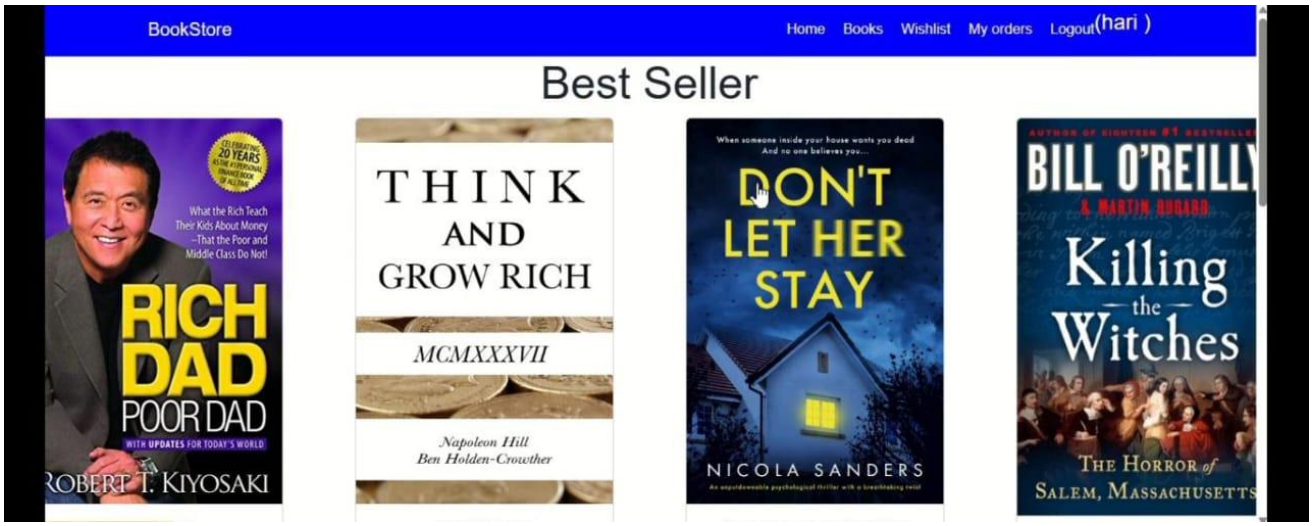
- **Protected Routes:**
  For every protected API request, the token is included in the Authorization header as:
  Authorization: Bearer <token>

- **Authorization:**
  The backend validates the token before granting access to restricted routes such as user profile, cart, orders, and admin operations.

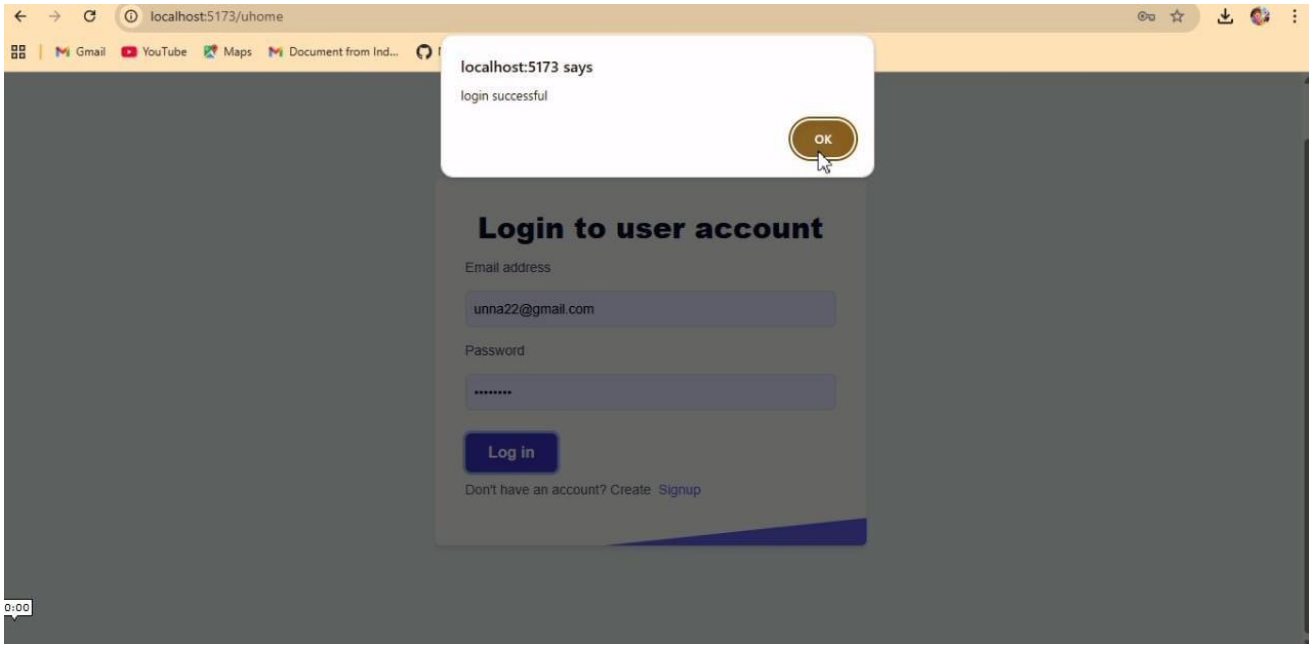
USER INTERFACE

Signup Page

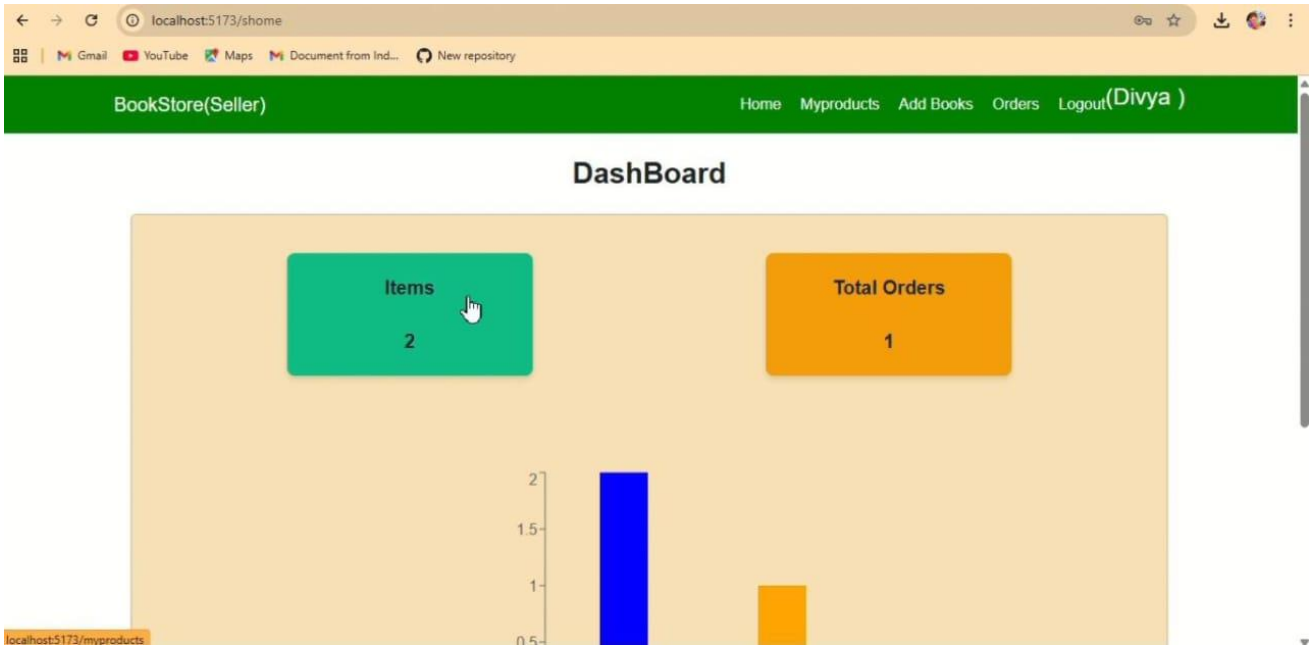




Products Details Page



Seller Dashboard



TESTING

Testing Strategy

- **UI Testing:**
  Each page (Home, Books, Cart, Profile, Seller & Admin Dashboard) was manually tested to verify layout, navigation, and user interactions.

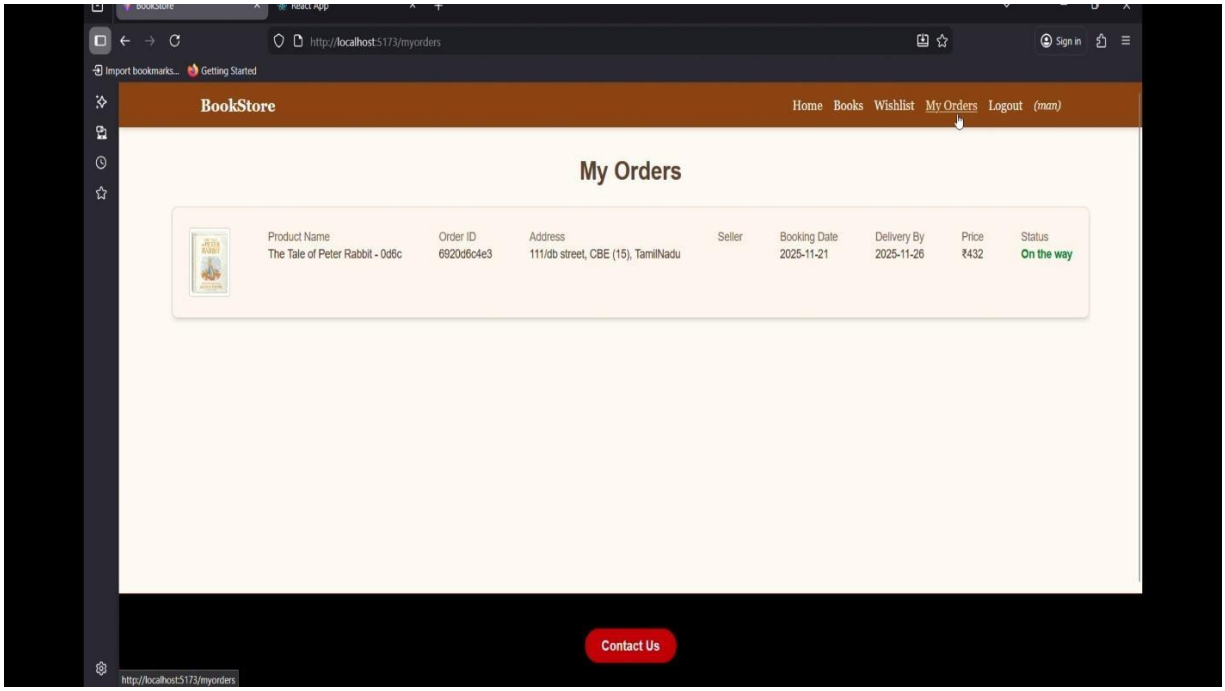
- **API Testing:**
  All backend API endpoints were tested using **Postman** to validate request methods, parameters, responses, and error handling.

Tools Used:

- **Manual UI Testing** (Browser-based testing)
- **Postman** for API endpoint testing
- **Console Logs & Debugging Tools** for resolving errors

SCREENSHOTS OR DEMO

Order Confirmation Page



KNOWN ISSUES:

- Bookstore API responses may be slow at times.
- Error messages are not always displayed clearly.
- Duplicate book orders or cart entries may occur if buttons are clicked repeatedly.
- Images may load slowly on weak internet.
- User Authentication and Authorization
- Book Catalog Management
- Payment Gateway Integration
- Order Management
- Scalability and performance
- Security
- Responsive Design

FUTURE ENHANCEMENTS

- Personalized Recommendations
- E-book and Audiobook Integration
- Book Reviews and Ratings
- Wishlist and Favorites
- Social Sharing
- Social Sharing
- Author profiles
- Book Clubs and Discussions
- Mobile App
- LAI(Location -Aware Intelligence)
- AR(Augmented Reality)