

Full Stack Development with MERN

1. Introduction

- **Project Title:** BookNest-Where Stories Nestle
- **Team Members:** Jakke VeeraShankar [Team Leader]
Dulla SivaKalyani[Team member]
Duggana MahaLakshmi[Team member]
Battivalasala Sri Lalitha devi[Team member]

2. Project Overview

- **Purpose:** The purpose of the BookNest application is to redefine the traditional reading experience by offering a digital platform where users can explore, discover, and purchase books with ease. The app is tailored for modern readers who prefer a seamless, online experience that doesn't compromise on the joy of browsing and collecting literature.
- **Key Features:**
 - Users can securely register and log in to the platform using their email and password. The system ensures data privacy by encrypting passwords and using token-based authentication to manage sessions. This feature allows users to safely access personalized features like order history and saved preferences..
 - The application provides a comprehensive listing of books available for purchase. Each book entry displays relevant details such as the title, author, genre, description, price, rating, and current stock status. This helps users make informed decisions while browsing the catalog..
 - Books can be added to a shopping cart with specified quantities. Once ready, users can proceed through a secure checkout process to finalize their purchases. This triggers backend operations to generate an order and update the inventory accordingly.
 - After a successful transaction, users receive an order confirmation that includes a unique order ID, the list of books purchased, the total cost, and estimated delivery information. This assures users that their order was successfully placed.
 - Users can view a detailed history of all past and current orders from their profile. Each order record includes purchase details and shipment tracking (if integrated). Users can also review books and rate their shopping experience, contributing to community feedback and recommendations..
 - Admins can manage books, users, and orders through a secure backend interface. They can add/edit/delete book entries, monitor sales, and view analytics.

3. System Architecture

- **Client Layer (Frontend)**
Technology: React.js
Users: Readers (Customers), Admin

Role:

- Interactive book browsing and purchasing.
- Responsive UI for all devices.
- Axios-based API calls.
- User session management with local storage.

- **Server Layer (Backend API)**

Technology: Node.js + Express.js

Responsibilities:

- API handling for authentication, book inventory, and orders.
- Middleware for validation and security.
- Separate routes for books, users, and orders.

- **API Gateway**

Technology: Node.js with Express.js (or a dedicated gateway service like NGINX or API Gateway libraries for microservices)

Function: Acts as a single entry point for all incoming client requests, helping to decouple the frontend from individual backend services.

- **Authentication Service**

Technology: MongoDB

Role:

- Registers new users and stores hashed passwords.
- Authenticates login attempts using bcrypt and issues JWT tokens.
- Verifies user identity for protected routes.
- Maintains session validity via tokens, enabling secure, stateless access to user

4. Setup Instructions

- **Install Prerequisites** : Node.js, npm, MongoDB (local/Atlas)
- **CloneRepository** : git clone <https://github.com/your-username/booknest.git>
- **Start MongoDB** : mongod or connect to MongoDB Atlas
- **Setup Backend:** cd server npm install npm start
- **Setup Frontend:** cd client npm install npm start
- **Frontend API:** <http://localhost:3000>
- **Backend API:** <http://localhost:5000>

5. Folder Structure

Client (React Frontend) :

/client

/public
/src
 /components
 /pages
 /context
 /styles
App.jsx
package.json

Server (Node.js + Express Backend):

/server
 /models
 /routes
 /controllers
index.js
package.json

6. Running the Application

- **Frontend:** cd client
 npm start
 # Runs on <http://localhost:3000>
- **Backend:** cd server
 npm start
 # Runs on <http://localhost:5000>

7. API Documentation

- **User APIs:**
 - POST /api/regist Register new user
 - POST /api/login – Authenticate user
- **Book APIs:**
 - GET /api/books – Fetch all books
 - GET /api/books/:id – Fetch single book details
 - POST /api/books – (Admin) Add new book
 - PUT /api/books/:id – (Admin) Update book
 - DELETE /api/books/:id – (Admin) Delete book
- **Order APIs:**
 - POST /api/orders – Place an order
 - GET /api/orders – View all orders for user
 - GET /api/orders/:id – View order details

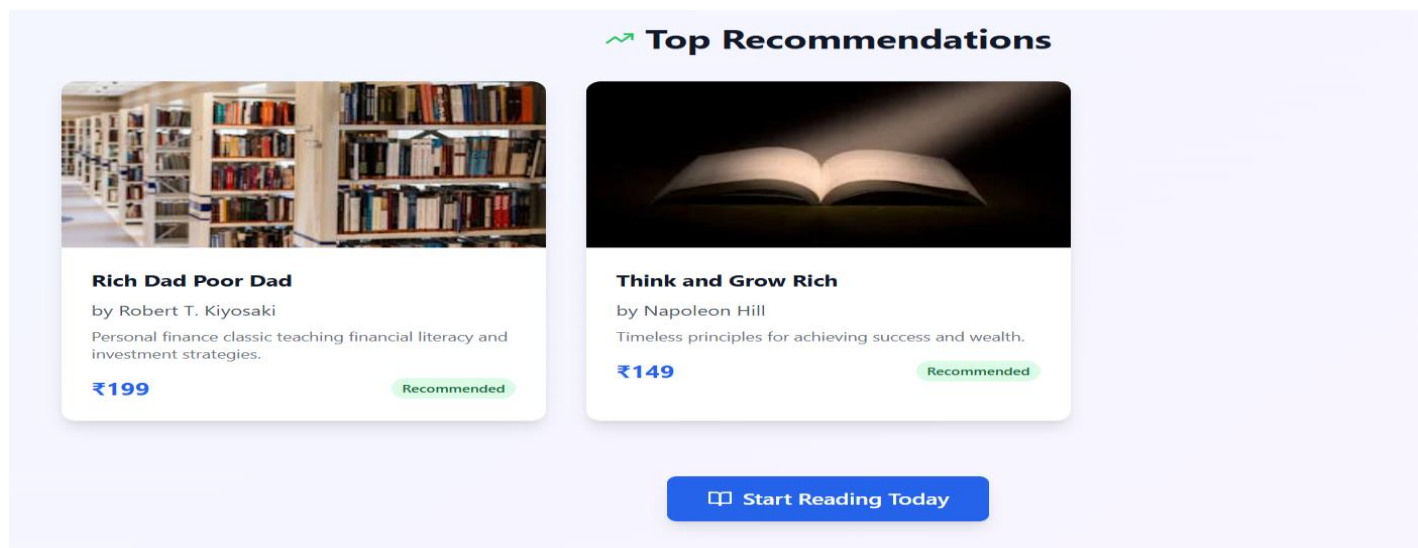
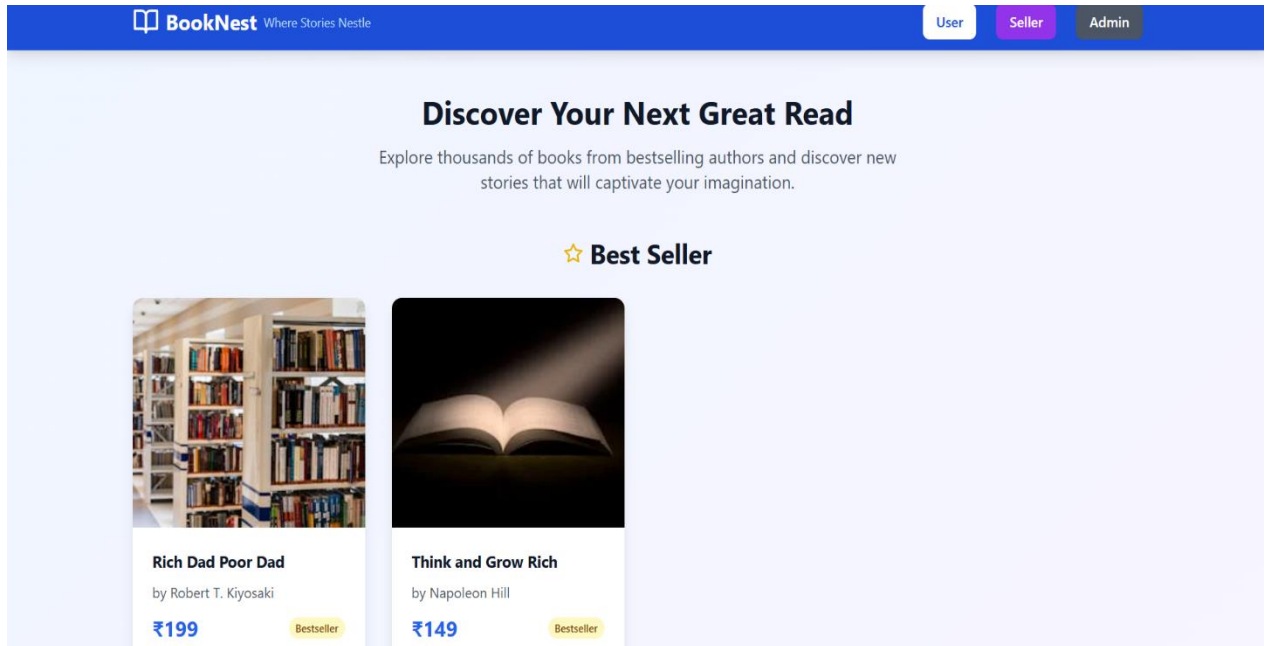
8. Authentication Flow

- **User Registration (POST /register):** Registers name, email, password (hashed), saved in DB.
- **User Login (POST /login):** Authenticates credentials → Returns JWT → Stored on client.

9. Testing

- **Unit Testing:** API functions and logic verified.
- **Integration Testing:** End-to-end testing for cart → order → confirmation.
- **UI Testing:** Responsive design tested across devices.
- **Security Testing:** JWT authentication and protected routes.

10. Screenshots / Demo




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Login to User Account

Email Address

 Enter your email

Password

 Enter your password

Sign In

Don't have an account? [Create Signup](#)

 BookNest

[Home](#)

[Books](#)

[Wishlist](#)

[My Orders](#)

[Logout](#)

Welcome Back to BookNest

Discover your next great read from our curated collection

☆ Best Sellers



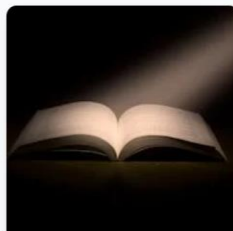
Rich Dad Poor Dad

by Robert T. Kiyosaki

₹199

Bestseller

[View](#)



Think and Grow Rich

by Napoleon Hill

₹149

Bestseller

[View](#)

BookNest

Home

Books


Wishlist

My Orders

Logout

My Wishlist

Books you've saved for later



Rich Dad Poor Dad

Author: Robert T. Kiyosaki

Genre: Business

Price: ₹199

Remove

Add to Cart

BookNest

Home

Books


Wishlist

My Orders

Logout

Books List

Explore our comprehensive collection of books



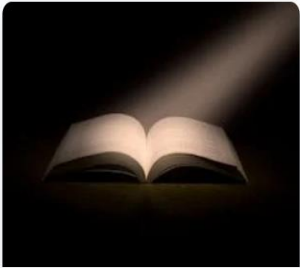
Rich Dad Poor Dad

Author: Robert T. Kiyosaki

Genre: Business

Price: ₹199

Add to Wishlist



Think and Grow Rich

Author: Napoleon Hill

Genre: Business


Price: ₹149

Add to Wishlist

BookNest

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Rich Dad Poor Dad

by Robert T. Kiyosaki

₹199

Description

Personal finance classic teaching financial literacy and investment strategies.

Info

Title: Rich Dad Poor Dad

Author: Robert T. Kiyosaki

Genre: Business

Price: ₹199

Seller: BookShop Inc.

Remove from Wishlist



Buy Now

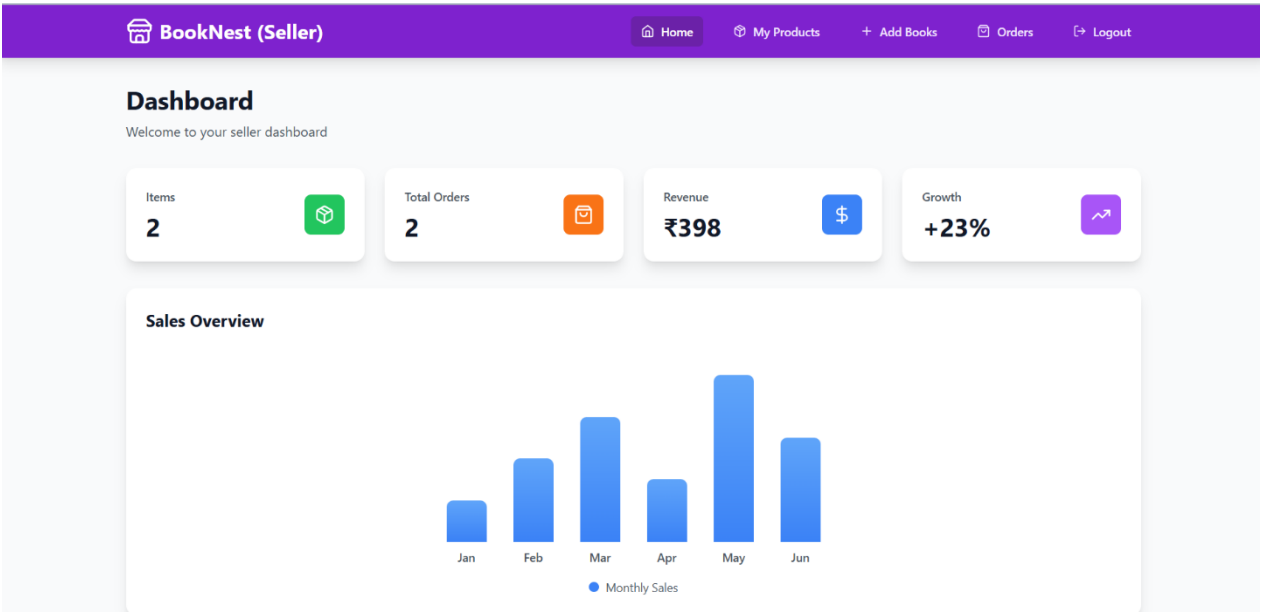
BookNest

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My Orders

Track your book orders and delivery status

PRODUCT	ORDER ID	ADDRESS	SELLER	BOOKING DATE	DELIVERY BY	PRICE
 Think and Grow Rich	6580449015	123 Main St, New York, NY	BookStore Inc.	18/12/2023	25/12/2023	₹195
 Rich Dad Poor Dad	9ba7vdfc8	D.NO:203, Miapur street, Kakinada, Andhra Pradesh - 533005	BookShop Inc.	6/27/2025	7/4/2025	₹195



BookNest Admin

Home

Users

Sellers

Logout

Users

SL/NO	USERID	USER NAME	EMAIL	OPERATION
1	0000000000000001	John Doe	john@example.com	<div>view</div> <div></div>

Active Users

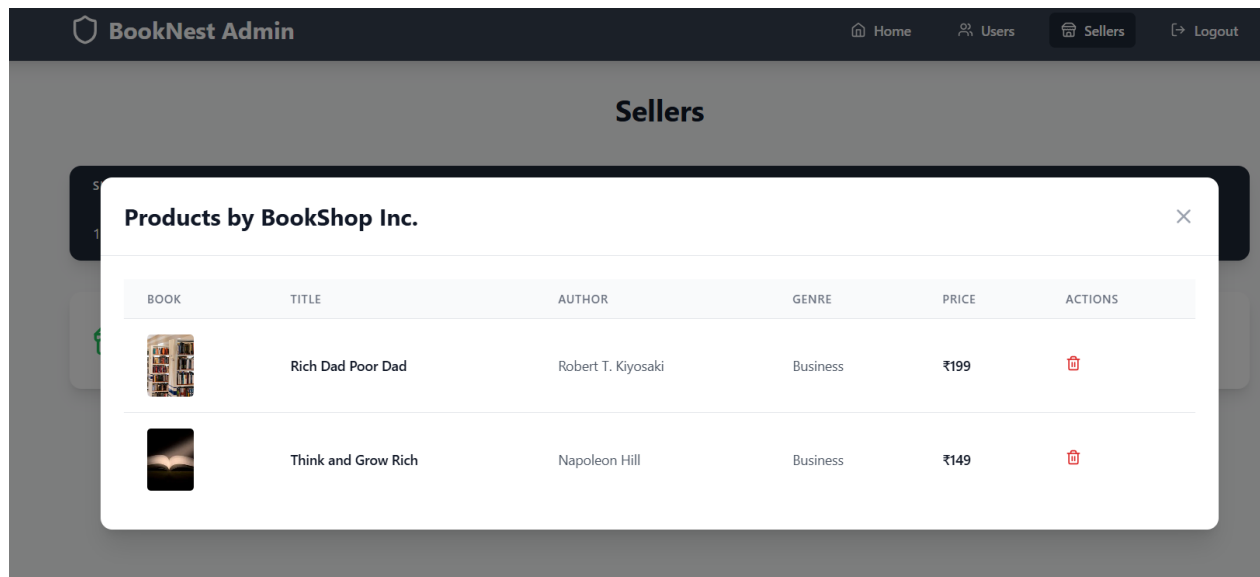
1

Inactive Users

0

Total Orders

6



The demo of the app is available

at: <https://drive.google.com/file/d/1y7TPSSUC5krDNSxNI66VvYI4MTxPy8XV/view?usp=sharing>

11. Known Issues

- No Payment Gateway Yet – Purchases are simulated.
- Role-based admin access pending frontend enforcement.
- UI needs improvement on small screens.
- Real-time order tracking not yet implemented

12. Future Enhancements

- Integrate payment gateways (Stripe, Razorpay)
- Add analytics dashboard for admin

- Allow users to upload book reviews
- Mobile App version for Android/iOS
- Real-time in-app notifications
- Implement recommendation engine (based on reading behavior)
- Real-time stock alert system