**Project Design Phase**

**Solution Architecture**

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| Date | 04-12-2025 |
| Team ID |  |
| Project Name | Bookstore |
| Maximum Marks | 4 Marks |

**Solution Architecture:**  
The solution architecture for BookStore ensures a robust, user-friendly, and scalable online platform that connects readers with a rich catalog of books while giving admins full control over inventory and orders. It focuses on responsive design, secure transactions, efficient catalog search, and smooth checkout flows to maximize conversion and user satisfaction.​

**Key capabilities:**

* Seamless book browsing, searching, and filtering across categories, authors, genres, and ratings.​
* End‑to‑end purchase lifecycle management from cart to order creation, payment, and delivery tracking.​
* Scalable user authentication and authorization using JWT for Customers and Admins.​
* Secure and traceable payment processing integrated with external payment gateways, with orders stored in MongoDB.​
* Review and rating features plus responsive UI, enabling customers to share feedback and shop comfortably on any device.​

**Example – Solution Architecture Diagram :**

* Clients (Customers, Admin) interact with a Presentation Layer built in React (web + mobile‑friendly). Frontend communicates with the Backend API over HTTPS.
* Backend Layer (Node.js + Express) exposes REST APIs for authentication, catalog, cart, orders, reviews, and admin management, and handles JWT validation and business rules.
* Data Layer uses MongoDB with collections for Users, Books, Orders, and Reviews; Mongoose models manage schema and relations.
* Payment Integration service connects the backend to a payment gateway (e.g., Stripe/Razorpay) for secure card/UPI transactions and sends status updates back to Orders.
* Logging/Monitoring components capture API logs and errors, while CI/CD and containerized deployment (e.g., Docker + cloud) allow scalable rollout of BookStore services.

