

Project Design Phase-II

Technology Stack (Architecture & Stack)

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Team ID: SWTID1743607143
Project Name: BookEase
Maximum Marks: 4 Marks

Technical Architecture

The BookEase platform utilizes a MERN stack architecture to provide a local, scalable e-commerce solution for book trading, supporting user, seller, and admin functionalities with a responsive UI.

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	User Interface	Web UI for browsing books, managing cart, admin tasks; homepage includes sparkle animations	React 18.x, Tailwind CSS, Lucide React
2	Application Logic-1	Manages user authentication and role-based navigation	Node.js 20.x, Express.js 4.x, JWT
3	Application Logic-2	Handles book catalog browsing and seller inventory management	Node.js, Express.js, Mongoose 8.x
4	Application Logic-3	Processes admin tasks, including user and seller deletion with notifications	Node.js, Express.js
5	Database	NoSQL database storing users, books, orders; JSON-like documents	MongoDB 7.x
6	Cloud Database	Not implemented	None
7	File Storage	Stores book images and static assets locally	Local Filesystem
8	Infrastructure	Local development and deployment	Local: Node.js server

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks for frontend, backend, database, and styling	React, Express.js, MongoDB, Mongoose, Tailwind CSS
2	Security Implementations	Token-based authentication, password hashing, secure APIs	JWT, bcrypt
3	Scalable Architecture	3-tier architecture (UI, logic, data) supports user growth with sharding	MongoDB sharding, Express.js
4	Availability	Local replication ensures data availability	MongoDB Replica Sets
5	Performance	Optimized queries and caching support 1000 requests per second	Redis, MongoDB indexes

References

- <https://c4model.com/>
- <https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>
- <https://www.ibm.com/cloud/architecture>
- <https://aws.amazon.com/architecture>
- <https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>