

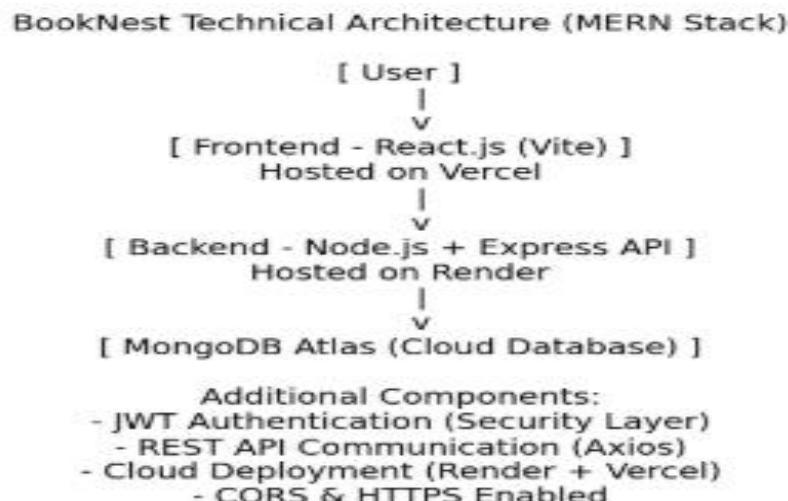
## Project Design Phase-II

### Technology Stack (Architecture & Stack)

Date	11 February 2026
Team ID	LTVIP2026TMIDS34775
Project Name	BookNest : where stories nestle
Maximum Marks	4 Marks

#### **Technical Architecture:**

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



## **External APIs**

### **Guidelines:**

#### **UI Layer:**

React.js (Vite) web application for user registration, login, book browsing, cart management, and order placement. Hosted on Vercel.

#### **Backend Layer:**

Node.js + Express REST API handling authentication (JWT), book management, cart operations, and order processing. Hosted on Render.

#### **Database:**

Cloud-based MongoDB Atlas (NoSQL) storing users, books, and orders.

#### **API Communication:**

Frontend communicates with backend using Axios and REST APIs (JSON format).

#### **Security:**

JWT authentication, bcrypt password encryption, HTTPS enabled, and CORS configuration.

#### **Scalability & Deployment:**

Cloud deployment with independent frontend and backend scaling using Vercel + Render + MongoDB Atlas.

**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1	User Interface	Web UI for browsing, cart & orders	React.js (Vite), HTML, CSS, JS
2	Backend API	Handles authentication & book APIs	Node.js, Express.js
3	Authentication	Secure login & session handling	JWT, bcrypt
4	Database	Store users, books, orders	MongoDB Atlas
5	API Communication	Frontend-Backend integration	Axios, REST APIs
6	Hosting - Frontend	Deploy UI application	Vercel
7	Hosting - Backend	Deploy API server	Render
8	Security	Secure communication	HTTPS, CORS

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology/Approach
1	Open-Source Frameworks	Frontend & backend frameworks	React.js, Node.js, Express
2	Security Implementation	Authentication & encryption	JWT, bcrypt, HTTPS
3	Scalable Architecture	Cloud-based deployment	Render, Vercel, MongoDB Atlas
4	Availability	High uptime & cloud hosting	Cloud Infrastructure
5	Performance	Fast API & optimized queries	Indexed MongoDB, REST APIs
6	Maintainability	Modular MERN architecture	MVC Structure