

Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	16 April 2025
Team ID	SWTID1744468652
Project Name	I-movies : movie ticket booking system
Maximum Marks	4 Marks

Technical Architecture:

This MERN stack-based application is designed using a modular, component-driven architecture to ensure scalability, maintainability, and real-time responsiveness. The architecture follows the traditional three-tier pattern:

- **Frontend Layer:** Built using React.js, this layer handles the client-side logic, including UI rendering, routing, and communicating with the backend via RESTful APIs. Users can register, login, browse data, perform actions, and view updates dynamically.
- **Backend Layer:** Powered by Node.js and Express.js, this layer processes requests from the frontend, manages business logic, and performs operations such as authentication, CRUD operations, and validations.
- **Database Layer:** MongoDB is used as a NoSQL document-based database to store application data such as user details, session info, posts/products/tasks (depending on your project type), and more.

All parts of the system are hosted on cloud platforms like Vercel (for frontend) and Railway (for backend), providing continuous integration, deployment, and availability.

Components & Technologies:

S.No.	Component	Description	Technology
1	Frontend	UI for user interaction, forms, views, and routing	React.js , HTML, CSS, JavaScript
2	Backend	API endpoints, routing, controllers, business logic	Node.js , Express.js
3	Authentication	User login, signup, secure token-based access	JWT , bcrypt.js
4	Database	Stores users, items/tasks/posts, sessions	MongoDB , Mongoose
5	File Storage	If project includes image/file uploads	Multer, Local Uploads Folder / Cloudinary
6	Hosting & Deployment	Continuous deployment for frontend & backend	Vercel (frontend) , Railway (backend)
7	API Testing/Tools	For testing endpoints and debugging	Postman, Thunder Client

Application Characteristics:

S.No.	Characteristics	Description	Technology
1	Full-Stack App	Complete end-to-end functionality from UI to DB	MERN Stack
2	Open Source & Modular	Built using open-source tools with clean separation of concerns	separation of concerns React components, Express routes
3	Security	Encrypted passwords, protected routes, role-based access (if applied)	JWT, bcrypt, Helme
4	Scalable	Easily extendable architecture with REST APIs	CRUD architecture, modular file structure
5	Performance	Fast frontend rendering, lazy loading (if applicable), optimized queries	MongoDB Indexing, React optimization