Project Design Phase

Solution Architecture

Date	12 April 2025
Team ID	SWTID1744468652
Project Name	i-movies: movie ticket booking system
Maximum Marks	4 Marks

Solution Architecture:

This architecture illustrates how the MERN Movie App platform functions across the User, Cloud, and Admin networks:

- **Frontend (UI):** Built with React, users interact through a responsive web interface for both the movie dashboard (admin) and movie listing (user) apps. The UI is styled with Tailwind CSS for a modern and clean look.

- **Backend (API):** Developed using Node.js and Express.js, it handles communication between the frontend, MongoDB database, and external services like Cloudinary and email (Nodemailer).

- **Authentication**: Managed via JSON Web Tokens (JWT), ensuring secure, role-based access for both admins and users.

- **Data Services**: Central MongoDB database stores movie details, genres, user information, and watchlists. Mongoose is used for schema modeling.

- **Image Management**: Cloudinary is integrated for storing and serving movie posters and related images.

- **Email Service:** Nodemailer is used for sending password reset emails and OTP confirmations to users.

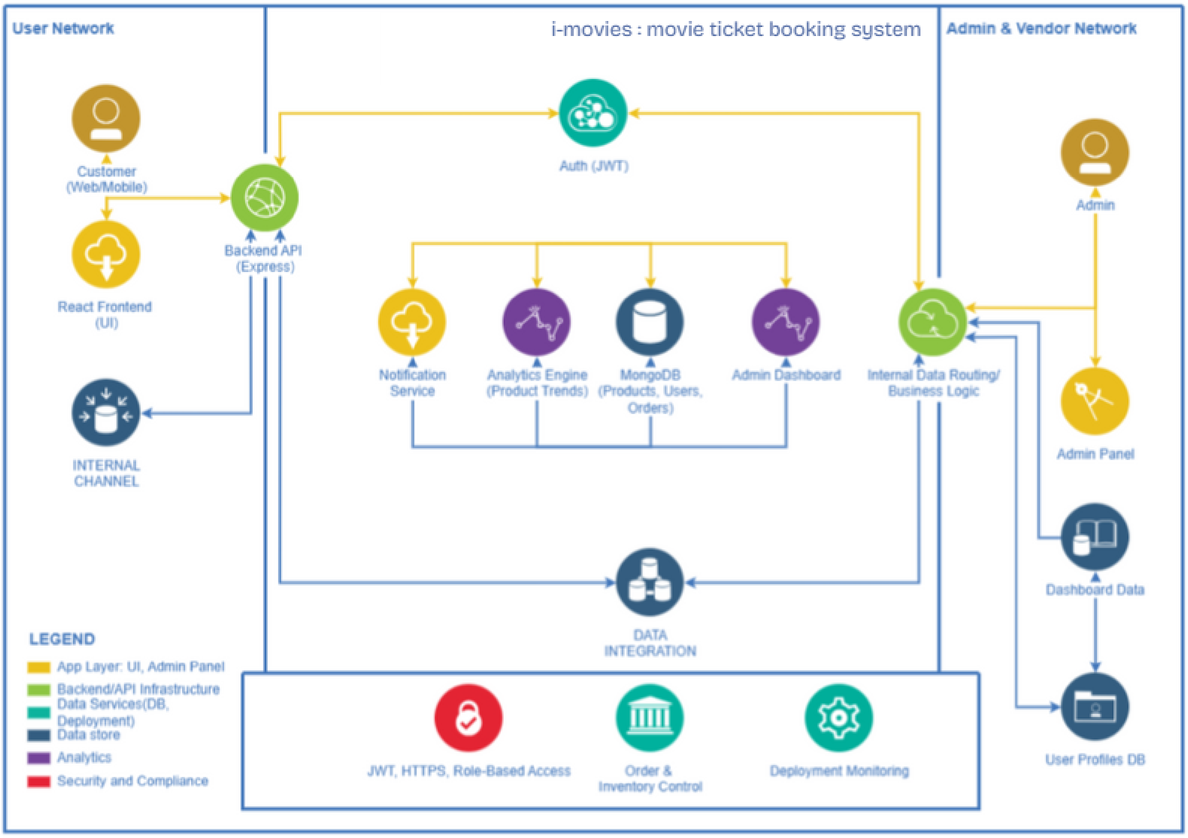
- **Admin Dashboard:** Allows admins to manage movies and genres, view analytics, and moderate content through a dedicated dashboard interface.
- **User Features:** Users can browse movies, filter by genre/rating, search, manage their watchlist, and handle authentication (register, login, password reset).

- **API Communication:** Axios is used in the frontend for making HTTP requests to the backend.

- **Security & CORS:** CORS is configured to allow secure communication between frontend and backend hosted on different domains. Passwords are securely hashed using Bcrypt.

Color-coded legends in the architecture diagram distinguish UI components, backend logic, data storage, image hosting, authentication, and email services for clarity.

Solution Architecture Diagram:


User Network
i-movies : movie ticket booking system
Admin & Vendor Network
Customer (Web/Mobile)
React Frontend (UI)
Backend API (Express)
INTERNAL CHANNEL
Auth (JWT)
Notification Service
Analytics Engine (Product Trends)
MongoDB (Products, Users, Orders)
Admin Dashboard
Internal Data Routing/ Business Logic
Admin
Admin Panel
Dashboard Data
User Profiles DB
DATA INTEGRATION
JWT, HTTPS, Role-Based Access
Order & Inventory Control
Deployment Monitoring
LEGEND
🟨 App Layer: UI, Admin Panel
🟩 Backend/API Infrastructure
🟩 Data Services(DB, Deployment)
🟦 Data store
🟪 Analytics
🟥 Security and Compliance