**🧾 Solution Architecture Document**

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**🆔 Team ID:** LTVIP2025TMID57021  
**📌 Project Name:** DocSpot – Seamless Appointment Booking for Health  
**👥 Team Size:** 4  
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**💡 Solution Architecture**

The solution architecture of **DocSpot** bridges healthcare service gaps with scalable web technology. It defines how our system components interact to provide patients, doctors, and administrators with a seamless and secure experience.

**🎯 Architecture Goals**

* Deliver a **scalable and secure** online booking platform.
* Map out communication between **frontend, backend, and database** layers.
* Ensure **role-based dashboards** for patients, doctors, and admins.
* Enable **JWT authentication** and secure authorization.
* Provide a **modular framework** for future upgrades (e.g., telemedicine, pharmacy integration).

**🧰 Technology Stack**

* **Frontend**: React.js + Tailwind CSS (responsive UI)
* **Backend**: Node.js + Express.js (API & business logic)
* **Database**: MongoDB Atlas (cloud-hosted)
* **Authentication**: JWT tokens (role-based)
* **Deployment**: Netlify (frontend), Railway / Render (backend)

**🏗️ System Architecture Overview**

DocSpot uses a **modular client-server architecture**:

* Users interact with the **React frontend**, which communicates via RESTful APIs.
* The **Express.js backend** processes data and handles logic.
* **MongoDB** securely stores user details, appointment records, and doctor profiles.
* **JWT** ensures secure, token-based access control.
* An **Email Notification Service** triggers confirmations and reminders.

**🚀 Development Phases**

1. **User Authentication Module** (JWT-based login/register)
2. **Role-Based Dashboards** for Patients, Doctors, and Admins
3. **Doctor Slot Management** for real-time availability
4. **Appointment Booking & Management**
5. **Admin Analytics & Monitoring Panel**
6. **Email Notification System**

**📊 Architecture Diagram**

