Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	26-11-2025
Name	Vignesh v
Project Name	DocSpot – Doctor Appointment Booking System
Maximum Marks	4 Marks

Technical Architecture:

The DocSpot platform is designed using a scalable 3-tier architecture, ensuring efficient appointment management, real-time availability, and secure interactions between patients, doctors, and administrators.

The system consists of:

1. Presentation Layer (Frontend)
    - Provides user interfaces for patients, doctors, and admin.
    - Supports responsive and intuitive UI for appointment booking and schedule management.

2. Application Layer (Backend / Business Logic)
    - Handles authentication, appointment creation, schedule updates, and admin operations.
    - Exposes RESTful APIs for frontend communication.

3. Data Layer (Database)
    - Stores users, doctors, appointments, availability slots, and system logs.

Ensures secure and structured storage for all data entities.

Table-1 : Components & Technologies:

System Module	Functional Description	Tech Stack
Frontend Experience	Interactive portal for patients, doctors, and administrators.	React.js, HTML5, CSS3, JavaScript, Tailwind CSS
Core Business Services	Manages booking workflows, provider search, and schedule coordination.	Node.js, Express.js Framework
Administrative & Background Services	Handles admin dashboard, system monitoring, and alert dispatch.	React.js + Node.js Runtime
Data Persistence Layer	Repository for users, doctor profiles, slot availability, and appointments.	MongoDB (Atlas Cluster)
Identity & Access Management	Secure authentication and session control for all user roles.	JSON Web Tokens (JWT), bcrypt.js
Client-Server Data Exchange	Facilitates communication between the frontend and backend services.	RESTful API Architecture, Axios
Hosting & CI/CD Pipeline	Infrastructure for deployment and continuous integration.	Render / Vercel / Netlify / Railway Platforms

Table-2: Application Characteristics:

References:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frontend, backend built on modern open-source stacks	React.js, Node.js, Tailwind CSS
2	Scalable Architecture	Supports thousands of concurrent users	MVC + REST APIs
3	Secure Framework	Implements token security and role-based access	JWT, bcrypt
4	Responsive UI	Works on desktop and mobile	React.js + Tailwind
5	Cloud Storage	Manages doctor profile images and uploads	Cloudinary (optional)

[React.js Documentation]

[Node js Best Practice]

[JSON Web Server Referance]