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

Date	17 June 2025
Team ID	LTVIP2025TMID59716
Project Name	Flight Finder
Maximum Marks	4 Marks

Technical Architecture:

The **SB Flights** is built using a scalable and modular 3-tier architecture, ensuring high performance, maintainability, and future scalability.

Presentation Layer (Frontend): Travelers can search for flights, view detailed flight information, and book tickets and administrators can log in to manage flight listings and monitor bookings and Built with modern web technologies (e.g., HTML5, CSS3, JavaScript frameworks like React).

Business Logic Layer (Backend): Flight search, filtering, and booking management and user authentication and role-based access control (traveler vs. admin) and real-time seat availability and booking confirmation.

Data Storage Layer: Passenger profiles, booking history, and transaction records and Flight schedules, seat inventory, and airline information and Admin and service provider records.

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App.	HTML, CSS, JavaScript / React.js / Next.js / React Native
2.	Application Logic-1	Flight search, booking logic, seat selection, confirmation	Node.js / Express.js / Java
3.	Application Logic-2	Admin panel for managing flights, monitoring, and reporting	React.js (Frontend) + Node.js (Backend)

4.	Application Logic-3	Notifications and alerts via email/SMS	Twilio API, SendGrid, Cron Jobs, Node Scheduler
5.	Database	Stores users, flight data, bookings, and admin records	MongoDB / PostgreSQL / MySQL
6.	Cloud Database	Scalable cloud-hosted database service	MongoDB Atlas, Amazon RDS, Firebase Realtime DB.
7.	File Storage	Stores documents, invoices, logs	AWS S3 / Google Cloud Storage / Local Filesystem
8.	External API-1	Real-time flight pricing & availability	Amadeus API / Skyscanner API / AviationStack API
9.	External API-2	Weather or airport status integration	OpenWeather API / Aviation API

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	React.js, Node.js, Express.js, MongoDB, Nginx
2.	Security Implementations	Authentication, encryption, firewall, and access control implementations	JWT, HTTPS, bcrypt, CORS, OAuth2, Helmet.js, IAM Roles (AWS)
3.	Scalable Architecture	System scalability via tiered or service-oriented design	3-Tier Architecture, Microservices (optional), Docker, Kubernetes, Load Balancers
4.	Availability	Measures to ensure application uptime and failover	Multi-Zone Deployment, Auto-Scaling Groups, Load Balancers, Cloud CDN
5.	Performance	Optimization for speed, caching, concurrency, and request handling	Redis (caching), CDN (e.g., Cloudflare), Nginx Reverse Proxy, Lazy Loading, Indexing

References:

[React.js Documentation]

Node js Best Practice

JSON Web Server Referance

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d