Project Design Phase

Solution Architecture

Date	15 February 2025
Team ID	LTVIP2025TMID53108
Project Name	FlightFinder
Maximum Marks	4 Marks

Solution Architecture:

Frontend (Web/Mobile App): Built with a responsive UI framework (e.g., React or Flutter) enabling users to input preferences, search flights, and receive suggestions in real time.

- **API Gateway / Backend Services**: Facilitates communication between the frontend, MongoDB Atlas, and third-party services. Handles request routing, authentication, rate limiting, and failover logic.
- **Flight Data Ingestion**: Continuously pulls live data from airline APIs, normalizes it, and stores it in MongoDB using dynamic and compound indexes for efficient querying.
- **MongoDB Atlas Cluster**:
    - Stores structured and unstructured flight metadata.
    - Implements **dynamic indexing** and **aggregation pipelines**.
    - Integrated with **Atlas Search** for full-text and facet-based search across routes, pricing, duration, etc.
- **Recommendation Engine**: Uses user behavior, preferences, and historical search data to surface contextual suggestions (e.g., price trends, alternate routes, best time to buy).
- **Analytics & Monitoring**: Tracks user interaction, system health, search patterns, and operational metrics to drive both user satisfaction and business optimization.

FlightFinder Solution Architecture