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

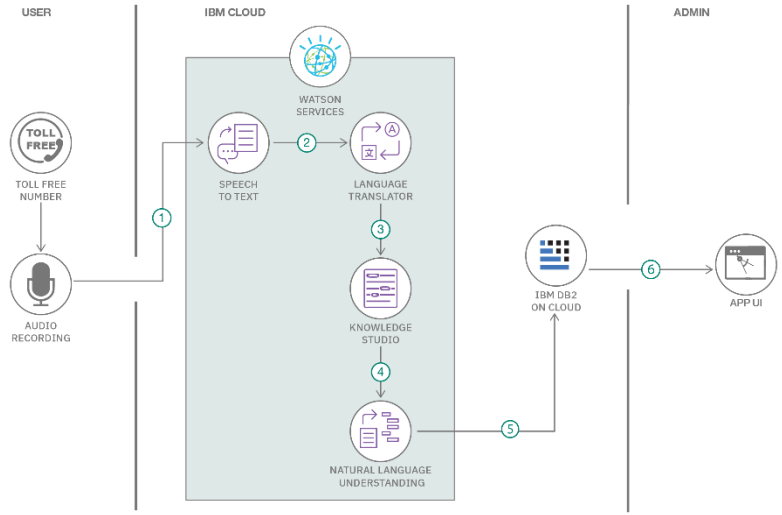
Date	25 June 2025
Team ID	LTVIP2025TMID56096
Project Name	Flight Fider
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/



Guidelines:

- Include all the processes (As an application logic / Technology Block)
- Provide infrastructural demarcation (Local / Cloud)
- Indicate external interfaces (third party API's etc.)
- Indicate Data Storage components / services
- Indicate interface to machine learning models (if applicable)

S.No	Component	Description	Technology
1.	User Interface	Frontend pages for users to search, filter, and book flights	HTML, CSS, JavaScript / Angular Js / React Js
2.	Search & Filter Engine	Enables users to search flights by location, date, class, airline, and price.	React.js state, MongoDB queries,
3.	Flight Listings	Shows available flights with details,	React.js,CSS
4.	Booking System	Handles passenger detail forms and booking confirmation	React Forms, Express.js, MongoDB
5.	Authentication & Access	Provides login/signup for users and admins	
6.	Admin Dashboard	Allows admin to add/edit/delete flights and manage bookings	React.js, Express.js, MongoDB, JWT
7.	Backend API	Handles all logic for bookings, users, flights, and filters	Node.js, Express.js
8.	Database Layer	Stores flight data, bookings, and user/admin credentials	MongoDB, Mongoose
9.	Version Control	Manages codebase and team collaboration	Git, GitHub
10.	Deployment	Hosts the frontend, backend, and database for live access	Render, Netlify, MongoDB Atlas
11.	Project Management Tools	Organizes tasks, designs, and communication during development	Trello, Notion, Figma, Google Docs/Meet

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Uses open-source tools like React.js, Node.js, Express.js, MongoDB, and CSS to ensure cost efficiency and community-driven support.	React.js, Node.js, Express.js, MongoDB, Tailwind CSS
2.	Security Implementation	Implements JWT for authentication, bcrypt for password encryption, HTTPS for secure data transfer, and input validation to prevent common attacks.	JWT, bcrypt.js, Helmet.js, HTTPS, Express-validator
3.	Scalable Architecture	Built using a modular MERN stack (MongoDB, Express, React, Node.js) with RESTful APIs, allowing easy scalability by adding microservices if needed.	MERN stack, RESTful APIs, Microservices
4.	Availability	Deployed on cloud platforms like Render or Vercel with MongoDB Atlas for high uptime, ensuring 24/7 access and reliable performance	Render, Vercel, MongoDB Atlas
5.	Performance	Designed with optimized queries, React's virtual DOM, backend caching (if needed), and load balancing support for handling multiple requests fast.	React Virtual DOM, MongoDB Indexing, Node.js, Caching

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

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