Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	24 June 2025
Team ID	LTVIP2025TMID53161
Project Name	SB Foods - On-Demand Food Ordering Platform
Maximum Marks	4 Marks

Technical Architecture Overview:

The SB Foods system is built using a **3-tier architecture**:

- **Frontend (Presentation Layer)** using React.js
- **Backend (Application Logic Layer)** using Node.js + Express.js
- **Database Layer** using MongoDB (NoSQL)

This ensures separation of concerns, easy scaling, and maintainability.

Example: Order processing during pandemics for offline mode

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

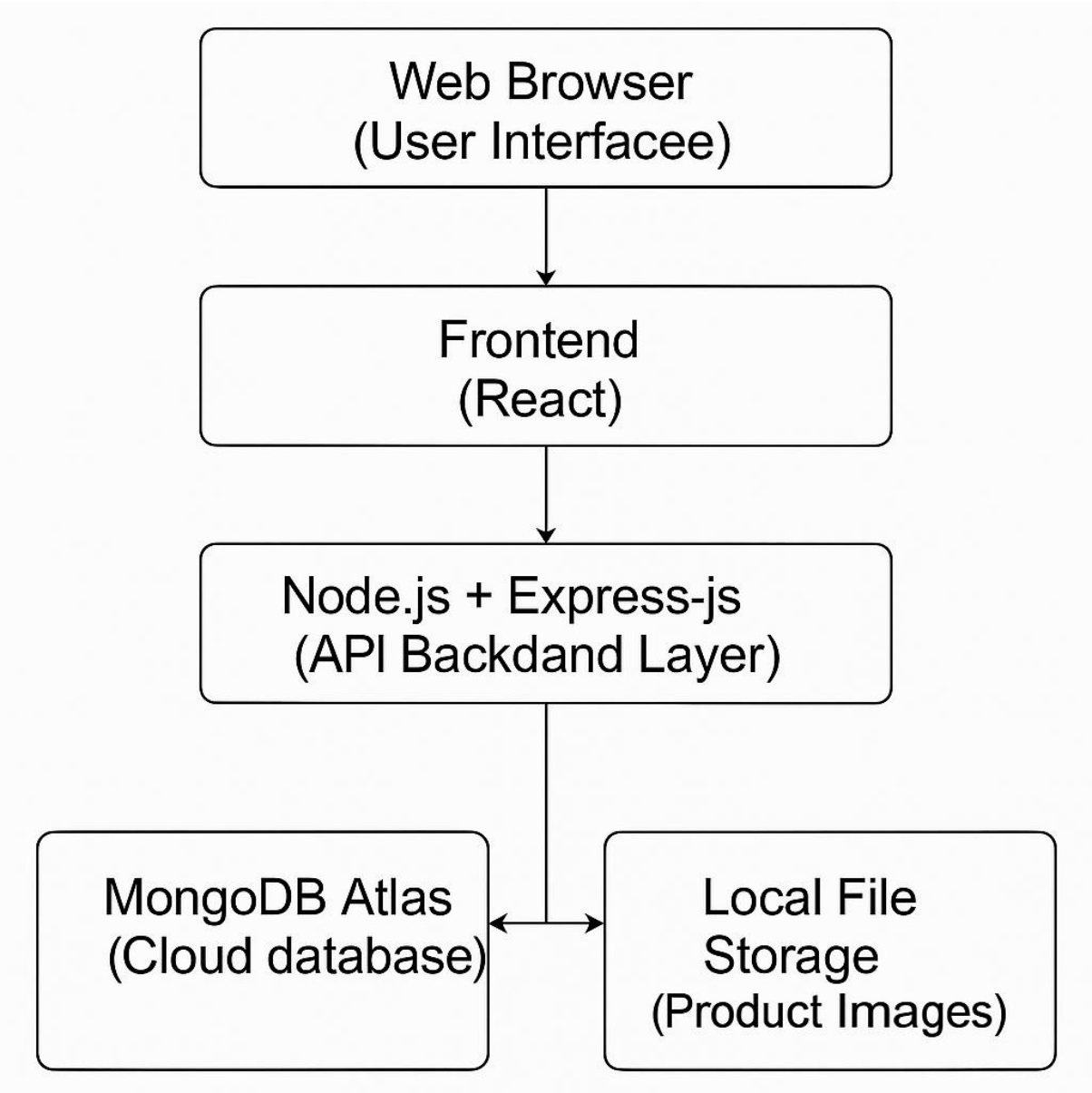

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Web UI accessible via desktop/mobile	React.js, HTML, CSS, JavaScript
2	Application Logic-1	Handles product listing, ordering, user flows	Node.js, Express.js
3	Application Logic-2	OTP/Email Confirmation Service	Nodemailer / Twilio APIs

4	Application Logic-3	Admin Dashboard logic, CRUD operations	Express.js
5	Database	NoSQL database for products, orders, users, etc.	MongoDB
6	Cloud Database	Cloud-hosted DB instance	MongoDB Atlas
7	File Storage	Product images and static files	Local FileSystem / Cloudinary
8	External API-1	Pincode validation / address autocomplete	India Post API / Google Maps API
9	External API-2	Payment integration	Razorpay / Stripe
10	Machine Learning Model	(Optional/Future) Personalized food recommendations	TensorFlow.js / Scikit-learn (TBD)
11	Infrastructure	Deployment configuration	Local server / Vercel / Railway.app

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology / Approach
1	Open-Source Frameworks	Frameworks used in development	React.js, Node.js, Express, MongoDB
2	Security Implementations	Password hashing, secure login, CORS, data validation, rate limiting	bcrypt.js, Helmet, HTTPS, JWT, SHA-256
3	Scalable Architecture	3-tier, microservice-ready backend, separation of concerns	Express Router, Modular Folder Structure
4	Availability	99.9% uptime, hosted on cloud, ready for scaling	Vercel / Railway / MongoDB Atlas
5	Performance	Fast API response, CDN for images, lazy loading, caching, pagination	React lazy, MongoDB indexing, Redis (optional)

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