Project Design Phase-II

Technology Stack (Architecture & Stack)

Date:	1 July 2025
Team ID:	LTVIP2025TMID54172
Project Name:	ShopSmart: Your Digital Grocery Store Experience
Maximum Marks:	4 Marks

Technical Architecture

This web application enables users to browse, search, and purchase groceries online. It supports functionalities for both customers and administrators/sellers. The system is deployed on cloud infrastructure with RESTful APIs and secure storage integrations.

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	User Interface	Web UI for customer and seller interactions	HTML, CSS, JavaScript, React JS
2	Application Logic-1	Customer-side logic: cart, product browsing, checkout	JavaScript (React + Node.js)
3	Application Logic-2	Admin-side logic: order handling, inventory, payments	Node.js, Express.js
4	Application Logic-3	Seller dashboard functionalities	Node.js, Express.js
5	Database	Product, user, and transaction data	MongoDB (NoSQL)
6	Cloud Database	Scalable database service on cloud	MongoDB Atlas (Cloud)
7	File Storage	Product images and user-uploaded content	Cloudinary / AWS S3

8	External API-1	Payment gateway integration	Razorpay / Stripe API
9	External API-2	Location-based delivery tracking or Google Maps	Google Maps API
10	Machine Learning Model	Product recommendation (optional enhancement)	TensorFlow JS / Scikit-learn (if applicable)
11	Infrastructure	Cloud-hosted app, continuous deployment, containerized	Vercel / Heroku / Docker + Kubernetes (optional)

Table-2: Application Characteristics

S.No	Characteristics	Description and Technology Used
1	Open-Source Frameworks	React JS, Node.js, Express, MongoDB
2	Security Implementations	JWT Auth, HTTPS, bcrypt, CORS
3	Scalable Architecture	3-tier architecture using REST API, Microservices (optional)
4	Availability	High availability with Vercel CDN, Load balancing (Heroku)
5	Performance	API caching, code splitting, Redis (optional), Lazy Loading

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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