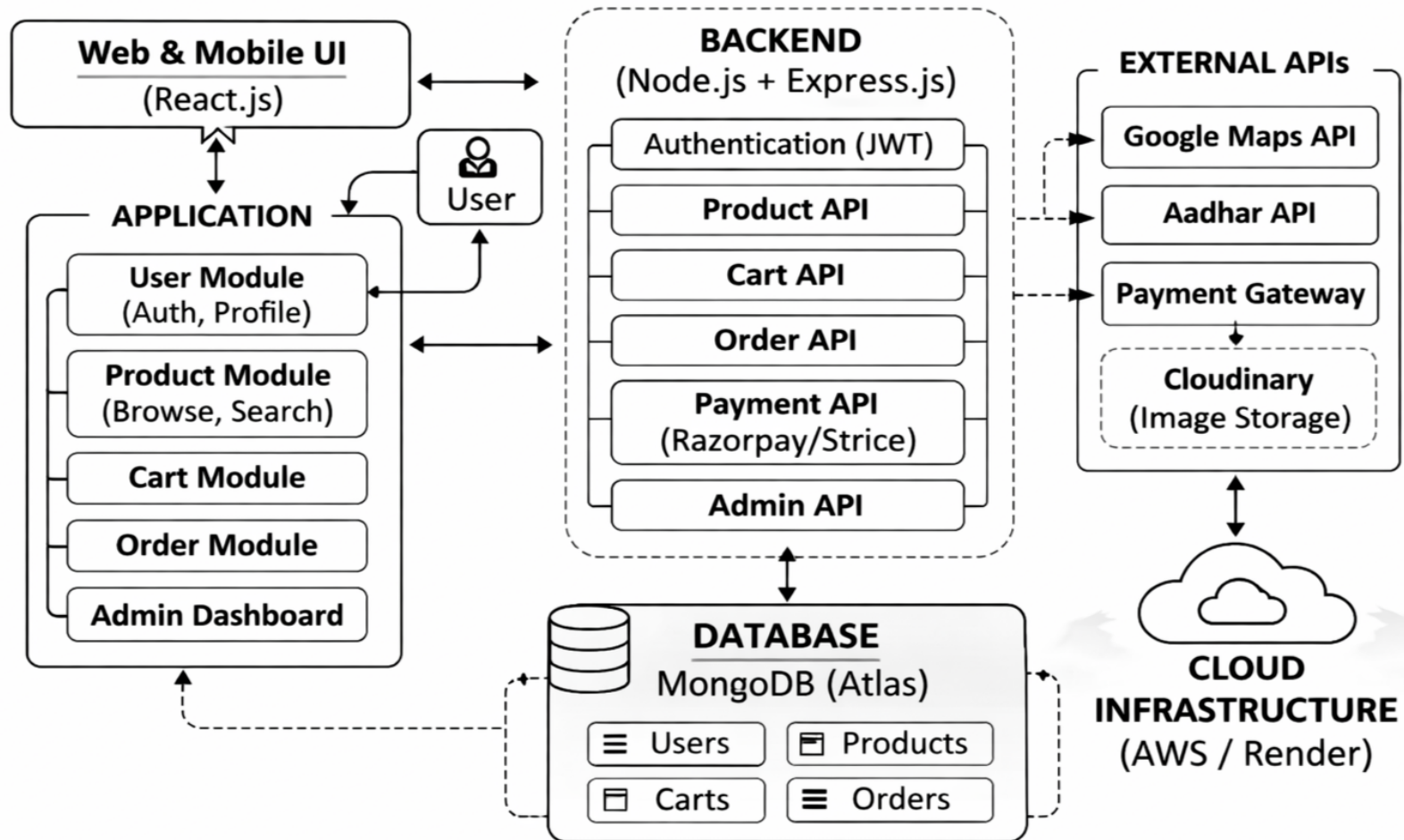


**Project Design Phase-II**  
**Technology Stack (Architecture & Stack)**

Date	19 February 2026
Team ID	LTVIP2026TMIDS81333
Project Name	ShopSmart: Your Digital Grocery Store Experience
Maximum Marks	4 Marks

**Technical Architecture:**



S.No	Component	Description	Technology
1	User Interface	Web application for customers & admin to browse products, add to cart, manage orders	HTML, CSS, JavaScript, React.js, Bootstrap
2	Application Logic-1	Backend business logic (authentication, cart, orders, product management)	Node.js, Express.js
3	Application Logic-2	Payment processing logic	Razorpay API / Stripe API
4	Application Logic-3	Order & inventory management logic	Node.js with Express Controllers
5	Database	Stores users, products, orders, cart, payments	MongoDB (NoSQL)
6	Cloud Database	Cloud-hosted MongoDB service	MongoDB Atlas
7	File Storage	Product images storage	Cloudinary / Local Server Storage
8	External API-1	Payment Gateway Integration	Razorpay API / Stripe API
9	External API-2	Email/SMS notification service	Nodemailer / Twilio API
10	Machine Learning Model	Product recommendation system (optional future enhancement)	Basic Recommendation Logic / ML Model (Future Scope)
11	Infrastructure	Application deployment	Frontend: Netlify/Vercel Backend: Render / Railway / AWS Cloud: AWS / DigitalOcean

**Table-2: Application Characteristics:**

S. No	Characteristics	Description	Technology Used
1	Open-Source Frameworks	Frontend & Backend frameworks used	React.js, Node.js, Express.js, MongoDB
2	Security Implementations	Password encryption, authentication, secure APIs	JWT Authentication, Bcrypt, HTTPS, CORS, Helmet.js
3	Scalable Architecture	3-Tier Architecture (Frontend, Backend, Database)	MERN Stack Architecture
4	Availability	3-Tier Architecture (Frontend, Backend, Database)	MERN Stack Architecture
5	Performance	Fast data fetching, optimized queries, caching	MongoDB Indexing, React Optimization, CDN

**References:**

<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>