Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	**25 June 2025**
Team ID	**LTVIP2025TMID24654**
Project Name	**Shopez : one-stop shop for online purchases**
Mentor Name	**Dr Shaik Salma Begam**
Maximum Marks	**4 Marks**

Technical Architecture

Shopez is a MERN stack e-commerce platform designed for scalability, security, and a seamless user experience. The architecture includes a React-based frontend, Node.js/Express backend, MongoDB database, and cloud/file storage for assets. The system is modular, supporting future integration with external APIs and cloud infrastructure.

Table 1: Technology Stack Components

S.No	Component	Description	Technology / Service Used
1	User Interface	Web UI for users and admins	React.js, HTML5, CSS3, JavaScript
2	Application Logic-1	User authentication, registration, session management	Node.js, Express.js, JWT
3	Application Logic-2	Product browsing, search, filtering, cart management	Node.js, Express.js
4	Database	Data storage for users, products, orders, banners	MongoDB, Mongoose
5	Cloud Database	(Optional/Scalable) Cloud-hosted MongoDB	MongoDB Atlas
6	File Storage	Product images, banners	Local filesystem, (optionally AWS S3)
7	External API-1	(Optional) Payment gateway integration	Stripe API, PayPal API

8	External API-2	(Optional) Email notifications	SendGrid, Nodemailer
9	Machine Learning Model	(Future) Product recommendation, personalization	Python (Flask API), TensorFlow, Scikit-learn
10	Infrastructure	Application deployment, scaling, and management	Local server, Docker, AWS EC2, Heroku

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Table 2: Application Characteristics

S.No	Characteristics	Description	Technology / Approach Used
1	Open-Source Frameworks	Use of open-source frameworks for rapid development and community support	React.js, Node.js, Express.js, MongoDB
2	Security Implementations	JWT authentication, password hashing, HTTPS, input validation, role-based access control	JWT, bcrypt, Helmet, CORS, OWASP practices
3	Scalable Architecture	Modular codebase, RESTful APIs, stateless backend, cloud-ready deployment	Docker, AWS, MongoDB Atlas, Microservices (future)
4	Availability	High uptime via cloud deployment, load balancing, and database replication	AWS EC2, Heroku, MongoDB Atlas, Nginx
5	Performance	Optimized queries, caching, CDN for static assets, efficient API design	MongoDB indexing, Redis (future), Cloudflare CDN