**Project Design Phase-II**

**Technology Stack (Architecture & Stack)**

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| Date | 26-06-2025 |
| Team ID | LTVIP2025TMID59696 |
| Project Name | Shopsmart: your digital grocery store experience |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

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ShopSmart – Your Digital Grocery App is built using a robust and scalable 3-tier architecture, ensuring high performance, modularity, and maintainability to support real-time grocery transactions between customers and local vendors.

🔹 Architecture Layers:

1. Presentation Layer (Frontend):  
User-friendly web and mobile interface for customers and vendors to search products, manage orders, track deliveries, update inventory, and view notifications.

2. Business Logic Layer (Backend):  
Handles user authentication, product catalog management, order processing, vendor dashboards, delivery updates, payment handling, and admin functionalities.

3. Data Storage Layer:  
Secure and scalable storage of user profiles, product listings, order history, inventory data, reviews, and payment transactions.

The system is integrated with third-party APIs for real-time location tracking, SMS/email notifications, and secure payment gateways to provide a seamless shopping experience.

Table-1: Components & Technologies

| S.No | Component | Description | Technology |
| --- | --- | --- | --- |
| 1 | User Interface | Responsive UI for customers and vendors | HTML, CSS, JavaScript, Angular |
| 2 | Application Logic-1 | Manages customer-facing operations like browsing, cart, orders | Node.js, Express.js |
| 3 | Application Logic-2 | Vendor management, admin dashboard, inventory control | Angular, Node.js |
| 4 | Database | Stores product data, user info, orders, feedback, transactions | MongoDB or Firebase |

Table-2: Application Characteristics

| S.No | Characteristics | Description | Technology |
| --- | --- | --- | --- |
| 5 | Open-Source Frameworks | Modern frontend and backend tools | Angular, Node.js, Bootstrap, Tailwind CSS |
| 6 | Scalable Architecture | 3-tier model with modular microservices and REST APIs | Microservices, RESTful APIs |

References:

* Angular Documentation
* Node.js Best Practices
* [MongoDB Documentation](https://www.mongodb.com/docs)
* [Technical Architecture Guide](https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d)