Project Design Phase-I
Solution Architecture

Date	20 Feb 2026
Team ID	LTVIP2026TMIDS91056
Project Name	ShopSmart: Your Digital Grocery Store Experience
Maximum Marks	4 Marks

Solution Architecture:

The ShopSmart system follows a web-based multi-tier architecture consisting of the presentation layer, application layer, and data layer. This architecture ensures scalability, maintainability, and secure data processing while providing a responsive user experience.

Architecture Components

Presentation Layer (Frontend)

This layer provides the user interface through which customers, sellers, and administrators interact with the system. It includes web pages for browsing products, managing carts, placing orders, and viewing dashboards.

Application Layer (Backend)

The backend handles business logic, user authentication, order processing, payment handling, and communication between the frontend and database. It ensures smooth system operations and secure processing of requests.

Data Layer (Database)

The database stores user information, product details, inventory data, orders, and transaction records. It ensures data consistency, integrity, and efficient retrieval.

Data Flow Description

1. Users interact with the web interface to browse or purchase products.

2. Requests are sent to the backend server for processing.

3. The backend retrieves or updates data from the database.

4. Processed information is returned to the user interface.

5. Payment gateway processes transactions securely.

Security Considerations

- User authentication and authorization

- Secure payment processing

- Data encryption

- Privacy protection measures

- Secure database access

Scalability and Performance

The architecture supports scalability to handle increasing users, products, and transactions. Efficient database queries and optimized backend processing ensure good performance and responsiveness.

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