

**Project Design Phase**  
**Solution Architecture**

Date	19/02/2026
Team ID	LTVIP2026TMIDS39395
Project Name	<b>ShopSmart – Digital Grocery Web Application</b>
Maximum Marks	4 Marks

**Solution Architecture:**

Solution architecture is a structured process that bridges the gap between business problems and technology solutions. In the case of **ShopSmart – Digital Grocery Web Application**, it ensures that customer needs are transformed into a scalable and efficient technical system.

Its goals are to:

- **Find the best tech solution to solve existing business problems:**

ShopSmart addresses problems like long queues in grocery stores, limited product visibility, and difficulty in tracking orders. The solution uses Angular (frontend), Node.js & Express.js (backend), and MongoDB (database) to provide a seamless online grocery shopping experience.

- **Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders:**

The system follows a 3-tier architecture:

- Presentation Layer (Angular UI)
- Application Layer (Node.js backend APIs)
- Data Layer (MongoDB database)

This structure ensures smooth communication between user interface, server logic, and data storage.

- **Define features, development phases, and solution requirements:**

Key features include:

- User registration & login
- Product browsing & search
- Add to cart & checkout
- Secure online payment
- Order tracking
- Admin product management

Development phases:

1. Requirement Analysis
2. System Design

### 3. Development

### 4. Testing

### 5. Deployment

- Provide specifications according to which the solution is defined, managed, and delivered:

The solution uses REST APIs for communication, JWT for authentication, and MongoDB for data storage. The application is designed to be scalable, secure, and user-friendly.

### Solution Architecture Diagram:

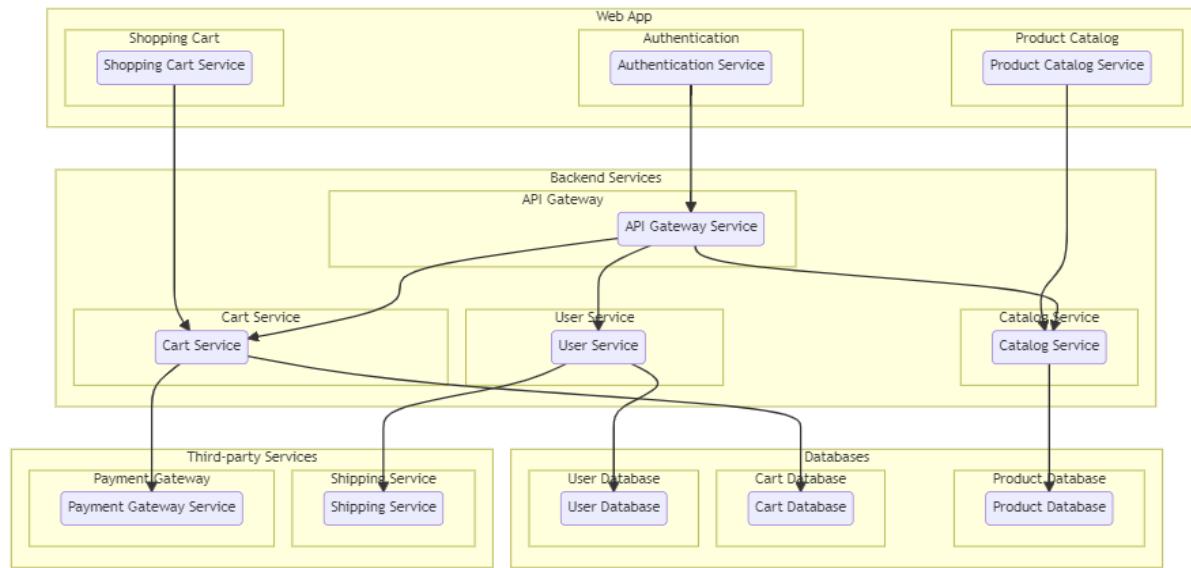


Figure 1: Architecture and data flow of the ShopSmart

Reference: <https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/>