**Project Design Phase**

**Solution Architecture**

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| Date | 26 June 2025 |
| Team ID | LTVIP2025TMID59506 |
| Project Name | ShopEZ:One-Stop Shop for Online Purchases |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

To develop an affordable, scalable, and user-friendly e-commerce platform that empowers small and local shopkeepers to easily establish an online presence, manage their business digitally without technical expertise, and connect directly with customers seeking reliable, locally sourced products through a seamless and secure shopping experience.

**1. Frontend (Client Side) – React.js**

* **Components:** Product listings, cart, checkout, user dashboard, admin panel
* **State Management:** Redux (for cart, user session, etc.)
* **Routing:** React Router
* **Security:** Client-side JWT token handling for auth

**2. Backend (Server Side) – Node.js + Express.js**

* **API Layer:** RESTful API endpoints for product CRUD, orders, authentication, etc.
* **Middleware:** JWT auth, error handling, CORS, input validation

**3. Database – MongoDB**

* **Collections:** Users, Products, Orders, Reviews, Payments
* **ODM:** Mongoose for schema definitions and queries
* **Scalability:** Supports sharding and replication for large data sets

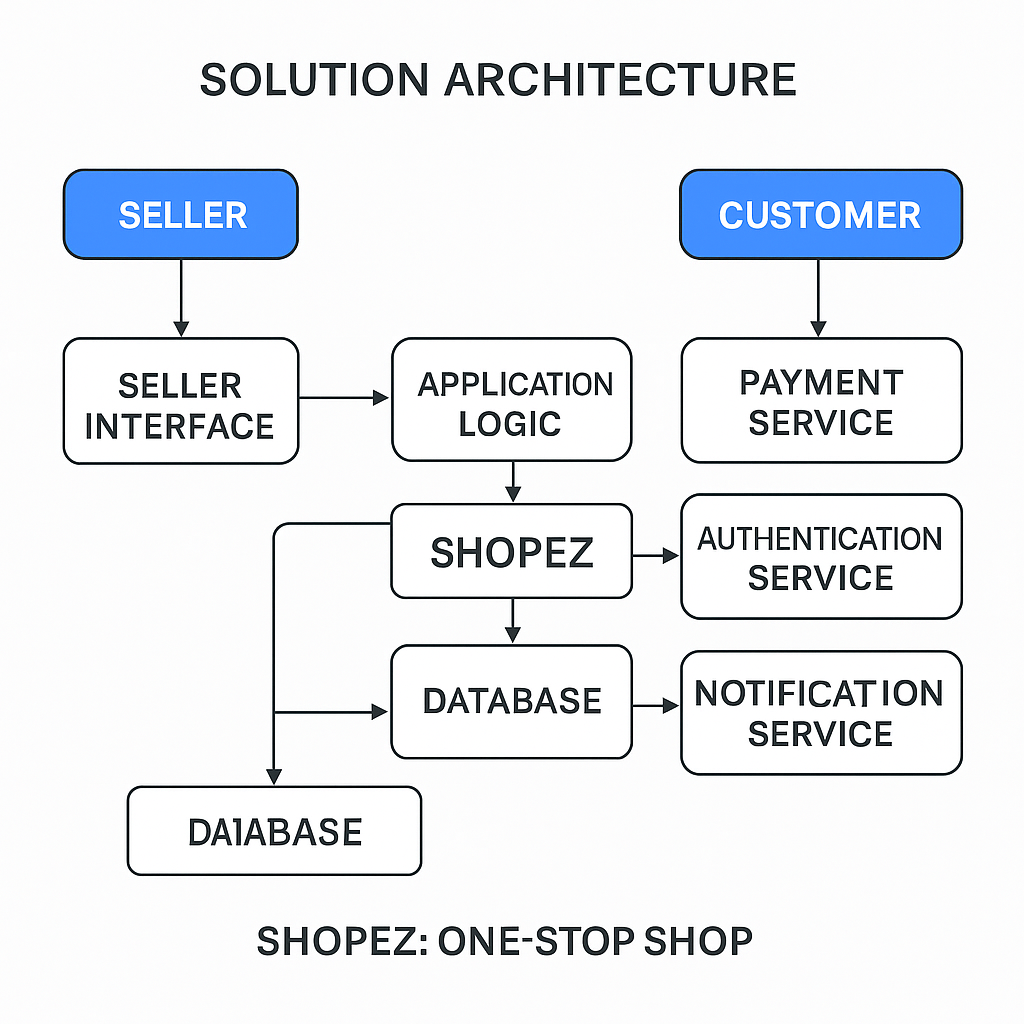
**4. Authentication & Authorization**

* **User Auth:** JWT-based authentication
* **Roles:** Role-based access control (buyer, seller/admin)
* **Password Security:** bcrypt for hashing

**5. Payment Gateway Integration**

* **Stripe or Razorpay APIs** for secure online payments
* **Transaction records** stored and linked to orders

**Example - Solution Architecture Diagram:**

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