

## **MERN Stack Training**

**Company:** Sensation Software Solutions

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**Training Duration:** 6 Months

**Days:** 91

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### **Objective of the Day**

The primary objective of **Day 91** was to perform an in-depth **backend code review and refactoring** of the GadgetShop project. Since the project was approaching completion, the focus shifted from feature development to **stability, scalability, and maintainability** of backend code.

The trainer emphasized that in real industry projects, the final phase involves improving code quality, removing redundancy, and ensuring that backend APIs are production-ready.

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### **Backend Code Review Process**

The day started with a complete walkthrough of the **Node.js + Express backend repository**. Each major module was reviewed carefully, including:

- Product APIs
- Authentication and Authorization logic
- Cart and Wishlist APIs

- Order and Checkout APIs

Special attention was given to how data flows between controllers, routes, and database models.

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## Refactoring API Controllers

Several backend controllers were refactored to improve readability and performance:

- Removed duplicate logic across APIs
- Centralized error handling using middleware
- Improved naming conventions for variables and functions
- Ensured async/await usage with proper try-catch blocks

This made the backend code easier to debug and more professional.

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## Database Consistency & Validation

MongoDB schemas were reviewed to ensure:

- Required fields are properly validated
- Default values are applied correctly
- Enum values (order status, product categories) are enforced

This step ensured **data consistency**, which is critical for large-scale applications.

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## Security Improvements

Security-related checks were reviewed:

- JWT token verification in protected routes
- Role-based access for admin APIs
- Prevention of unauthorized product updates or deletions

The trainer explained how weak backend validation can cause serious production issues.

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## Hands-on Practice

- Tested APIs after refactoring
  - Verified no breaking changes
  - Checked database entries manually
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## Conclusion

Day 91 focused heavily on **backend code quality and security**, ensuring that GadgetShop's server logic follows professional industry standards and is stable for deployment.