MERN Stack Training
Company: Sensation Software Solutions
Student Name: Tajinder Kaur
Training Duration: 6 Months
Days: 92

Objective of the Day

The objective of **Day 92** was to improve **backend performance** and optimize API responses to handle real-world user traffic efficiently.

API Performance Analysis

The trainer explained how unnecessary data transfer and heavy database queries slow down applications. Existing APIs were analyzed for:

- Over-fetching of data
- Unoptimized MongoDB queries
- Repeated database calls

Optimizing Product APIs

Product listing APIs were optimized by:

- Selecting only required fields using `.select()`

- Implementing pagination logic
- Reducing payload size for frontend rendering

This improved page load speed significantly.

Order & Cart API Improvements

Order APIs were improved to:

- Prevent duplicate orders
- Validate cart items before checkout
- Handle stock availability at backend level

Backend logic was added to ensure **business rule enforcement**, not just frontend validation.

Error Handling & Logging

Global error handling middleware was enhanced to:

- Log errors internally
- Return clean, user-friendly error messages
- Avoid exposing sensitive server information

This reflects real production practices.

Hands-on Practice

- Load tested APIs with multiple requests
- Simulated invalid API calls
- Verified error responses

Conclusion

Day 92 strengthened the **backend performance and robustness** of the GadgetShop project, making it suitable for real users and higher traffic loads.