

## Week 3

1. Implemented secure Shopify webhook handler with HMAC verification, idempotency checks, event routing (order/checkout events), async queue processing, retry logic, and sandbox-tested integrations.
2. Built Product Catalogue Sync service supporting full and incremental sync, product/variant mapping, image optimisation for WhatsApp, scheduled 6-hour sync, and admin-triggered manual sync endpoint.
3. Developed a real-time Inventory Management system with stock validation before order creation, Redis-based inventory caching, multi-location support, and webhook-driven cache invalidation.
4. Integrated low-stock alerts and out-of-stock handling to prevent overselling and maintain accurate order processing flows.
5. Implemented Customer Data Management module with lookup (phone/email), create/update workflows, order history retrieval, Redis caching, and GDPR-compliant export/deletion handling.
6. Developed Shopify Admin UI Extension to display WhatsApp payment status, UPI details, reconciliation state, analytics dashboard, and manual reconciliation interface.
7. Strengthened reliability with async processing, detailed logging, failure monitoring, and comprehensive unit + integration test coverage across webhooks, sync, and inventory modules.

**Supervisor's Comments and Signature :**