Medical Inventory Management System

Klm College Of Engineering For Women

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1. Assignments

Objective: I led the development of a Salesforce-based **Medical Inventory Management System**. I created my Salesforce account and followed the guided project with support from my teammates. We collaborated by dividing tasks and solving errors using AI assistance.

Detail:

"As we worked on the Medical Inventory project, each of us contributed knowledge and support to others. Member 1 mapped the inventory flow, helping everyone understand the hospital's supply chain needs. Member 2 led data modeling sessions with clear explanations. I (Member 3) created the testing plan, which we refined collaboratively. Member 4 configured real-time inventory alerts using Flow Builder. These shared learning sessions made our output and our teamwork stronger."

2. Ideation Phase

1. Brainstorming Document

Challenge:

"How can we build an effective medical inventory management system inside Salesforce?"

Constraints & Context:

- o Must utilize Salesforce objects, automation, and reports
- o Must support integration with hospital ERP or supplier API

- o Mobile accessibility for warehouse/medical staff
- o Timeline: ~8 weeks

Ideation Techniques:

SCAMPER

o Mind mapping user roles: Admin, Nurse, Pharmacist, Inventory Clerk

• Raw Ideas:

- 1. Custom "Stock Request" object with approval process
- 2. Expiry alerts for medicines
- 3. Mobile form for staff to log usage
- 4. Real-time dashboard of inventory levels
- 5. Automated reorder triggers when stock falls below threshold
- 6. Supplier API integration for ordering
- 7. Patient-linked consumption tracking
- 8. Batch/lot tracking for medicines
- 9. QR/barcode scanning for inventory updates
- 10. Post-usage feedback/logs for critical items

Categorization:

Operations: Item usage, restocking

Monitoring: Dashboards, alerts

Experience: Mobile usability, traceability

Evaluation & Shortlisting:

Selected top ideas: automated reorder, expiry alerts, mobile logging, QR integration, batch tracking.

2. Empathy Map (Persona: Hospital Pharmacist)

Says	Thinks	Does	Feels
"I need faster access	"Are critical medicines	Logs inventory in	Worried about
to stock."	running low?"	spreadsheets	stockouts

Says	Thinks	Does	Feels
"Why do we always reorder late?"	"Could automation help?"	Manually checks expiry dates	Overwhelmed, reactive
"I don't want to misplace anything."	"How can I trace each batch?"	Cross-checks paper logs	Anxious about compliance

3. Problem Statement

Context: Hospitals using manual processes and spreadsheets for inventory tracking.

Need: A digital solution to monitor stock, automate alerts, and simplify restocking.

Impact: Inefficiencies cause medication delays, stockouts, compliance issues.

How Might We:

"How might we empower medical staff with a Salesforce-based inventory solution that provides real-time tracking, expiry alerts, and streamlined procurement?"

3. Requirement Analysis

1. Customer Journey Map (Modified)

1. Inventory Request

Staff requests medicine via portal/app

2. Approval Workflow

Pharmacist/Manager approves or denies

3. Issuance

Stock issued and logged against patient or department

4. Consumption Logging

Usage recorded, batch/expiry tracked

5. Reorder Trigger

System detects low stock, initiates reorder

6. Supplier Fulfillment

API call to supplier, receives restocked items

7. Inventory Update

Records updated with quantity, expiry, batch

8. Monitoring & Reporting

Dashboards show critical stock, upcoming expiries

2. Data Flow Diagram (DFD)

- External Entities: Medical Staff, Pharmacist, Supplier
- **System:** Salesforce Medical Inventory Management

Processes:

- o P1: Inventory Request and Approval
- P2: Issuance & Consumption Logging
- o P3: Stock Monitoring & Alerts
- o P4: Supplier Integration & Replenishment
- o P5: Reporting & Compliance

Data Stores:

- Inventory
- Stock Requests
- Batch/Expiry Info
- Supplier Orders
- Usage Logs

3. Solution Requirements

Functional:

- Objects: Medicine, Inventory, StockRequest, Supplier, Batch, Reorder, Feedback
- Relationships: Medicine ↔ Batch ↔ Inventory; StockRequest ↔ User; Reorder ↔
 Supplier

• Automation:

- o Flow: Expiry alerts, low-stock reorders, usage confirmation
- Approval Processes: High-cost requests
- o Apex: Batch validations, expiry-based restrictions

Non-Functional:

- Response time < 2 seconds
- Availability: 99.9%
- Security: Field-level, role-based, encrypted
- Mobile support: Essential for warehouse/scanning tasks

Operational:

- Salesforce Enterprise or Health Cloud
- Defined permission sets for nurse, pharmacist, admin

4. Project Design Phase

1. Problem-Solution Fit

- **Problem**: Disconnected inventory systems lead to overstocking, wastage, and compliance risk.
- **Solution**: Unified Salesforce solution with expiry monitoring, QR-based tracking, and automated restocking.
- Validation:
 - o Interviews: Pharmacists prefer mobile logging and expiry alerts
 - Competitive Gap: Few SME-friendly solutions
 - Metrics: 20% reduction in waste, 30% faster restocking

2. Proposed Solution

Core Features:

- **Inventory Dashboard**: Medicine stock levels, expiry alerts
- Stock Requests & Approvals: Via mobile app
- **Consumption Tracking**: By batch, department, or patient
- **Reorder Automation**: Triggered when below threshold
- Supplier Integration: REST API-based
- Mobile App Support: Barcode scan, item usage logging

Supporting Features:

• Field-level security (e.g., batch visibility restricted to managers)

- Flow-based notifications and escalations
- Real-time alerts and compliance logs

3. Solution Architecture

Layers:

Layer	Description
Data Layer	Custom Objects: Medicine, Batch, StockRequest, Inventory, Supplier
Logic Layer	Apex Triggers, Validation Rules, Flow Automations
Integration Layer	Supplier APIs (REST), optionally ERP/MIS system
UI Layer	Lightning App, LWC for dashboards, Mobile Flows for barcode scanning
Reporting Layer	Expiry reports, stock consumption, reorder trends (Einstein optional)
Security Layer	Profiles, Roles, Encryption, Field-Level Security
DevOps	GitHub + Salesforce CLI, Sandboxes, Deployment via Change Sets

5. Project Planning

Tools Used:

• **ClickUp**: Task tracking and team assignments

• Miro: Project Gantt and stakeholder roadmap

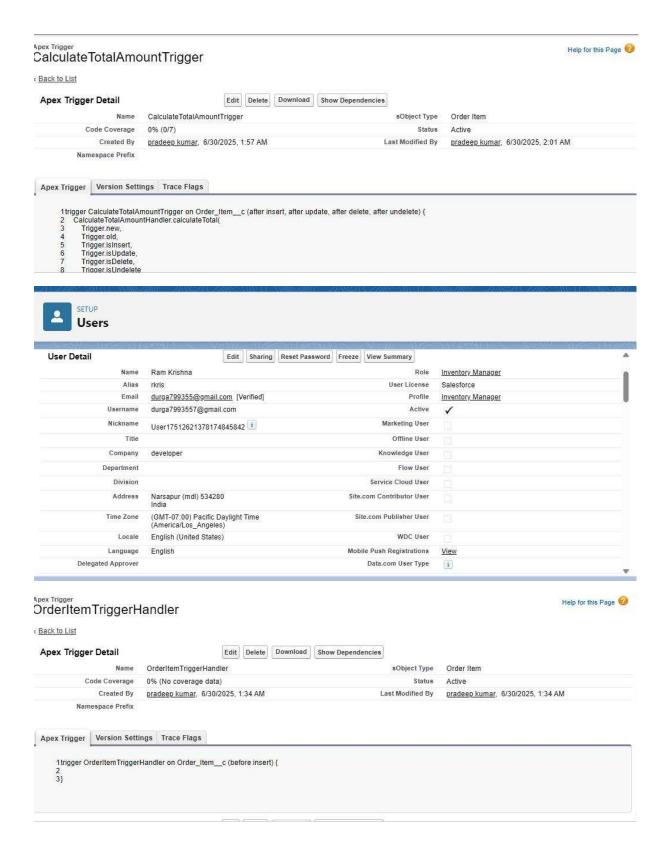
• Excel/Word: Task lists, RACI, status tracking

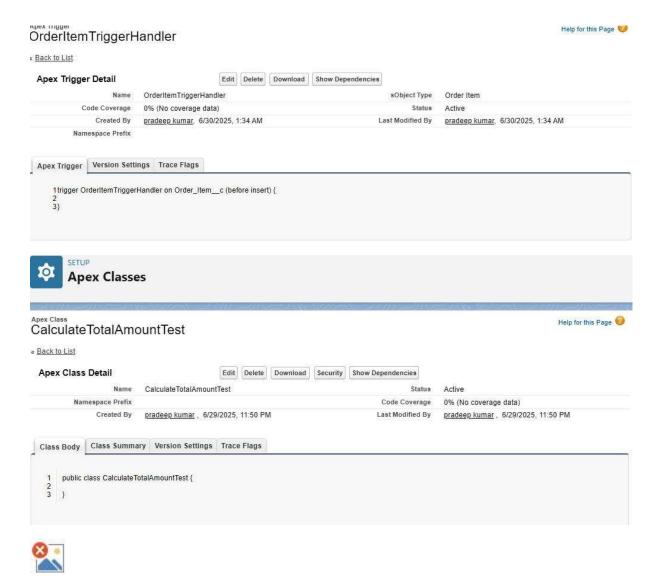
• Jira/Asana: Optional for team sprints

6. Project Files

- GitHub Repositories:
 - o Medical Inventory Salesforce App
- Includes:

- Custom Object Definitions
- Apex Classes & Flows
- Screenshots





7. Functional & Performance Testing

Scope:

Medicine creation, QR scans, expiry updates, reorder flows

Metrics:

- < 2 sec response for mobile flows
- < 1% failure rate
- Handle up to 100 users logging data concurrently

Test Tools:

- JMeter scripts for Salesforce REST calls
- Salesforce Developer Console & Event Monitoring