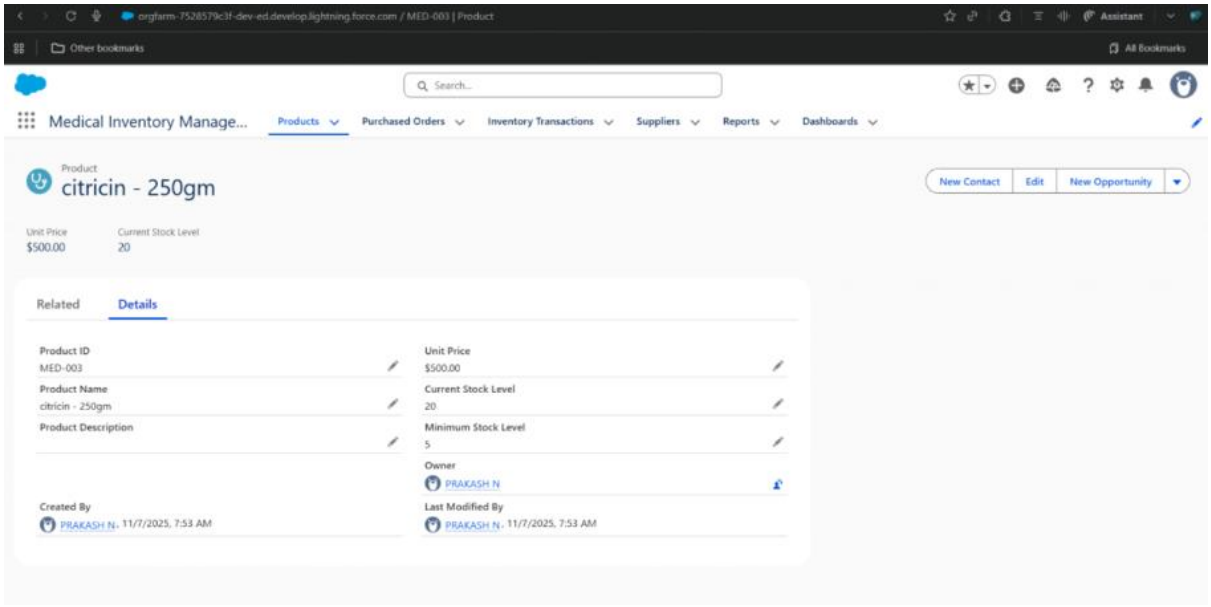
Phase 5: Performance Testing

Field	Details
Date	9 November 2025
Team ID	NM2025TMID02588
Project Name	Medical Inventory Management System
Maximum Marks	4 Marks

1. Preparation and Environment Setup

Aspect	Key Action	Salesforce Context
Test Environment	Use a **Full Sandbox** or a **Partial Copy Sandbox**.	**Crucial:** Performance results in Developer Sandboxes are not representative of production performance due to resource limitations.
Data Volume	Populate the sandbox with **production-like data volumes (LDV)**.	Simulate years of inventory history (millions of records for Inventory Item, Lot/Serial, and Transaction objects). This is vital for testing SOQL efficiency.
Salesforce Approval	**Notify Salesforce** of your intent to conduct load testing.	Salesforce requires advance notification (typically **two weeks**) to approve and monitor external load tests to prevent accident
Tooling	Use approved third-party tools (e.g., JMeter, LoadView) or dedicated Salesforce tools like **Scale Test** and **Scale Center**.	The tools must be capable of authenticating via API and simulating real user/integration load.



2. Critical Inventory Test Scenarios

Test Type	Inventory Scenario	Performance Focus
Load Testing	**Simultaneous Scanning/Issue:** Simulate 100+ concurrent nurses/techs scanning and recording consumption from supply closets (creating Transaction records) during a shift change.	Response time for a single Transaction create; Governor limits (CPU time, DML statements) in trigger/automation.
Spike Testing	**Receiving a Bulk Shipment:** Simulate 5-10 concurrent warehouse users uploading a large inbound shipment via API or Data Loader that creates thousands of new Lot/Serial records at once.	Stability under sudden, intense load; batch processing speed; database write performance.
Volume Testing	**High-Volume Report Generation:** Test running the monthly "Inventory Valuation Report" or the "Expired Inventory	SOQL query efficiency; index usage; report run time;

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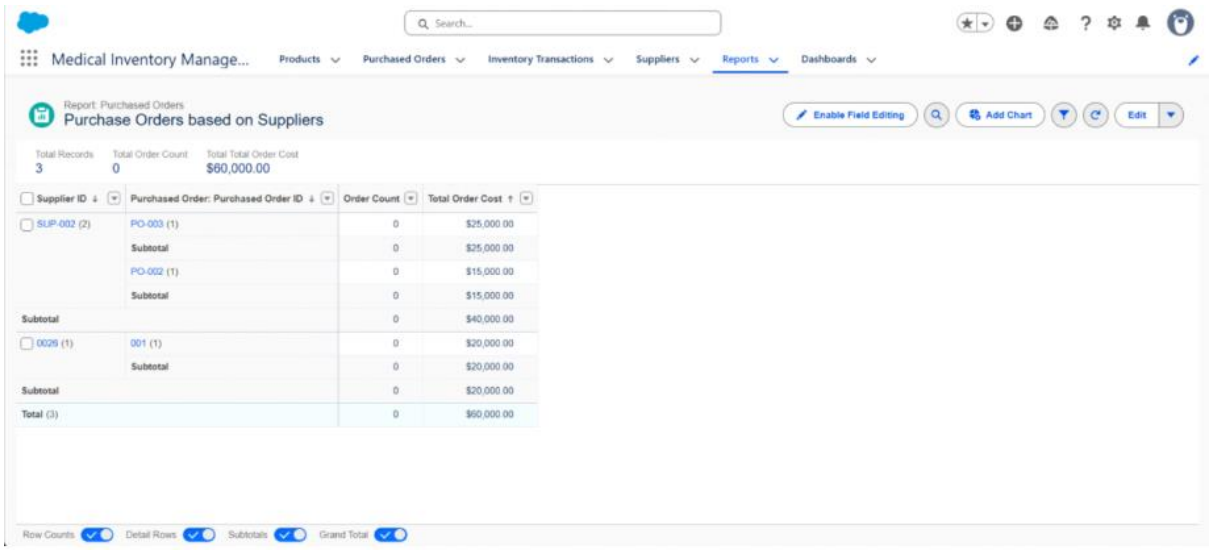
	Alert" report against the **full production data volume**.	**View State** issues in Visualforce/Apex.
Endurance Testing	**Continuous Reorder Processing:** Run the nightly automated reorder process (Flows/Batch Apex) continuously over a 6-8 hour period.	Memory leaks or growing resource consumption in Batch Apex jobs; performance degradation over time (soak test).
Integration Testing	**EHR Charge Capture:** Simulate the bulk asynchronous API call sending daily consumption records to the EHR/Billing system.	API response time under load; MuleSoft or other integration platform performance; error handling.



3. Common Optimization Focus Areas

- **SOQL Optimization:** Review all custom queries (SOQL). Ensure they are **selective** and utilize custom or standard indexes. Avoid unselective queries on large objects like Inventory__c or Lot_Serial__c.
- **Apex Bulkification:** Verify that all Apex triggers and classes handle data in bulk (e.g., operating on lists of 200 records) to avoid exceeding DML limits.

- **Governor Limits:** Closely monitor CPU time, heap size, and DML statements, as inventory processes (especially calculations like on-hand quantity) are resource-intensive.
- **Custom Sharing/Security:** Test the performance impact of complex sharing rules and custom permissions on large data sets, as these can severely slow down record retrieval.