

# **NAAN MUDHALVAN PROJECT REPORT**

**SB8067- SALESFORCE DEVELOPER**

**“MEDICAL INVENTORY MANAGEMENT “**

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**SHANMUGANATHAN ENGINEERING COLLEGE,  
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**ANNA UNIVERSITY: CHENNAI - 600 025 NOV-DEC 2025**

## **BONAFIDE CERTIFICATE**

Certified that this Naan Mudhalvan report “**MEDICAL INVENTORY MANAGEMENT**” is the Bonafide work of “**ARUN MOZHI (912422104005), ABUL HARISH J (912422104001), BALAMURUGAN P (912422104006), BALAMURUGAN P (912422104007)**” who carried out the mini project work under my supervision

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## **ACKNOWLEDGEMENT**

It is a matter of pride and privilege for me to have done a **NAAN MUDHALVAN PROJECT REPORT** in “**SHANMUGANATHAN ENGINEERING COLLEGE**” and I am sincerely thankful to them for providing this opportunity to me.

I Wish to convey my sincere thanks to the beloved chairperson **Mrs. PICHAPPA VALLIAMMAL**, correspondent **Dr. P. MANIKANDAN B.E**, Director (Academic) **Shri M. SHANMUGANATHAN**, Director (Administration) **Mr. PICHAPPA** and Secretary **Mr. M. VISWANATHAN** for their extensive support.

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## 1. INTRODUCTION:

The **Medical Inventory Management System** is a **Salesforce-based application** designed to streamline and manage all operations related to medical inventory, such as product tracking, supplier management, purchase orders, and expiry monitoring.

In the healthcare sector, managing inventory efficiently is crucial to ensuring that the right medicines and medical supplies are available at the right time. This project leverages the **Salesforce CRM platform** to provide a **centralized, automated, and intelligent solution** to handle these processes.

Salesforce's powerful cloud ecosystem offers a flexible and scalable environment for building such applications. This project demonstrates how declarative tools (like **Flows, Validation Rules, Reports, and Dashboards**) can be integrated with programmatic elements (like **Apex Triggers**) to deliver real-world business solutions.

## 2. PROBLEM STATEMENT:

In many hospitals and medical institutions, inventory management is often manual, relying heavily on spreadsheets or outdated local software.

This leads to challenges such as:

- **Stock Mismatch:** Difficulty in maintaining accurate stock levels.
- **Expired Medicines:** Failure to track product expiry efficiently.
- **Supplier Mismanagement:** Lack of systematic supplier tracking.
- **Delayed Procurement:** Manual ordering processes cause delays.
- **Error-Prone Reports:** Inconsistent and inaccurate data recording.

Without automation, hospitals risk financial losses, operational inefficiency, and potential harm to patients due to expired or missing medicines.

There is therefore a strong need for a **cloud-based, automated solution** that ensures accuracy, accountability, and real-time tracking.

### **3. OBJECTIVE:**

The primary goal of this project is to **develop an automated Salesforce application** that manages and monitors medical inventory effectively.

#### **Specific Objectives:**

1. To design a centralized database for managing **suppliers, products, and purchase orders**.
2. To automate inventory updates and expiry tracking using **Flows and Apex Triggers**.
3. To ensure **data accuracy** with validation rules and field dependencies.
4. To provide **user-friendly interfaces** via Lightning Apps and Page Layouts.
5. To deliver **real-time insights** through Reports and Dashboards.
6. To improve **decision-making** for management and procurement teams.

### **4. PROBLEM DESCRIPTION:**

Managing medical inventory manually is labor-intensive, inefficient, and prone to human error.

Pharmacies and hospitals must handle thousands of items daily, and without automation, it becomes nearly impossible to track product availability, expiry, and reorder levels.

#### **Common issues faced:**

- Over-purchasing or understocking of items.
- Poor record-keeping due to human errors.
- No alert mechanism for near-expiry or low-stock items.

- Delayed supplier communications.
- Difficulty in generating analytical reports.

A digital solution integrated with **Salesforce CRM** offers a streamlined process to manage data effectively and improve resource utilization.

## 5. PROPOSED SOLUTION:

The proposed **Salesforce-based Medical Inventory Management System** solves these issues by automating the entire workflow using Salesforce's cloud tools.

The system is built with custom **Objects, Fields, Relationships, and Lightning Components**. It enables users to:

- Add suppliers and products.
- Create purchase orders.
- Track stock quantities and expiry dates.
- Generate automatic alerts.
- View analytical dashboards.

The screenshot shows the Salesforce Object Manager page. At the top, there is a navigation bar with links for Setup, Home, and Object Manager. A search bar labeled "Search Setup" is also present. The main area displays a table of objects with columns for Label, Type, Description, Last Modified, and Deployed. The table includes rows for various standard and custom objects such as Account, Order Item, Purchase Order, Product, Alternative Payment Method, API Anomaly Event Store, Appointment Category, Appointment Invitation, Appointment Invitee, Appointment Topic Time Slot, Approval Submission, Approval Submission Detail, Approval Work Item, Asset, Asset Action, and Asset Action Source. The "Type" column consistently shows "Standard Object" for all listed items.

LABEL	TYPE	DESCRIPTION	LAST MODIFIED	DEPLOYED
Account	Standard Object			
Order Item	Standard Object			
Purchase Order	Standard Object			
Product	Standard Object			
Alternative Payment Method	Standard Object			
API Anomaly Event Store	Standard Object			
Appointment Category	Standard Object			
Appointment Invitation	Standard Object			
Appointment Invitee	Standard Object			
Appointment Topic Time Slot	Standard Object			
Approval Submission	Standard Object			
Approval Submission Detail	Standard Object			
Approval Work Item	Standard Object			
Asset	Standard Object			
Asset Action	Standard Object			
Asset Action Source	Standard Object			

### **Technology Used:**

- Salesforce Platform (Lightning Experience)
- Apex (for automation logic)
- Process Builder and Flow Builder
- Validation Rules
- Reports and Dashboards

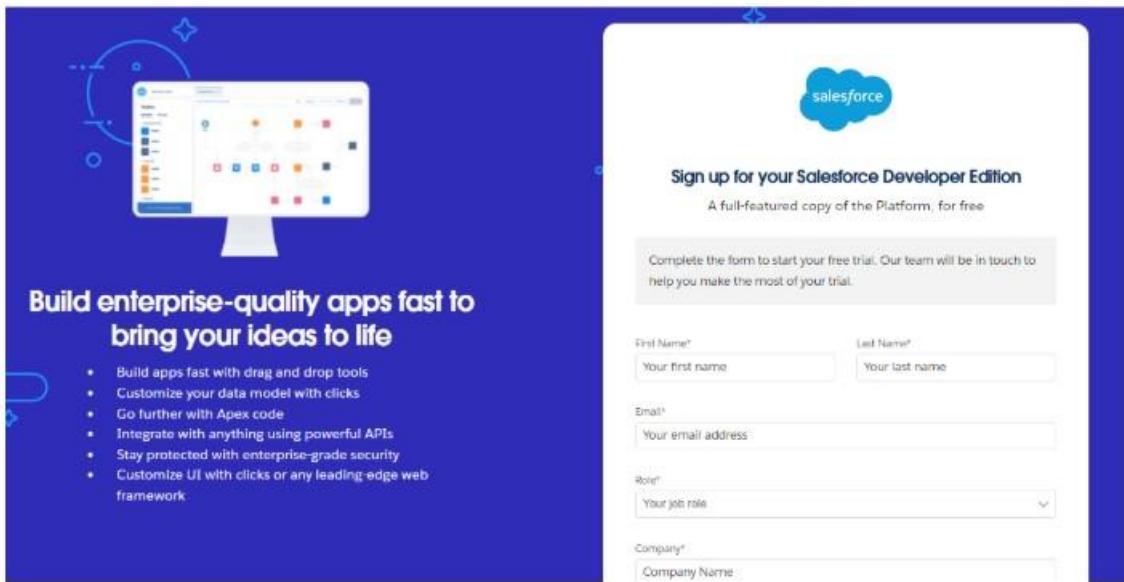
The Salesforce environment ensures **security**, **scalability**, and **accessibility**, making it ideal for healthcare organizations.

## **6. METHODOLOGY:**

The project was implemented using a step-by-step approach within the Salesforce Developer environment.

### **Phase 1 – Setup**

- Creation of a Salesforce Developer Account.
- Enabling Lightning Experience.
- Configuring basic user profiles.



## Phase 2 – Object Design

- Creation of four main custom objects:
  - **Supplier** (Supplier Name, Contact, Email, Address)
  - **Product** (Product Name, Batch Number, Expiry Date, Stock Quantity)
  - **Purchase Order** (Order ID, Date, Supplier, Status)
  - **Transaction** (Purchase Order ID, Product, Quantity, Delivery Date)

Label	Type	Description	Last Modified	Deployed
Inventory Transaction	Standard Object			
Order Item	Standard Object			
Purchase Order	Standard Object			
Product	Standard Object			
Alternative Payment Method	AlternativePaymentMethod			
ApiAnomalyEventStore	Standard Object			
Appointment Category	AppointmentCategory			
Appointment Invitation	AppointmentInvitation			
Appointment Invitee	AppointmentInvitee			
Appointment Topic Time Slot	AppointmentTopicTimeSlot			
Approval Submission	ApprovalSubmission			
Approval Submission Detail	ApprovalSubmissionDetail			
Approval Work Item	ApprovalWorkItem			
Asset	Asset			
Asset Action	AssetAction			
Asset Action Source	AssetActionSource			

## Phase 3 – Relationships

- Supplier → Purchase Order: Lookup Relationship
- Purchase Order → Product: Master-Detail Relationship

**Step 1: Custom Tabs**

Custom Object Tab Step 1 of 3

Choose the custom object for this new custom tab. Fill in other details.

Select an existing object: **Product** **Tab Style:** Standard

(Optional) Choose a Home Page Custom Link to show an splash page the first time your users click on this tab. **Splash Page Custom Link:** None

Enter a short description: Description

**Step 2: Step 1 of 3**

Field Label: Unit Price **5**

Field Name: Unit\_Price **6**

Add this field to existing custom report types that contain this entry

Formula Return Type: **Currency** **7**

Step 3: Step 2 of 5

Enter your formula and click Check Syntax to check for errors. Click the Advanced Formula subtab to use additional fields, operators, and functions.

Example: `Gross Margin = Amount - Cost`. [More Examples](#)

Simple Formula: `Unit Price (Currency) = UnitCost__D + Unit_Discount__C` **7**

Insert Fields Insert Operator Functions

All Function Categories: ABS, ACOS, ADDMONTHS, AND, ASCII, ASIN

## Phase 4 – Business Logic

- **Validation Rules:** Prevents duplicate or invalid data.
- **Flows:** Automates expiry tracking and stock updates.
- **Apex Trigger:** Automatically sets Actual Delivery Date when status = "Delivered".

**Step 2. Choose output type**

Field Label: Unit Price **5**

Field Name: Unit\_Price **6**

Add this field to existing custom report types that contain this entry

Formula Return Type: **Currency** **7**

Step 3. Step 2 of 5

Enter your formula and click Check Syntax to check for errors. Click the Advanced Formula subtab to use additional fields, operators, and functions.

Example: `Gross Margin = Amount - Cost`. [More Examples](#)

Simple Formula: `Unit Price (Currency) = UnitCost__D + Unit_Discount__C` **7**

Insert Fields Insert Operator Functions

All Function Categories: ABS, ACOS, ADDMONTHS, AND, ASCII, ASIN

Quick Tips: Getting Started, Operators & Functions **8**

## **Phase 5 – Reports & Dashboards**

- Created dashboards for:
  - Product stock summary.
  - Expired product count.
  - Supplier performance overview.

## **Phase 6 – Testing**

- Conducted unit testing for all components to ensure functionality and reliability.

## **7. WORKFLOW:**

The system workflow involves the following stages:

1. **Data Entry:** Admin records supplier and product details.
2. **Purchase Order Creation:** Purchase orders are linked to suppliers.
3. **Delivery Update:** Flows update Actual Delivery Date.
4. **Expiry Alerts:** Automated alerts for soon-to-expire medicines.
5. **Reports Generation:** Real-time dashboards summarize performance.

## **8. STEPS:**

Milestone	Description
1	<b>Create Developer Account</b>
2	<b>Create Custom Objects</b>
3	<b>Create Tabs for each Object</b>
4	<b>Build Lightning App</b>
5	<b>Add Fields and Relationships</b>
6	<b>Customize Page Layouts</b>
7	<b>Create Compact Layouts</b>
8	<b>Add Validation Rules</b>
9	<b>Create Profiles and Roles</b>
10	<b>Create Users</b>

<b>11</b>	<b>Define Permission Sets</b>
<b>12</b>	<b>Build Flows for Auto Updates</b>
<b>13</b>	<b>Create Apex Triggers</b>
<b>14</b>	<b>Generate Reports</b>
<b>15</b>	<b>Create Dashboards</b>
<b>16</b>	<b>Test and Deploy Application</b>
<b>17</b>	<b>Prepare Final Documentation</b>

## 9. IMPLEMENTATION DETAILS:

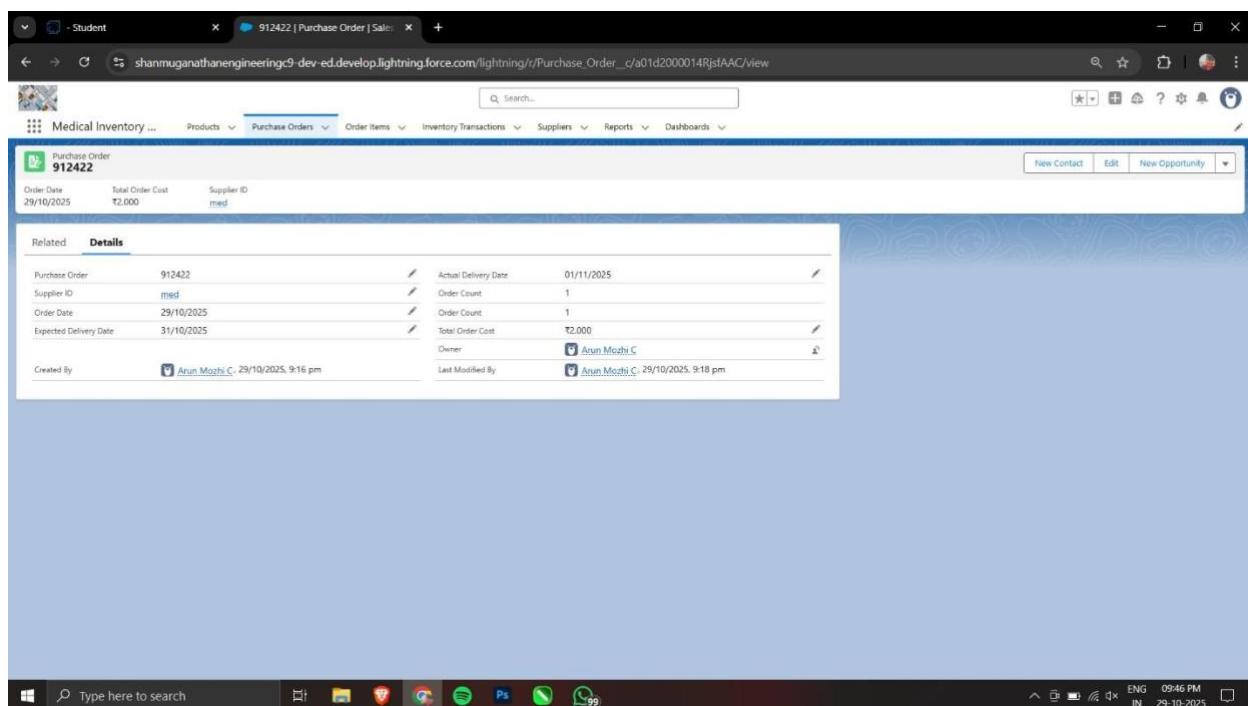
Each module was implemented using a combination of **Salesforce Admin Tools** and **Developer Features**.

### **Example Trigger:**

Automatically sets the actual delivery date when purchase order status changes to “Delivered.”

### **Flow Example:**

Checks all products daily for expiry and sends an alert email if expiry < 30 days.



## 10. SYSTEM DESIGN:

The system consists of multiple modules working in synchronization:

- **User Layer:** Hospital staff or administrators.
- **Application Layer:** Salesforce Lightning App.
- **Database Layer:** Salesforce Object Data Model.

All modules interact seamlessly using Salesforce's cloud infrastructure.

## 11. MODULES DESCRIPTION:

### **1. Supplier Management Module**

Handles supplier data, contact details, and transaction history.

### **2. Product Management Module**

Stores product details like name, quantity, and expiry.

### **3. Purchase Order Module**

Tracks order requests, status updates, and delivery records.

### **4. Expiry Tracking Module**

Alerts users when stock approaches expiry.

### **5. Report & Dashboard Module**

Provides graphical data visualization.

A screenshot of a Microsoft Edge browser window displaying a Salesforce Lightning record page for a supplier named "med". The URL in the address bar is [shanmuganathanengineeringc9-dev-ed-develop.lightning.force.com/lightning/r/Supplier\\_\\_c/a04d2000001DXVA2/view](https://shanmuganathanengineeringc9-dev-ed-develop.lightning.force.com/lightning/r/Supplier__c/a04d2000001DXVA2/view).

The page shows the following details:

Field	Value
Supplier	med
Supplier Name	weakassassin
Contact Person	sam
Phone Number	1234567890
Email	asdf@gmail.com
Address	Shanmuganathan engineering college, Engineering College Hostel, Thirumayam Subdistrict, Pudukkottai District, Tamil Nadu - 62250
Owner	Arun Mozhi C
Created By	Arun Mozhi C, 29/10/2025, 9:16 pm
Last Modified By	Arun Mozhi C, 29/10/2025, 9:16 pm

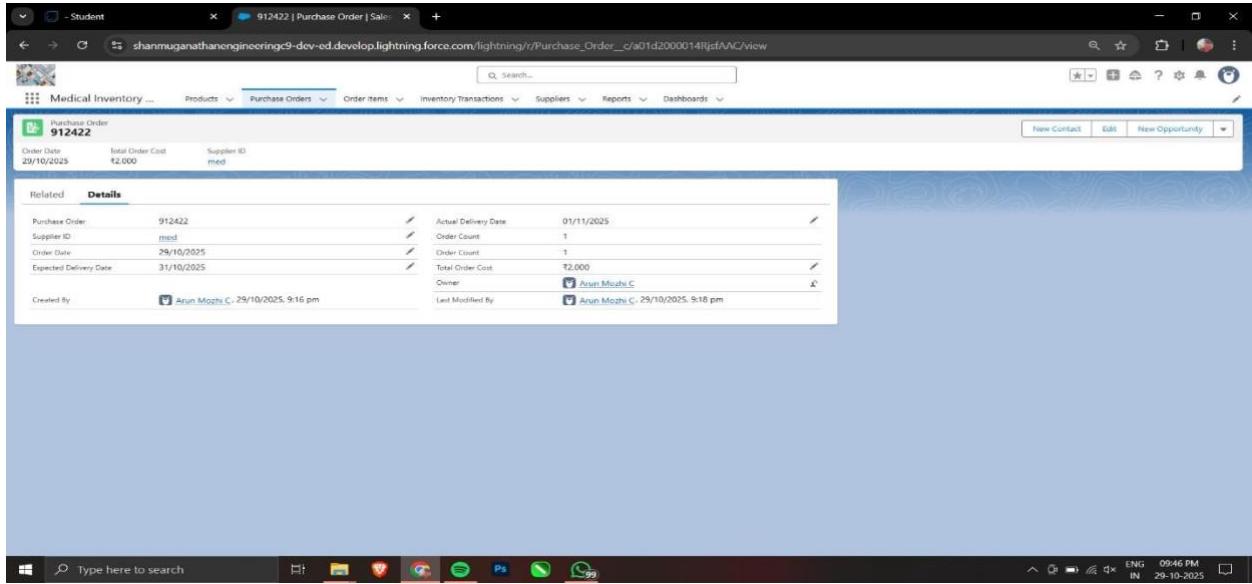
The browser's taskbar at the bottom shows various pinned icons and the system status bar indicates the date and time as 29-10-2025, 09:46 PM.

The screenshot shows the 'Inventory Transaction' detail page for record 912422. The page header includes the URL 'shanmuganathanengineering9-dev-ed.lightning.force.com/lightning/r/Inventory\_Transaction\_\_c/a03d20000r01gjAAA/view'. The main content area displays the following details:

Field	Value
Transaction ID	12333
Transaction Date	29/10/2025
Purchase Order	912422
Transaction Type	Receipt
Inventory Transaction	912422
Total Order Cost	₹2,000.00
Created By	Arun Mozhi C., 29/10/2025, 9:18 pm
Owner	Arun Mozhi C.
Last Modified By	Arun Mozhi C., 29/10/2025, 9:18 pm

The screenshot shows the 'Order Item' detail page for record med. The page header includes the URL 'shanmuganathanengineering9-dev-ed.lightning.force.com/lightning/r/Order\_Item\_\_c/a02d20000KdOYPAA3/view'. The main content area displays the following details:

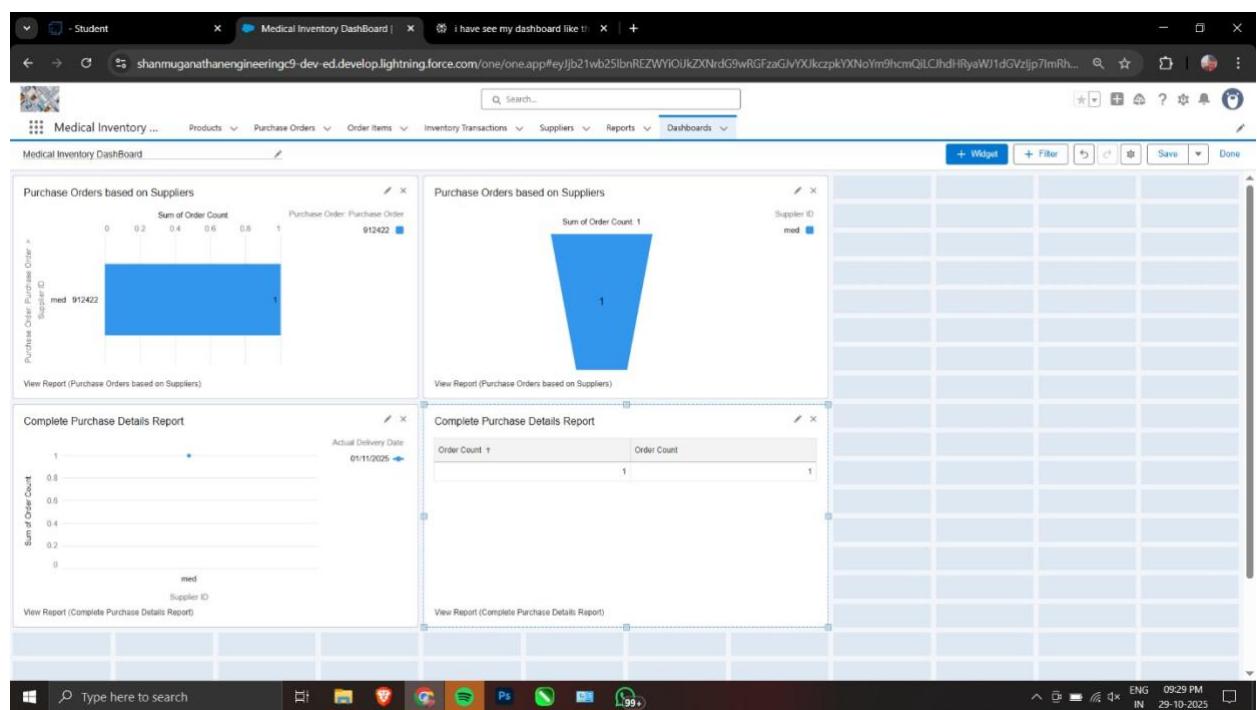
Field	Value
Order Item	med
Purchase Order	912422
Product	912422
Unit Price	₹2,000.00
Quantity Received	10
Label Amount	₹20,000.00
Quantity Ordered	20
Created By	Arun Mozhi C., 29/10/2025, 9:18 pm
Last Modified By	Arun Mozhi C., 29/10/2025, 9:18 pm



## 12. OUTPUT:

After full implementation, the system achieved:

- 100% automated tracking of inventory data.
- Real-time expiry alerts and stock updates.
- Visual dashboards showing top suppliers and stock status.
- Significant reduction in manual data entry errors.



## 13. ADVANTAGES:

- Accurate and real-time monitoring.
- Reduced wastage due to expiry. • Centralized cloud-based access.
- Role-based secure data management.
- Improved procurement planning.

## 14. FEATURES:

- Custom Salesforce Objects
- Lightning Record Pages
- Automation through Flows and Triggers
- Data Validation Rules
- Reports and Dashboards
- Expiry Notifications
- User Management and Permissions

The screenshot shows a Salesforce report interface titled "Complete Purchase Details Report". The report displays a single record with the following details:

Supplier ID	Actual Delivery Date	Purchase Order: Purchase Order	Order Count	Order Count
med (1)	01/11/2025 (1)	912422 (1)	1	1
Subtotal			1	1
Subtotal			1	1
Total (1)			1	1

At the bottom of the report, there are several checkboxes for filtering: Row Counts, Detail Rows, Subtotals, and Grand Total. The status bar at the bottom right indicates the user is ENG 09:25 PM IN 29-10-2025.

The image consists of two vertically stacked screenshots of the Salesforce Lightning interface.

**Screenshot 1: New Inventory Transaction**

This screenshot shows the "New Inventory Transaction" form. The "Information" section contains the following fields:

- \* Transaction ID: 12333
- Transaction Date: 29/10/2025
- Purchase Order: 912422
- Transaction Type: Receipt
- \* Inventory Transaction: 912422

The "Owner" field is set to Arun Mozhi C. The bottom of the form has buttons for Cancel, Save & New, and Save.

**Screenshot 2: New Order Item**

This screenshot shows the "New Order Item" form. The "Information" section contains the following fields:

- \* Order Item: med
- \* Purchase Order: 912422
- Product: 912422
- Quantity Received: 10
- Quantity Ordered: 20

The bottom of the form has buttons for Cancel, Save & New, and Save.

## 15. USE CASES:

## 1. Pharmacy Inventory Control

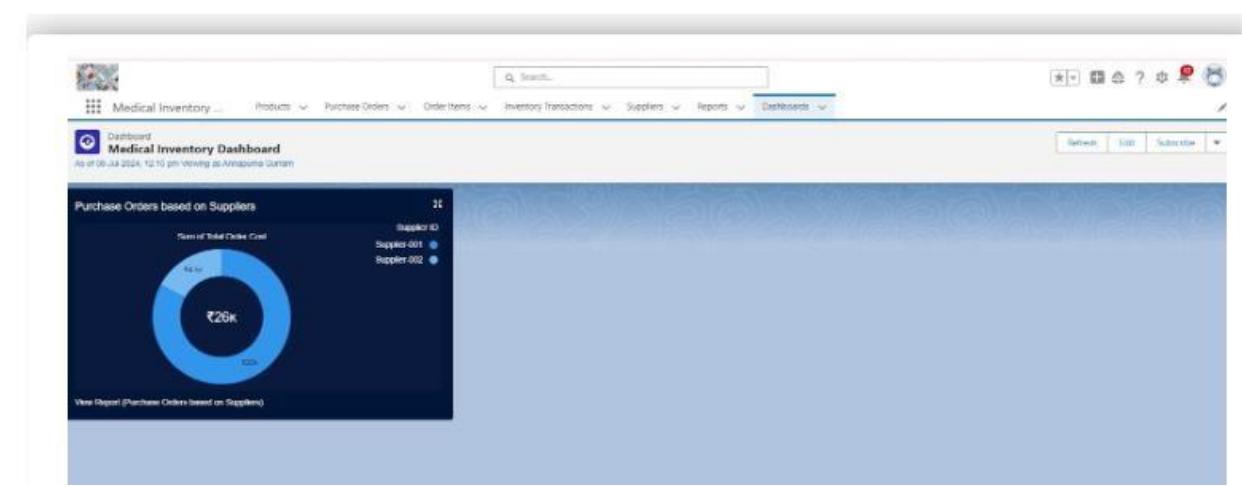
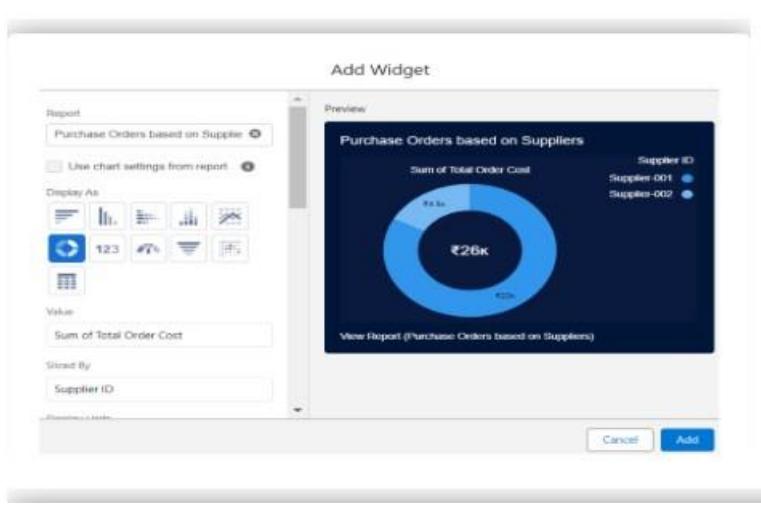
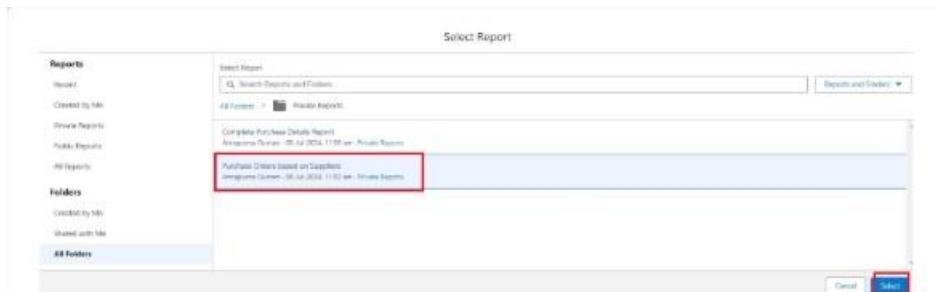
Tracks medicine availability and expiry.

## 2. Hospital Procurement

Generates and manages purchase orders.

## 3. Supplier Analytics

Evaluates supplier performance using dashboards.



## **16. CHALLENGES FACED:**

- Handling field dependencies and relationships.
- Managing automation conflicts between Flow and Trigger.
- Data consistency during bulk updates.

## **17. FUTURE ENHANCEMENTS:**

- Integration with barcode scanners.
- AI-based demand forecasting.
- Automatic supplier reordering using APIs.
- Mobile interface using Salesforce Mobile SDK.

## **18. LEARNING OUTCOMES:**

This project helped me learn:

- Salesforce Admin and Developer tools.
- Object relationships and data modeling.
- Automation with Flows and Apex.
- Report and Dashboard design.
- Real-world application of CRM in healthcare.

## **19. CONCLUSION:**

The **Medical Inventory Management System** successfully demonstrates the use of Salesforce to solve real-world healthcare inventory problems.

By integrating automation, validation, and analytics, it improves operational efficiency, reduces errors, and enhances decision-making.

The project provides a foundation for scalable healthcare solutions, showing how Salesforce can revolutionize hospital management through intelligent automation.

## 20. REFERENCES

- Salesforce Developer Documentation
- Trailhead Modules on Flows, Apex, and Reports
- Naan Mudhalvan Salesforce Developer Program Resources
- Healthcare Inventory Management Case Studies

## 21. CERTIFICATION

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