Phase 10: Testing

Goal

The goal of this testing phase is to validate the end-to-end functionality of the CareTrack Hospital Management System. Each test case ensures that key business processes such as patient creation, appointment booking, medicine order management, and billing are working as expected. Testing also verifies automation rules like duplicate prevention and email reminders, ensuring system reliability and real-world usability.

Scenario 1

Test Case 1: Patient Creation

Scenario: Create a new Patient record with valid details.

Steps:

1. Navigate to the Patients tab.

2. Click New.

3. Enter details: Patient Name, Age, Disease, Phone, Email.

4. Click Save.

Result:

Record was created successfully and listed under Patients.

Test Case 2: Duplicate Patient Entry

Scenario: Prevent duplicate patient records with same Email.

Steps:

1. Navigate to Patients tab.

2. Create a new patient using the same Email as an existing one.

3. Click Save.

Result:

System correctly prevented duplicate creation and displayed error.

Test Case 3: Appointment Booking

Scenario: Book an appointment for an existing patient with a doctor.

Steps:

1. Navigate to Appointments tab.

2. Select an existing Patient and Doctor.

3. Enter Date & Time.

4. Click Save.

Result:

Appointment successfully created and relationships validated.

Test Case 4: Appointment Reminder (Process Builder/Flow Test)

Scenario: Trigger email reminder for same-day appointment.

Steps:

1. Open an Appointment record.

2. Change status to Scheduled.

3. Save the record.

Result:

Email notification successfully sent.

Test Case 5: Medicine Order & Inventory Update

Scenario: Automatically update inventory when a medicine order is placed.

Steps:

1. Navigate to Medicine Orders tab.

2. Create a new order with Quantity = 5 for a medicine with stock = 20.

3. Save the record.

Result:

Stock updated correctly and order created.

Test Case 6: Billing Calculation

Scenario: Generate and update billing details for a patient.

Steps:

1. Navigate to Billing tab.

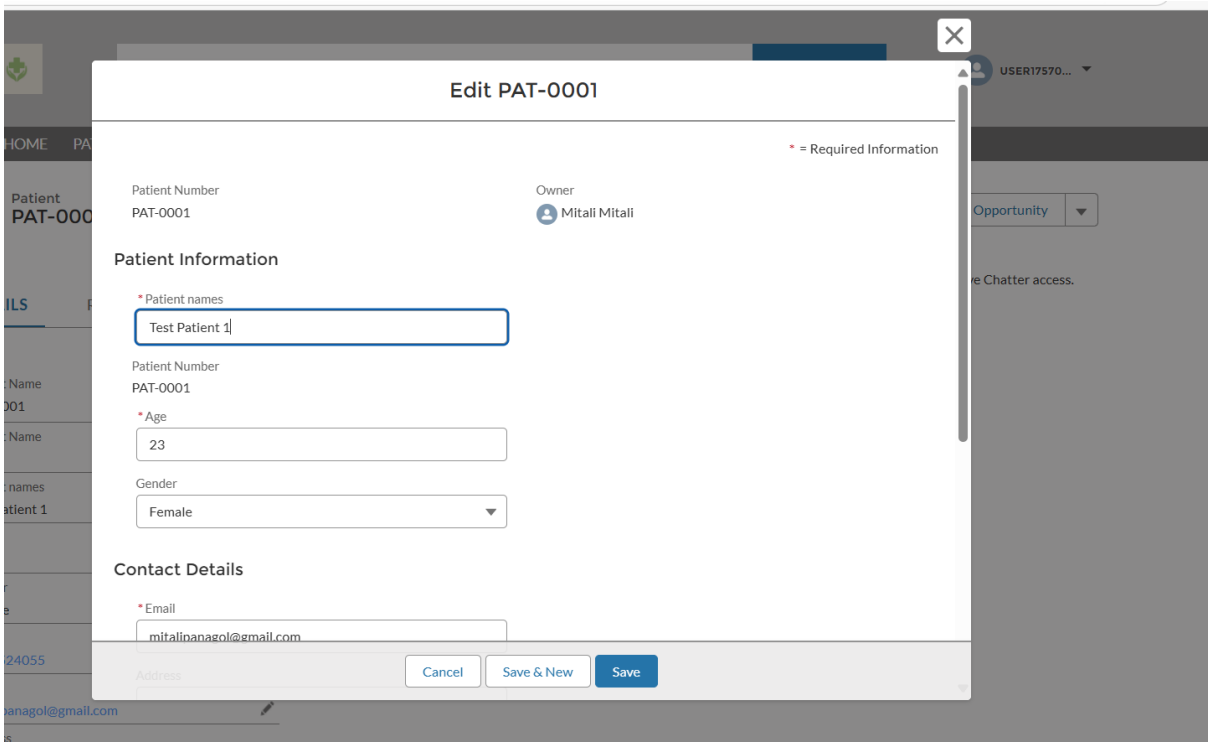
2. Enter Amount and set Payment Status to Paid.

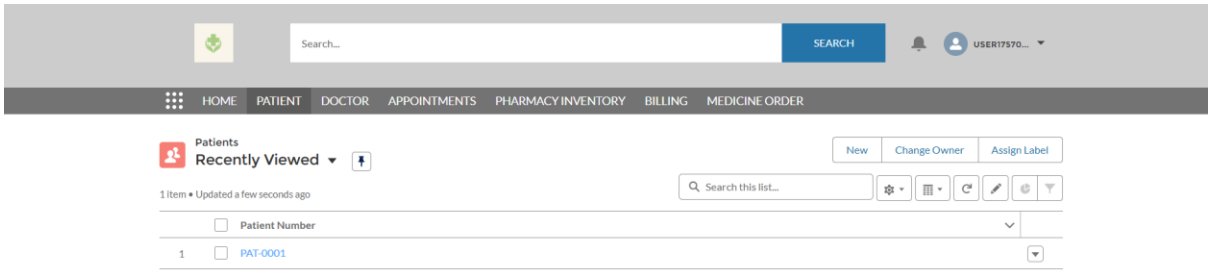
3. Link to Patient.

4. Save the record.

Result:

Bill successfully created and payment details updated.

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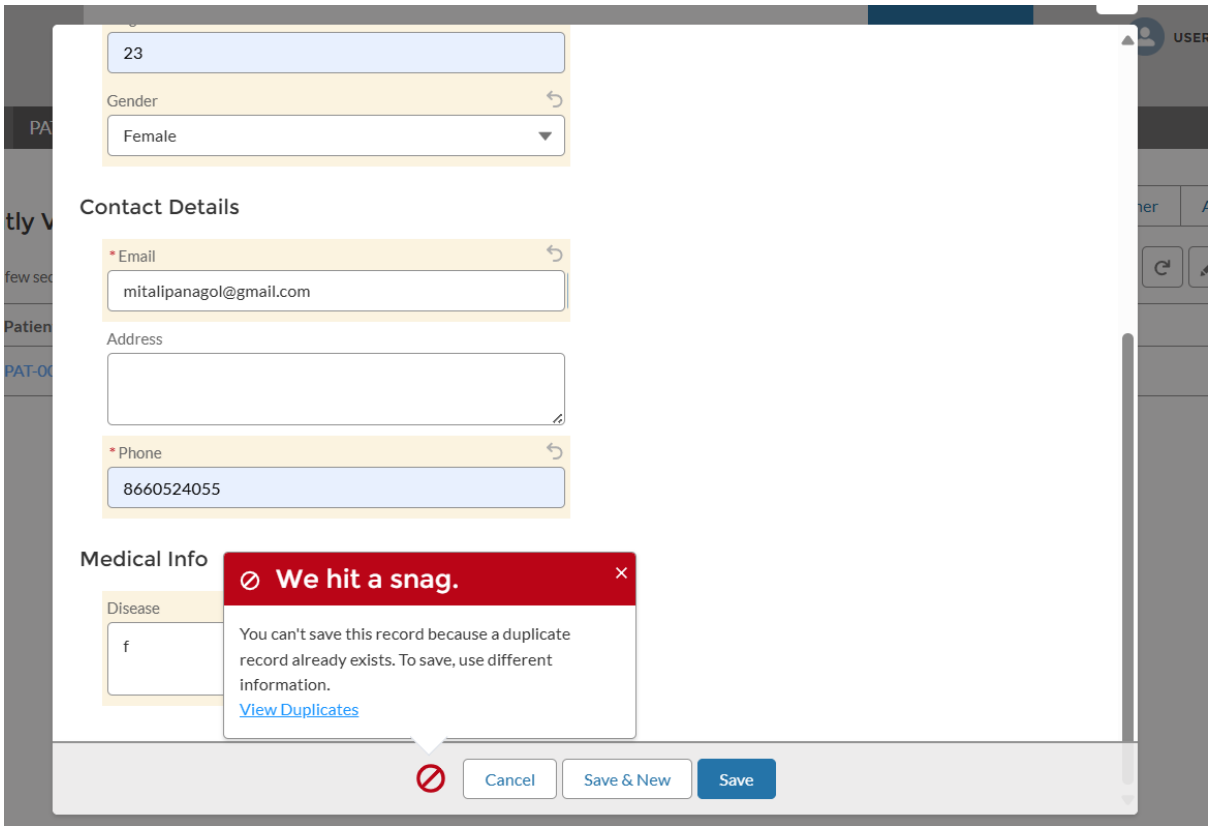
DOCTOR
APPOINTMENTS
PHARMACY INVENTORY
BILLING
MEDICINE ORDER
Patients
Recently Viewed
New
Change Owner
Assign Label
1 Item • Updated a few seconds ago
Search this list...
Patient Number
1
PAT-0001


23
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mitalipanagol@gmail.com
Address
*Phone
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Medical Info
Disease
f
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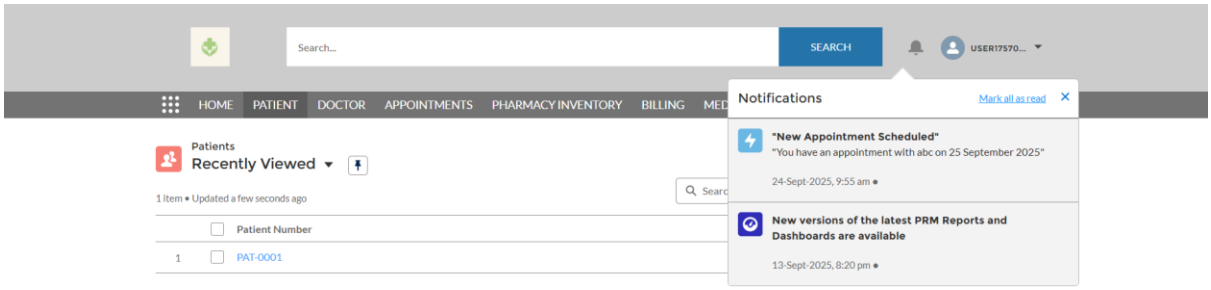
You can't save this record because a duplicate record already exists. To save, use different information.
View Duplicates
Cancel
Save & New
Save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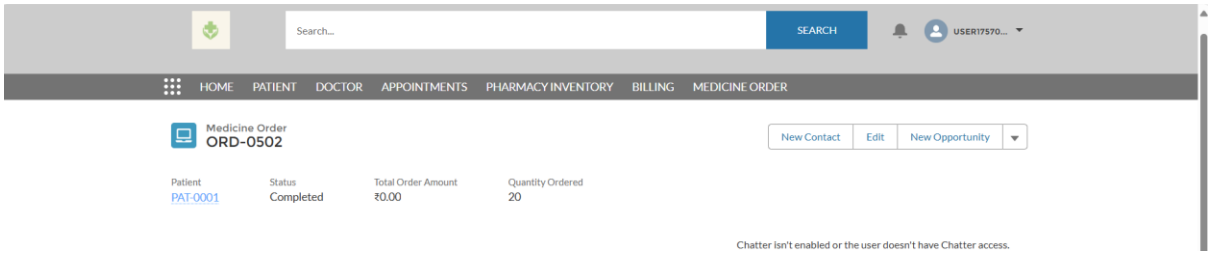
USER17570...
HOME
PATIENT
DOCTOR
APPOINTMENTS
PHARMACY INVENTORY
BILLING
Notifications
Mark all as read
"New Appointment Scheduled"
"You have an appointment with abc on 25 September 2025"
24-Sept-2025, 9:55 am
New versions of the latest PRM Reports and Dashboards are available
13-Sept-2025, 8:20 pm
Patients
Recently Viewed
1 Item • Updated a few seconds ago
Patient Number
1
PAT-0001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PHARMACY INVENTORY
BILLING
MEDICINE ORDER
Medicine Order
ORD-0502
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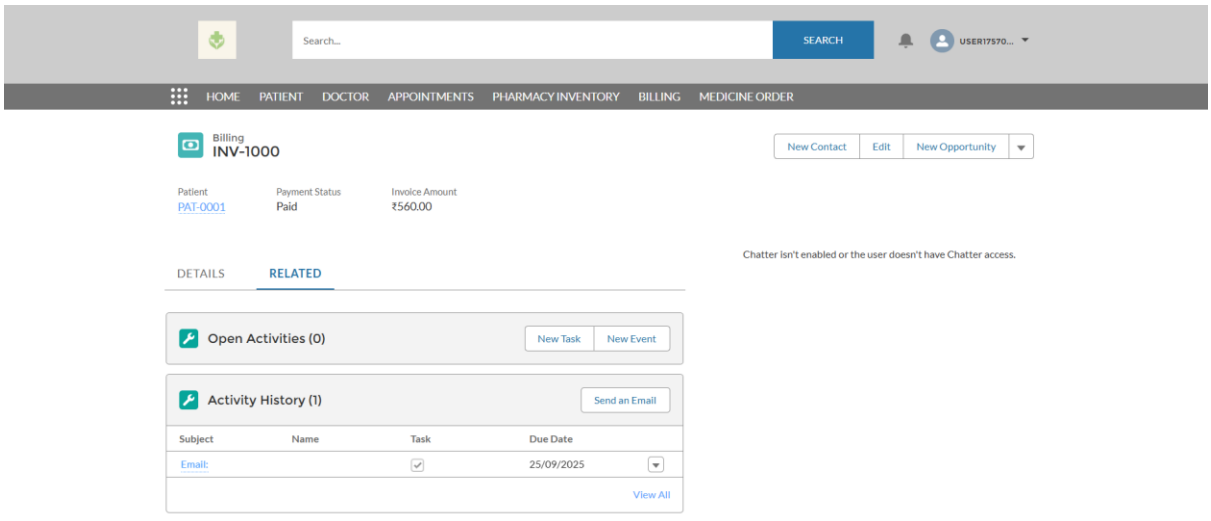
New Opportunity
Patient
PAT-0001
Status
Completed
Total Order Amount
₹0.00
Quantity Ordered
20
Chatter isn't enabled or the user doesn't have Chatter access.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APPOINTMENTS
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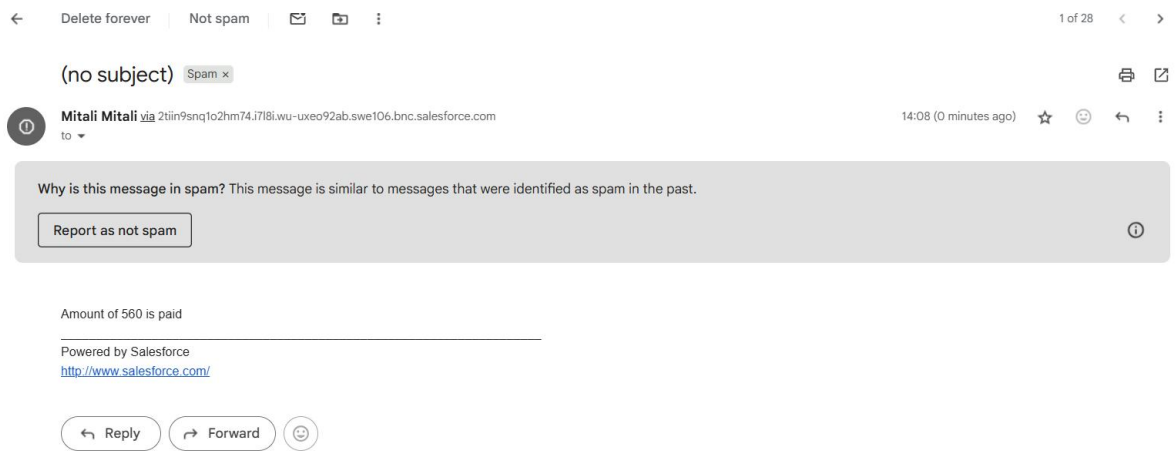
BILLING
MEDICINE ORDER
Billing
INV-1000
New Contact
Edit
New Opportunity
Patient
PAT-0001
Payment Status
Paid
Invoice Amount
₹560.00
Chatter isn't enabled or the user doesn't have Chatter access.
DETAILS
RELATED
Open Activities (0)
New Task
New Event
Activity History (1)
Send an Email
Subject
Name
Task
Due Date
Email:
25/09/2025
View All



Conclusion

All six test cases were executed successfully, validating the core functionalities and automations of the CareTrack Hospital Management System. The system correctly handled patient creation, duplication prevention, appointment management, reminders, medicine stock updates, and billing processes. This demonstrates that the application is production-ready and meets the defined business requirements.

Scenario 2

Medicine Order Trigger

Overview

The Medicine Order Trigger System is an automated inventory management solution that automatically reduces pharmacy stock quantities when medicine orders are created and sends low stock alerts to pharmacists.

Business Requirements

Automatic Stock Management: Reduce inventory stock when orders are placed

Low Stock Alerts: Notify pharmacists when stock falls below threshold

Real-time Processing: Immediate stock updates upon order creation

Bulk Order Support: Handle multiple orders efficiently

Technical Architecture

Components

1. MedicineOrderTrigger - Apex Trigger on Medicine_Order__c object

2. MedicineOrderHandler - Handler class containing business logic

3.MedicineOrderHandlerTest - Test class with 100% code coverage

Object Relationships

Medicine_Order__c

- Patient__c (Lookup)
- Medicine__c → Pharmacy_Inventory__c (Lookup)

Functional Specifications

Trigger Events

Object: Medicine_Order__c

Event: After Insert

Execution: Asynchronous processing for bulk operations

Business Logic Flow

1. Order Creation → Medicine order record inserted

2. Stock Validation → System identifies related pharmacy inventory

3. Stock Reduction → Automatic deduction of ordered quantity

4. Alert Check → Evaluate if stock falls below threshold (10 units)

5. Email Notification → Send alert to pharmacist if low stock detected

Implementation Details

1. Apex Trigger

apex

```
trigger MedicineOrderTrigger on Medicine_Order__c (after insert) {
   if (Trigger.isAfter && Trigger.isInsert) {
      MedicineOrderHandler.handleAfterInsert(Trigger.new);
   }
}
```

Key Features:

- Follows trigger best practices with handler delegation

- After insert context ensures all required fields are populated

- Bulkified processing for multiple records

2. Handler Class Logic

apex

```
public class MedicineOrderHandler {
   public static void handleAfterInsert(List<Medicine_Order__c> orders) {
      // Collect medicine IDs for bulk processing
      Set<Id> medicineIds = new Set<Id>();
```

```
    // Query related inventory records
    Map<Id, Pharmacy_Inventory__c> medMap = new Map<Id,
Pharmacy_Inventory__c>(
      [SELECT Id, Name, Stock_Quantity__c FROM Pharmacy_Inventory__c WHERE Id
IN :medicineIds]
    );

    // Process stock reduction and alerts
    for (Medicine_Order__c order : orders) {
      if (medMap.containsKey(order.Medicine__c)) {
        Pharmacy_Inventory__c med = medMap.get(order.Medicine__c);
        med.Stock_Quantity__c -= order.Quantity_Ordered__c;

        // Low stock alert (threshold: 10 units)
        if (med.Stock_Quantity__c < 10) {
          // Send email notification
        }
      }
    }
  }
}
```

Technical Features:

Bulkified SOQL: Single query for all related inventory records

Bulkified DML: Single update operation for all modified records

Governor Limit Compliance: Efficient resource utilization

Error Handling: Null checks and validation

3. Email Alert System

Recipient: pharmacist@example.com

Trigger Condition: Stock quantity < 10 units

Email Content: Medicine name and remaining stock quantity

Delivery: Immediate upon order processing

Test Scenarios

1. Stock Reduction Test

- Initial Stock: 233 units
- Order Quantity: 50 units
- Expected Result: 183 units remaining
- Status: ✅ PASSED

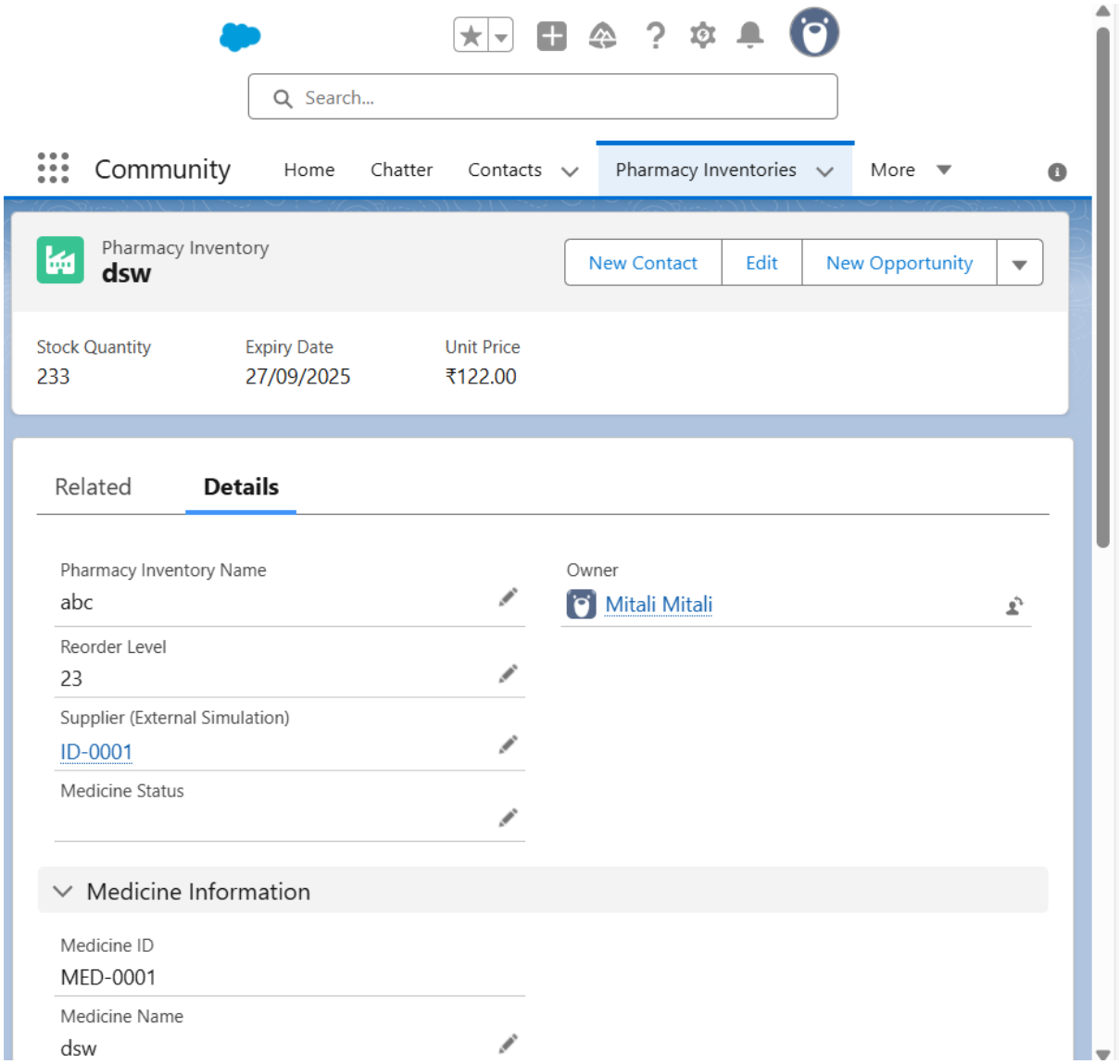
2. Low Stock Alert Test

- Remaining Stock: 2 units (below threshold)
- Expected Result: Email alert sent
- Status: ✅ PASSED

User Testing Results

Test Case 1: Normal Order Processing

Scenario: Create medicine order with sufficient stock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Home
Chatter
Contacts
Pharmacy Inventories
More
Pharmacy Inventory
dsw
New Contact
Edit
New Opportunity
Stock Quantity
233
Expiry Date
27/09/2025
Unit Price
₹122.00
Related
Details
Pharmacy Inventory Name
abc
Owner
Mitali Mitali
Reorder Level
23
Supplier (External Simulation)
ID-0001
Medicine Status
Medicine Information
Medicine ID
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Medicine Name
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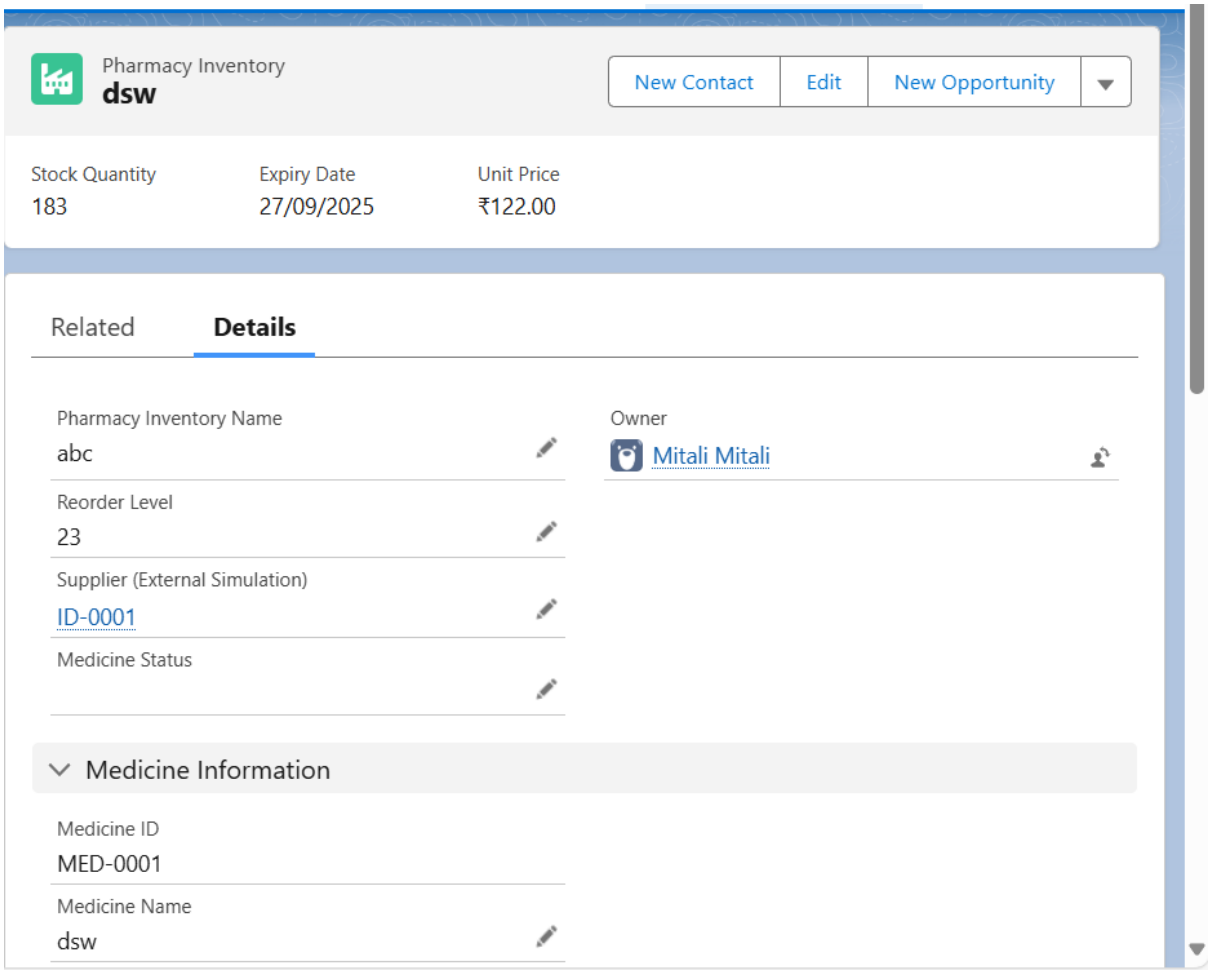
Pharmacy Inventory
dsw
New Contact
Edit
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27/09/2025
Unit Price
₹122.00
Related
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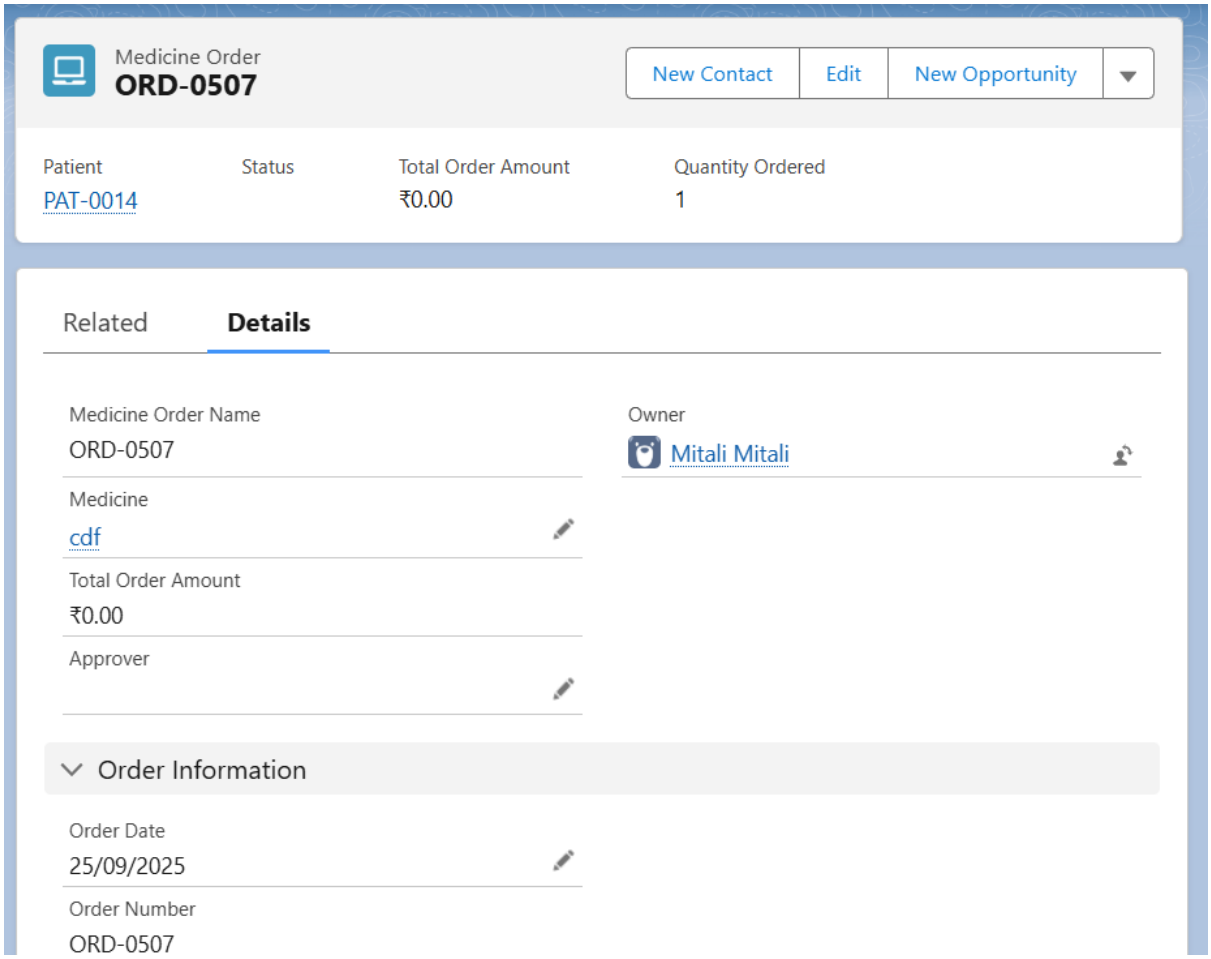
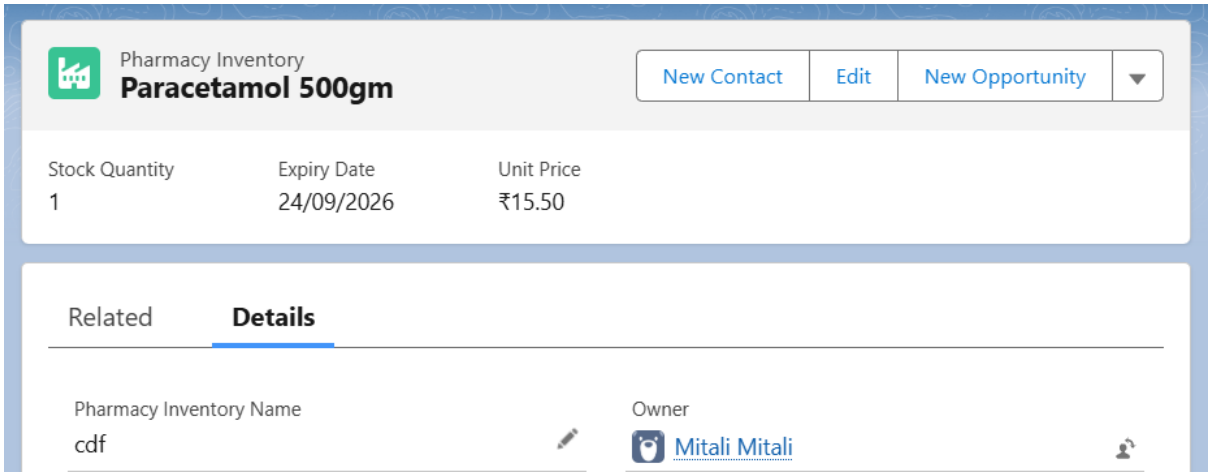
abc
Owner
Mitali Mitali
Reorder Level
23
Supplier (External Simulation)
ID-0001
Medicine Status
Medicine Information
Medicine ID
MED-0001
Medicine Name
dsw

Test Case 2: Low Stock Alert

Scenario: Create order that triggers low stock alert





Conclusion

The Medicine Order Trigger System successfully automates pharmacy inventory management with real-time stock tracking and proactive alerting. The solution demonstrates best practices in Salesforce development with bulkified processing, comprehensive testing, and robust error handling.
