Salesforce CRM Project Documentation

WhatNext Vision Motors: Shaping the Future of Mobility with Innovation and Excellence

Project Overview

WhatNext Vision Motors, a growing company in the automotive industry, wanted to improve how they manage customers, vehicles, and dealer operations. Their old manual process caused delays, wrong stock information, and customer dissatisfaction.

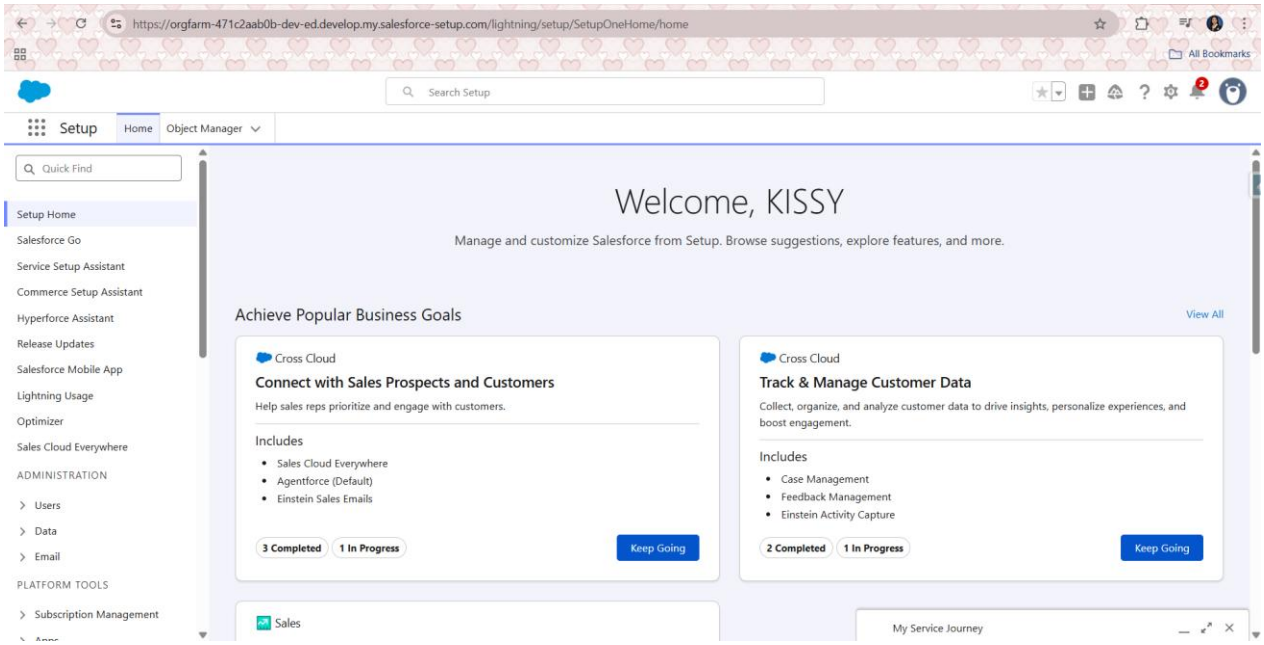
To solve these issues, a customized Salesforce CRM system was created. This system aims to automate vehicle order processing, ensure correct stock management, assign the nearest dealer, and send test-drive reminders automatically.

The system also uses Lightning Apps and Dynamic Forms to provide a clean and user-friendly interface. Overall, the CRM makes operations faster, reduces errors, and prepares the company for future upgrades such as AI-based vehicle recommendations or chatbot support.

Objectives

The key objectives of the Salesforce CRM Project for WhatNext Vision Motors: Shaping the Future of Mobility with Innovation and Excellence are the following:

1. **Automate Order and Dealer Assignment**
   - Automatically assign the closest dealer based on the customer's city.
2. **Prevent Out-of-Stock Orders**
   - Use validation rules and Apex triggers to stop customers from ordering vehicles with zero stock.
3. **Send Test Drive Reminders**
   - Automatically email customers one day before their scheduled test drive.
4. **Improve User Experience**
   - Use Lightning Apps and Dynamic Forms for a simple and responsive (UI) User Interface.
5. **Maintain a Scalable Backend**
   - Use Apex classes and batch jobs to handle stock updates and order confirmations in bulk.



Phase 1: Requirement Analysis & Planning

The first phase of the project focused on understanding the business needs of WhatNext Vision Motors and converting them into system requirements for Salesforce. The main goal was to create a CRM that supports the entire vehicle management process from tracking inventory, to handling customer orders, and managing post-sales interactions.

Business Requirements

The system must:

- Store all vehicle, dealer, and customer data in one place.
- Check stock availability during order creation.
- Assign the nearest dealer automatically.
- Track test drives and service requests.
- Automate processes to reduce manual work.

Defining Project Scope

To meet these needs, the system includes:

- Custom objects for vehicles, orders, customers, dealers, test drives, and service requests.
- Record-triggered flows for dealer assignment and email reminders.
- Apex triggers to validate stock and update inventory.

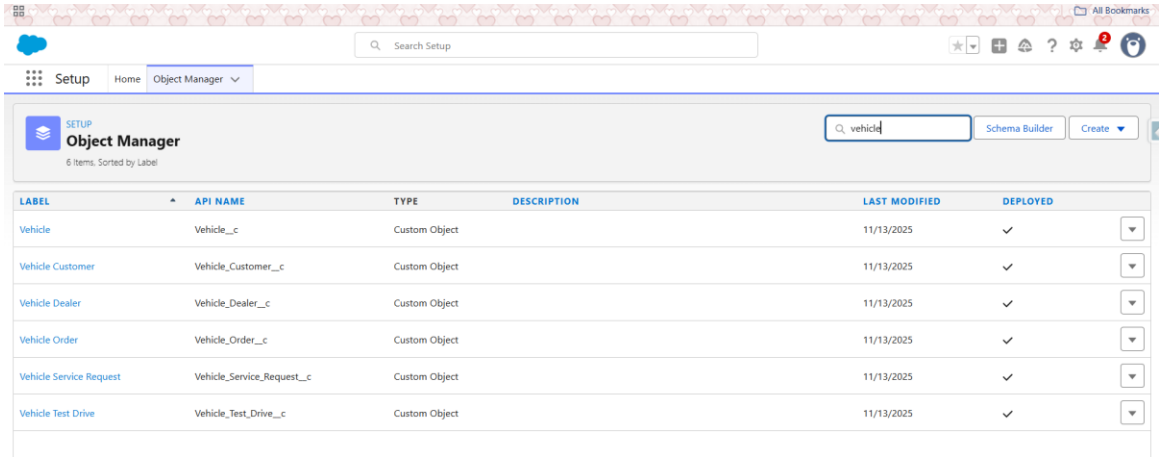
- Batch Apex for processing pending orders.

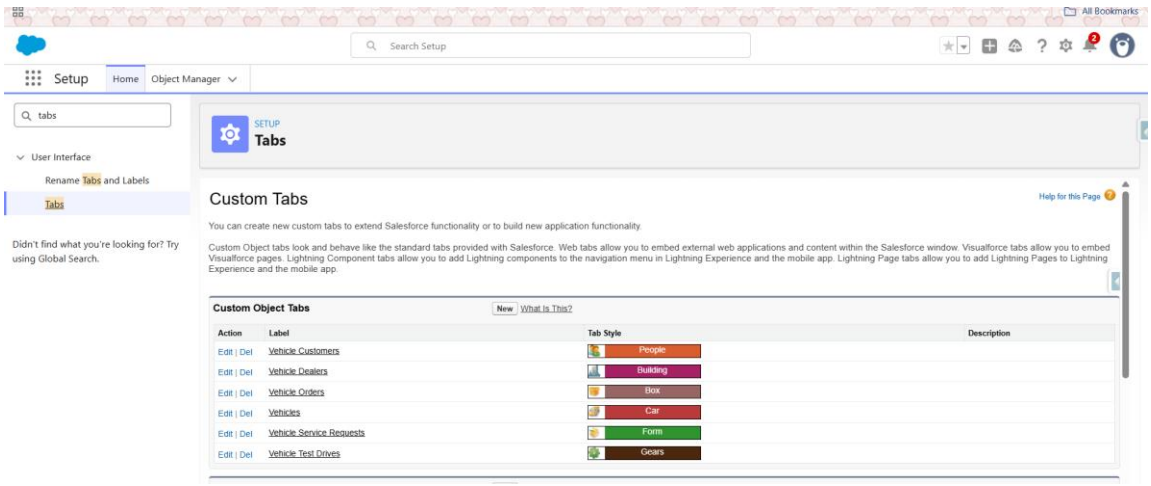
Data Model

Six custom objects were created to represent the business structure of the Capstone Project.

Object Name	Purpose
Vehicle__c	Stores vehicle details and stock informations
Vehicle_Dealer__c	Dealer information
Vehicle_Customer__c	Stores customer data
Vehicle_Order__c	Tracks vehicle orders
Vehicle_Test_Drive__c	Schedules and tracks test drives
Vehicle_Service_Request__c	Manages service history and issues

These objects are connected through lookup relationships to maintain accurate and consistent data.





Security Model

- **Standard Salesforce profiles** were used, and **Permission Sets** were added to give users access to the custom objects.
- **Field-Level Security and the Role Hierarchy were applied to make sure users can only view or edit information related to their roles.**
- **Field History Tracking was turned** on for important fields, such as **Stock_Quantity__c (Vehicle) and Status__c (Order),** to support auditing and monitoring.

Phase 2: Salesforce Development – Backend & Configurations o **Setup**

Environment & DevOps Workflow

To begin the development process, a **Salesforce Developer Org** was set up for building and testing all customizations and automation features.

- **Environment**: Salesforce Lightning Experience (Developer Edition) was used.
- **User Profiles/Roles:** Standard profiles were used for testing, and no custom profiles were created.
- **Deployment Method:** Metadata was deployed from the sandbox to production using **Change Sets**.

Customization of Objects, Fields, Validation Rules, and Automation

Custom Objects and Fields

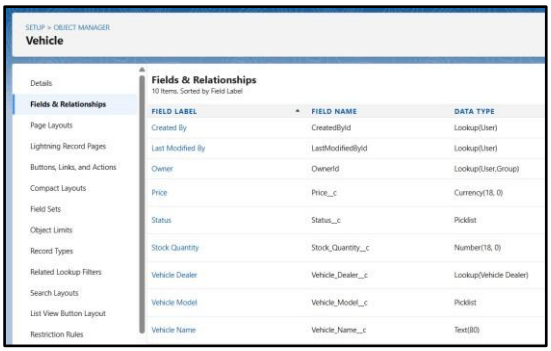
The following custom objects were created and configured to support the business processes:

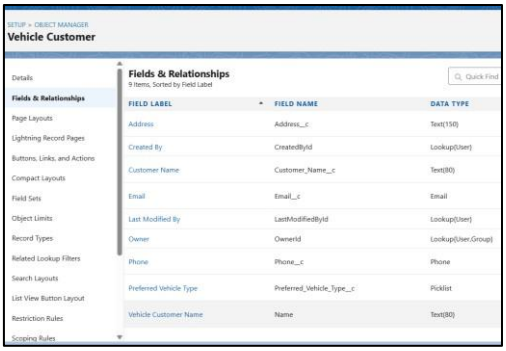
- **Vehicle** – Stores information such as vehicle name, model, and stock quantity.
- **Dealer** – Stores dealer details, including location and available vehicles.
- **Customer** – Stores customer information and address.
- **Order** – Records vehicle orders and their status.

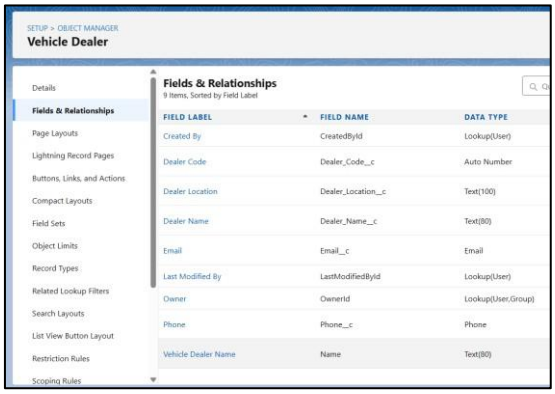
Relationships:

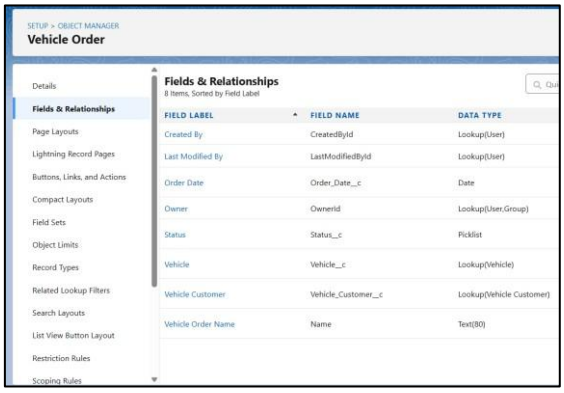
- Order → Vehicle: Lookup
- Order → Dealer: Lookup

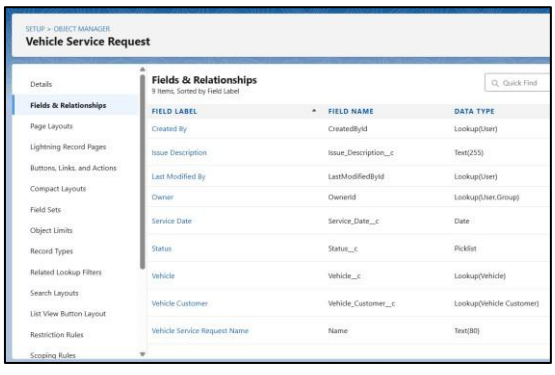
- Order → Customer: Master-Detail or Lookup (depending on the implementation)

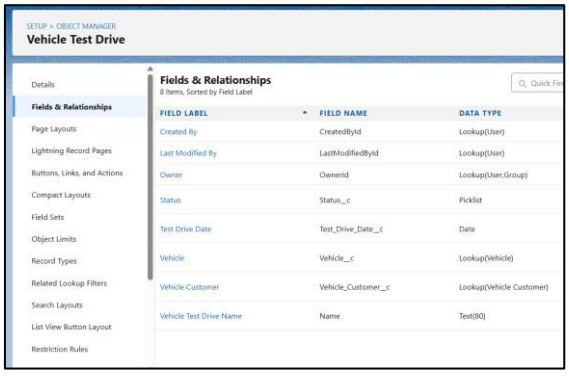












Validation Rules

- **Out-of-Stock Order Blocker:**
  This rule stops users from creating an order when the selected vehicle has zero stock.

Automation: Workflow Tools

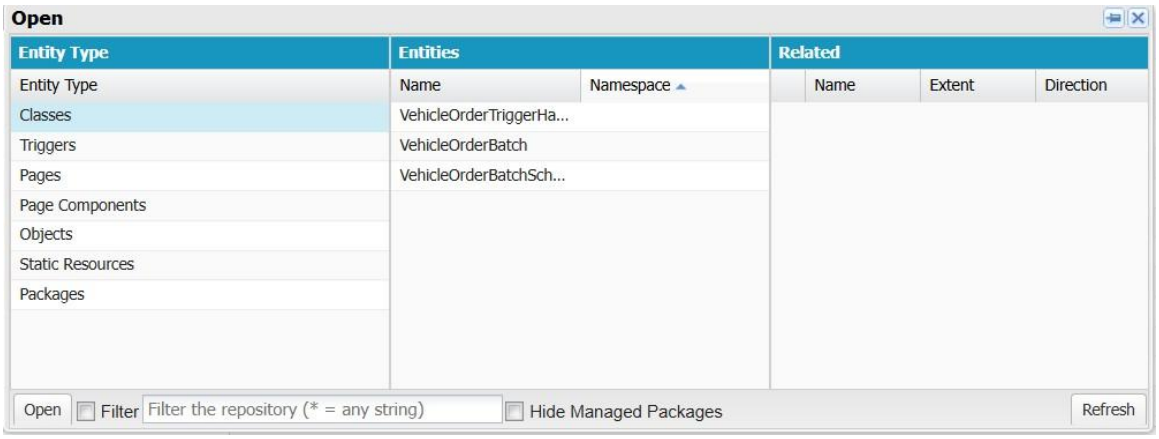
- A **Record-Triggered Flow** on the Order object automatically assigns the nearest dealer based on the customer's address.
- **Scheduled Flows** were used to send test-drive reminder notifications.

Apex Classes and Triggers

Apex Classes:
Apex classes were developed to organize the trigger logic and support automation in the backend:

- VehicleOrderTriggerHandler – manages stock validation and updates inside the trigger.
- VehicleOrderBatch – checks pending orders and confirms them when stock becomes available.
- VehicleOrderBatchScheduler – schedules the batch job to run every day at 12 PM.

All classes follow best practices by using **bulk-safe operations** and **reusable methods**.

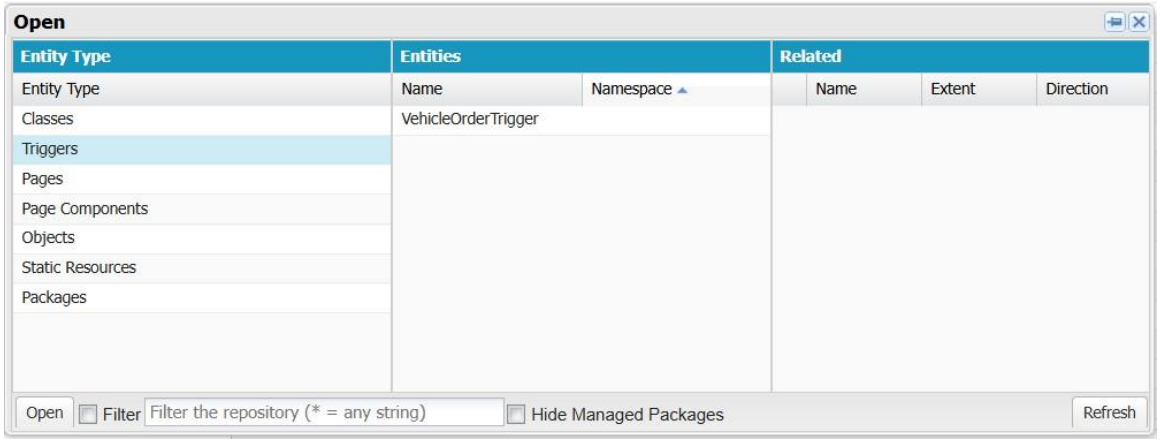


Apex Trigger:

An Apex Trigger was created on the **Order** object to perform the following functions:

- Validate vehicle stock availability.
- Automatically assign a dealer (if this task is not already done by a Flow).
- Order status update logic (**Pending or Confirmed**).

The trigger uses a **Trigger Handler pattern** to follow Salesforce best practices.

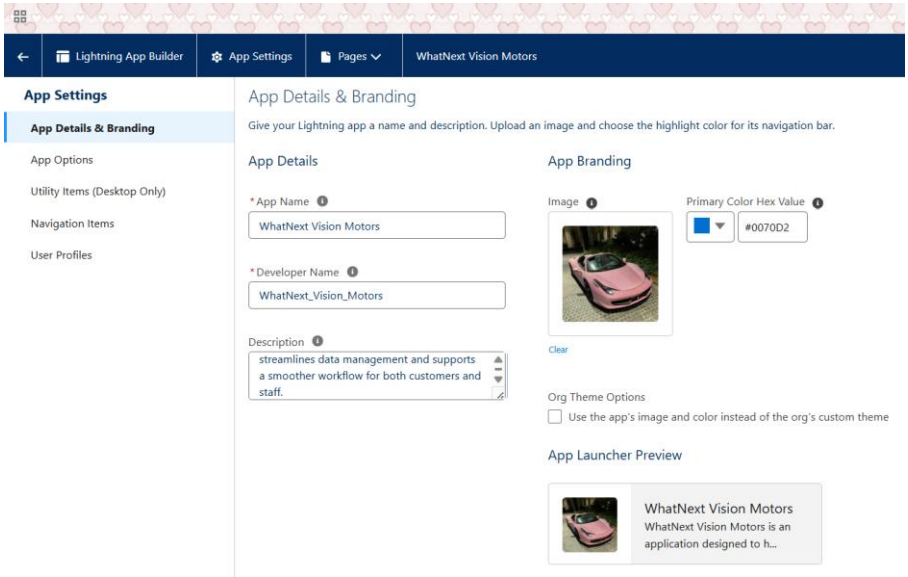


Phase 3: UI/UX Development & Customization

Lightning App Setup via App Manager

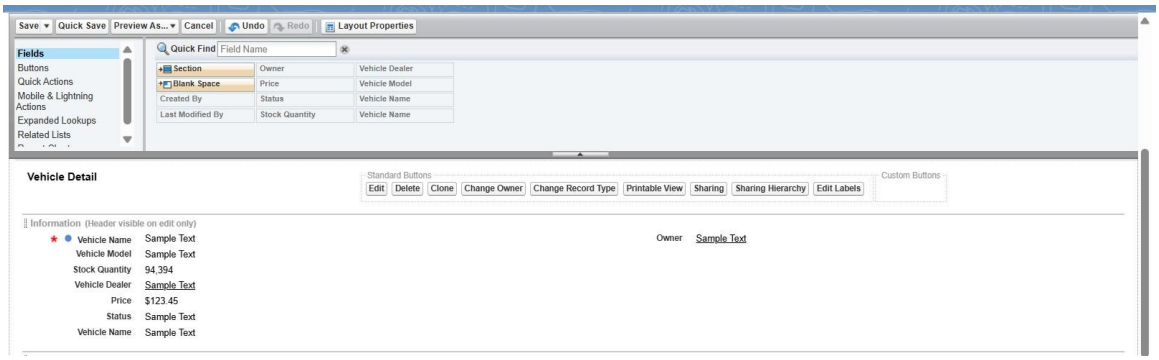
A custom Lightning App called **"WhatNext Vision Motors"** was created using the App Manager. This app includes important custom tabs such as Vehicles, Dealers, Orders, Customers, Test Drives, and Service Requests to make navigation easier.

- Lightning App created: *WhatNext Vision Motors*
- Tabs: Vehicles, Dealers, Customers, Orders, Test Drives, Services
- **Dynamic Forms** were used to show fields based on the record's status and availability.
- Highlight panels, related lists added to Lightning Pages.



Page Layouts and Dynamic Forms:

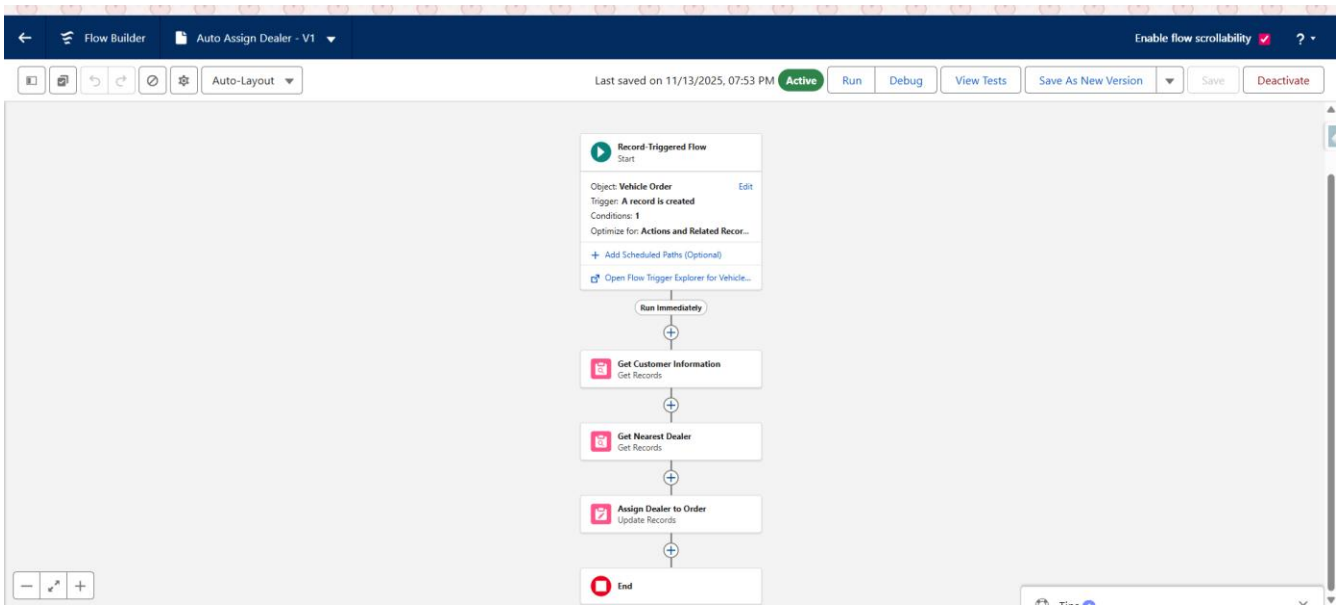
Page layouts were customized for the key objects **Vehicle__c**, **Vehicle_Order__c**, and **Vehicle_Test_Drive__c** to provide a clear interface and show only the fields that users need. Dynamic Forms were applied so that fields appear directly on the Lightning Record Page and are shown or hidden based on conditions such as order status or vehicle availability.



Flow 1: Auto Dealer Assignment

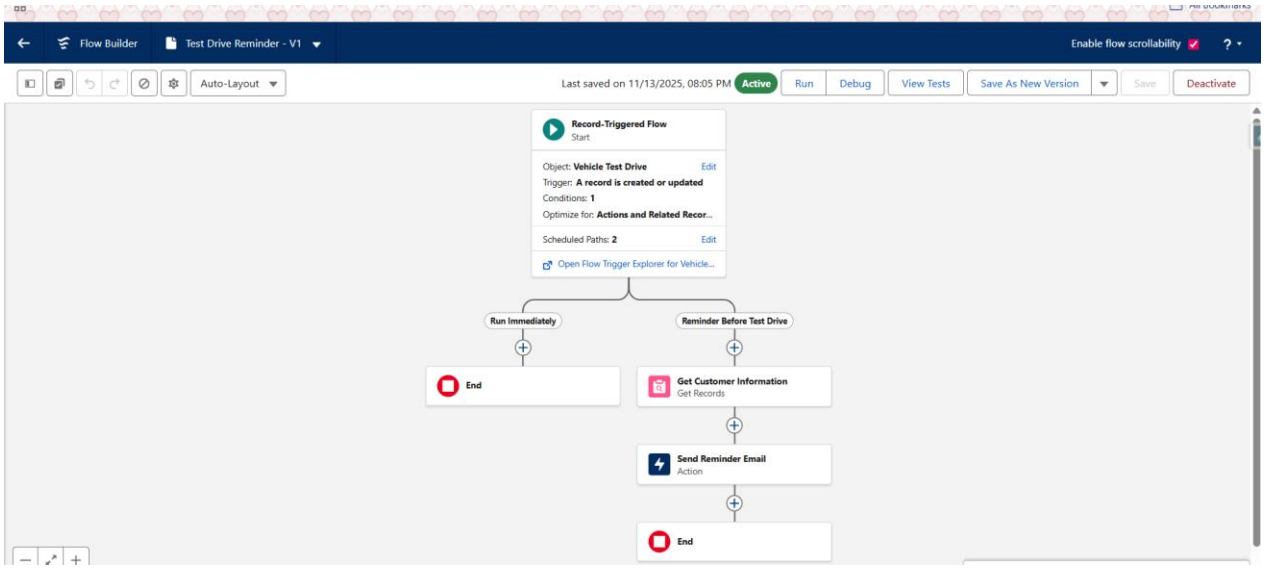
This flow runs on Vehicle_Order__c creation and:

- Retrieves the customer's address.
- Identifies a dealer located in the same city.
- Assigns that dealer to the order



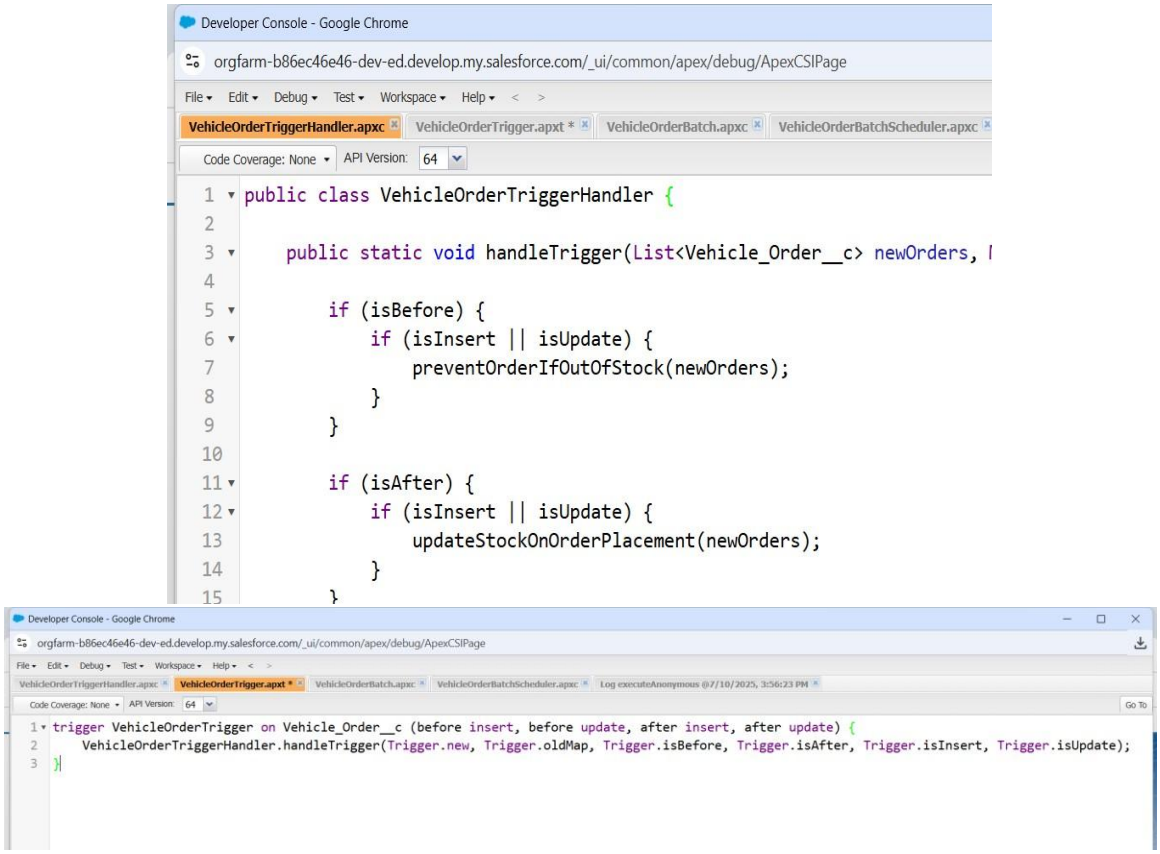
Flow 2: Test Drive Reminder

- This **Record-Triggered Flow** runs when a **Vehicle_Test_Drive__c** record is created or updated.
- Sends an email reminder **one day before** the scheduled test drive.



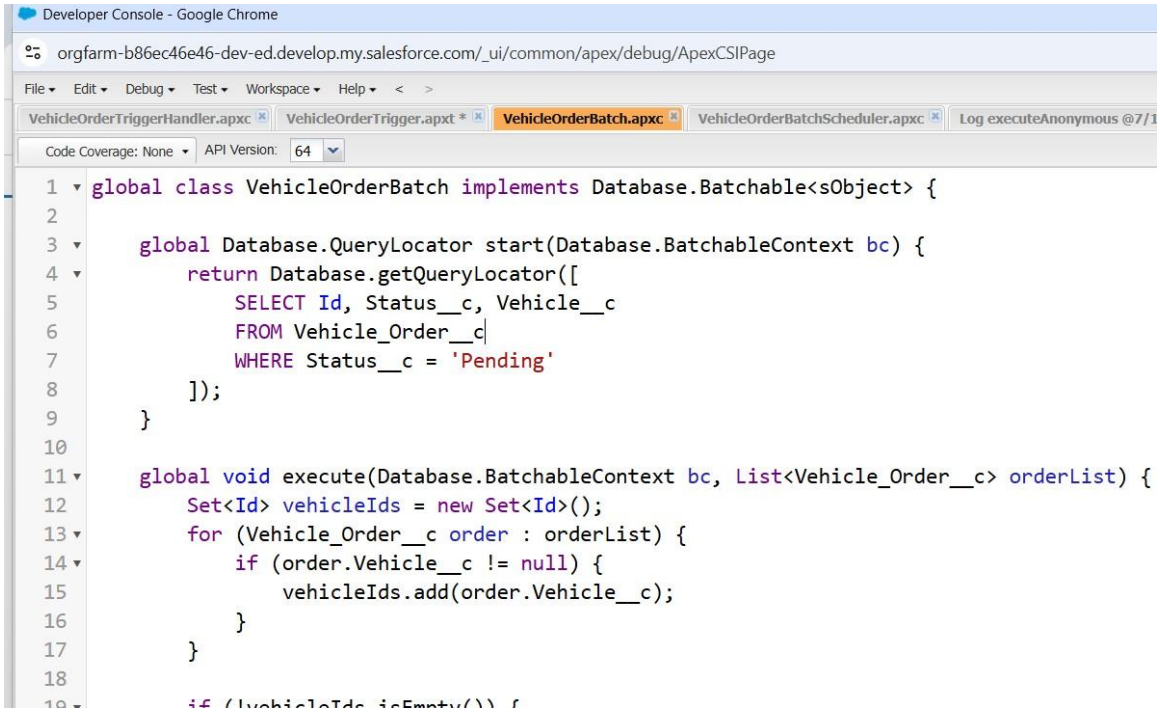
Apex Trigger & Handler

- Trigger: VehicleOrderTrigger
- Handler: VehicleOrderTriggerHandler
  - Prevents out-of-stock orders
  - Updates stock when order is confirmed



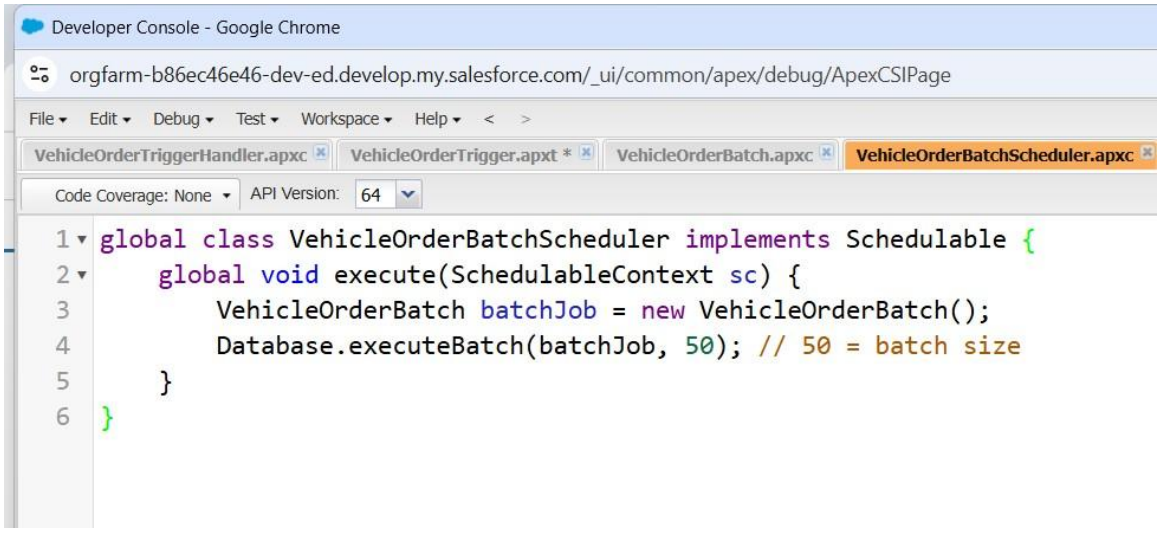
Apex Batch Class

- Class: VehicleOrderBatch
- Runs daily
- Checks for pending orders and available stock
- Updates status to *Confirmed* and adjusts stock



Scheduled Apex

- Class: VehicleOrderBatchScheduler
- Cron job runs daily at 12 PM
- Executes batch class automatically



Phase 4: Data Migration, Testing & Security

Data Loading Process

To load initial data into Salesforce, such as vehicles, dealers, and customers, the following tools were used:

Tools Used:

- **Data Import Wizard**:
  Used to import data for standard objects like Accounts and Contacts.
- **Data Loader**:
  Used for large data volumes and for custom objects like **Vehicle__c**, **Dealer__c**, and **Order__c**.

Steps:

1. Exported CSV files containing sample records.
2. Mapped the CSV columns to the corresponding Salesforce fields.
3. Used **Data Loader** to insert records for:

   • **Vehicle__c**

   • **Dealer__c**

   • **Customer__c**

   • **Order__c** (with valid relationships to other objects)

Field History Tracking, Duplicate Rules, and Matching Rules

Field History Tracking:

Field History Tracking was enabled for the following objects to monitor changes:

- **Vehicle__c:** Stock__c field
- **Order__c:** Status__c and Dealer__c fields

Duplicate & Matching Rules:

- **Matching Rule:** A custom rule on **Customer__c** based on **Email__c** and **Phone__c**.
- **Duplicate Rule:** Prevents the insertion of duplicate customer records.

Profiles, Roles, Permission Sets, and Sharing Rules Profiles

and Roles:

- Standard profiles, such as **Standard User** and **System Administrator**, were used.

Role Hierarchy was set up as follows:

- CEO

    └── Sales Manager
    └── Sales Rep **Permission**

Sets:

- An **Order Management Access** permission set was created.
- Assigned to users who need **create/read access** to Orders and Vehicles.

Sharing Rules:

- **Public Read/Write** access for most custom objects.
- **Manual Sharing** allowed for sensitive customer records.

Preparation of test cases for each and every salesforce features like booking creation, Approval Process, Automatic Task creation, flows, triggers etc.

1. Create a Vehicle:

INPUT:

Vehicle Name: Honda

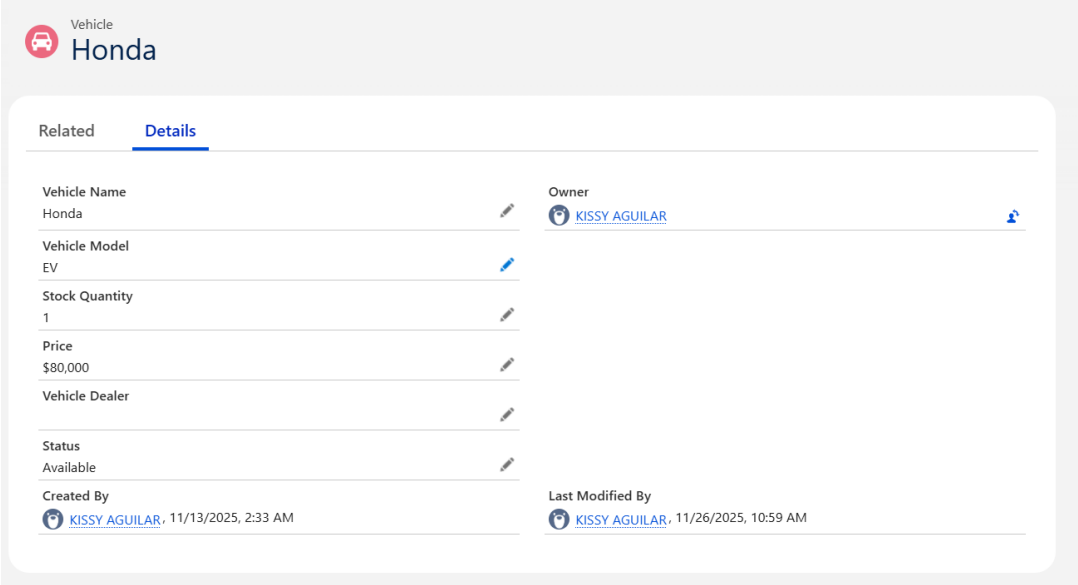
Vehicle Model: EV

Stock Quantity: 1

Price: $80,000

Status: Available

Dealer: Select existing Vehicle Dealer



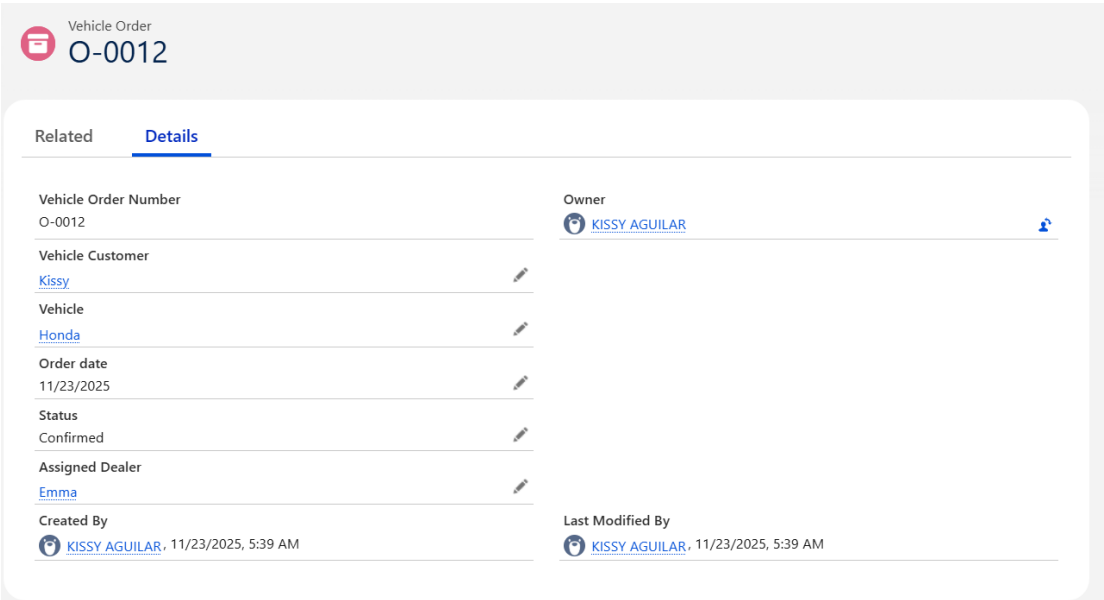
2. Test Stock = 0 (Error Case):

INPUT:

Edit the Stock Quantity of the above vehicle → Set it to 0.

Go to Vehicle Orders tab → Click New.

- **Vehicle:** Honda
- **Status:** Confirmed
- **Customer:** Select any existing customer OUTPUT



3. Test Stock > 0 (Confirmed Order)

INPUT:

Steps:

1. Set vehicle Stock Quantity back to 1.

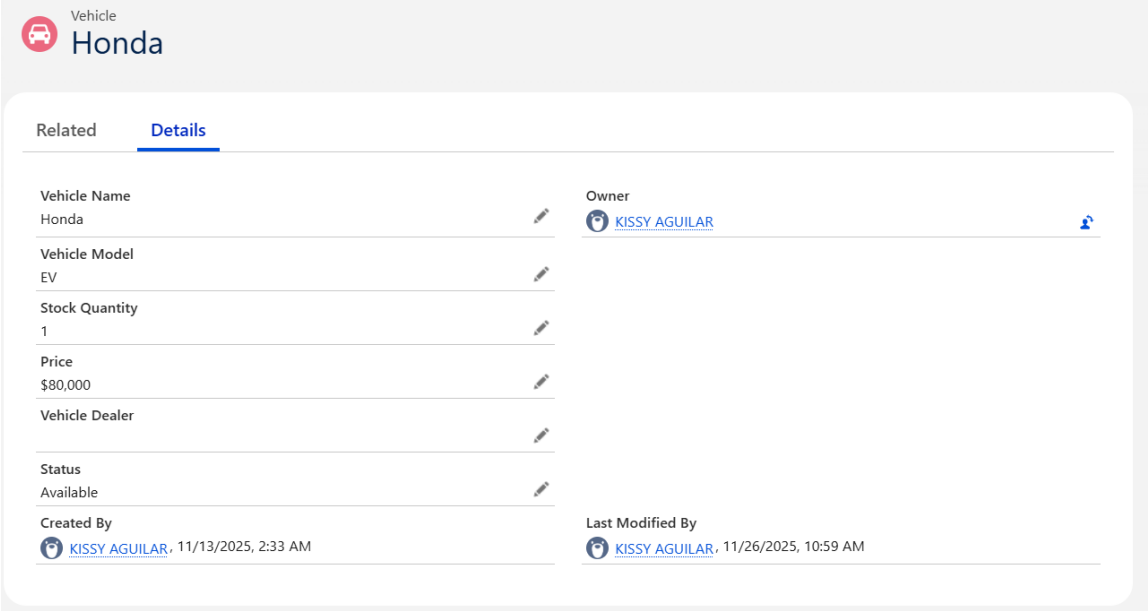
2. Create a Vehicle Order:

○ Status: Confirmed

○ Vehicle: Test Car

○ Vehicle stock should reduce from 2 → 1 automatically.

OUTPUT:

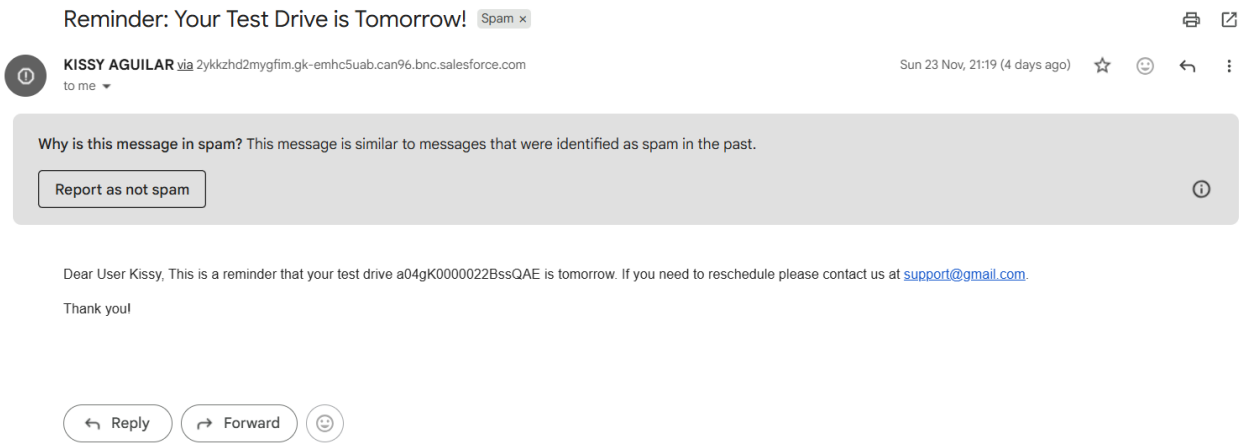


4. Test Drive Reminder Email:

Customer: Select any customer with email

Status: Scheduled Test Drive Date: Tomorrow (pick tomorrow's date)

OUTPUT:



INPUT:

Create a Pending Order when stock is 0:

1. Set Test Car stock to 0.

2. Create a Vehicle Order:

○ Status: Pending

Update stock: ● Set

Stock Quantity = 1

Run batch manually:

VehicleOrderBatch job = new VehicleOrderBatch();

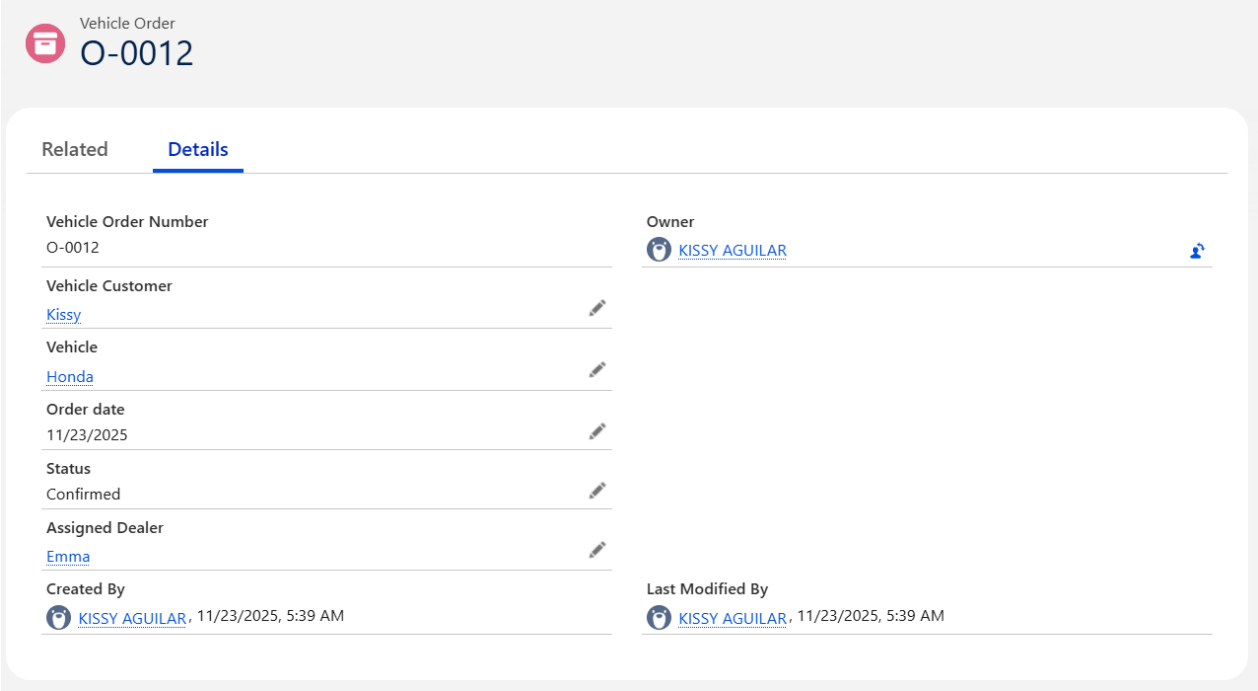
Database.executeBatch(job, 50);

OUTPUT:

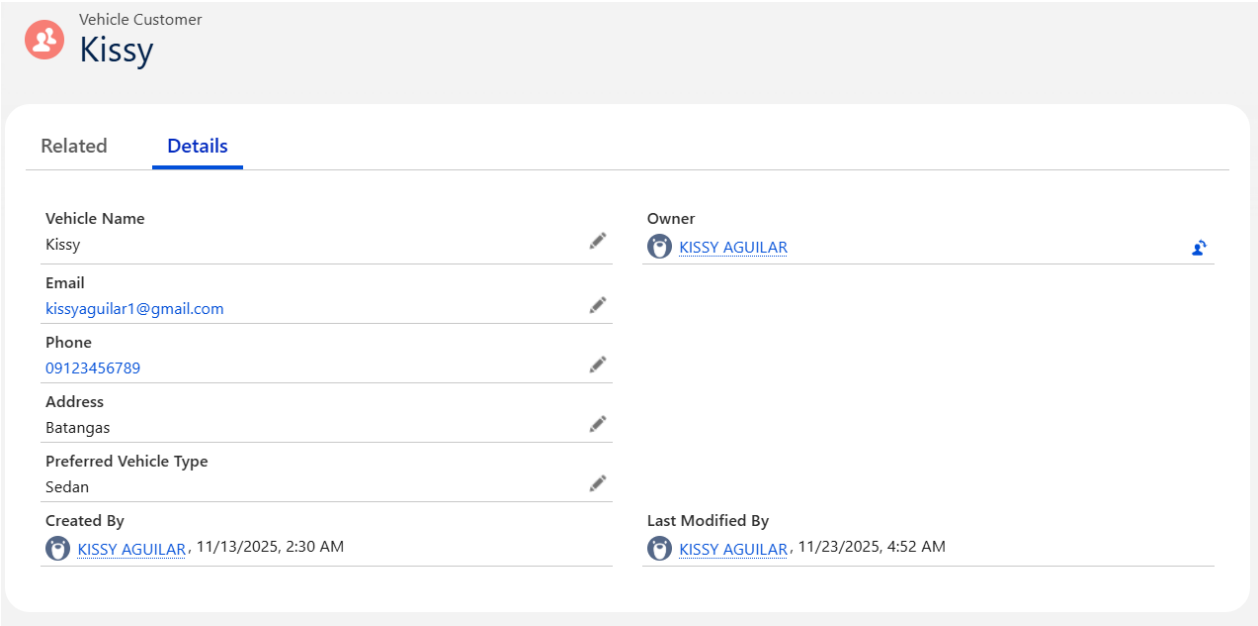
Expected Result:

● Your Pending Order should become Confirmed.

● Vehicle stock should reduce by 1.



Creation of Test Cases



To ensure Apex code is deployable and functional, **Test Classes** were created for:

- OrderTriggerHandler
- DealerAssignmentService
- StockValidationTrigger **Test Class Features:**

- Minimum 75% coverage
- Positive and negative test cases
- Used @isTest annotation with test data setup

Phase 5: Deployment, Documentation & Maintenance

Deployment Strategy

The **Change Set** method was used to deploy features from the Developer Org to the production environment.

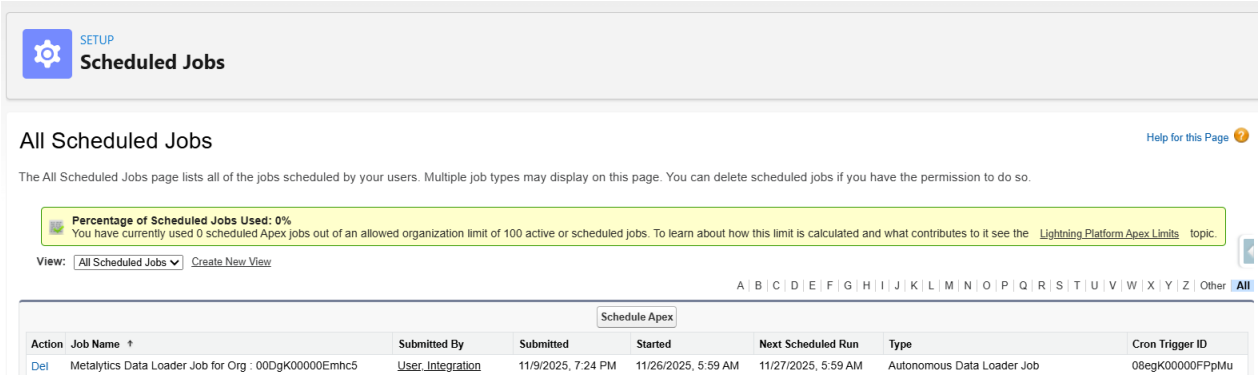
Deployment Steps:

1. Created an **Outbound Change Set** in the source org.
2. Added all custom components, including:
    - Custom objects, fields, flows, validation rules, triggers, and Apex classes.
3. Uploaded the Change Set to the **Target Org** (production/sandbox).
4. Validated and deployed it from **Inbound Change Sets** in the target org.
5. Conducted **post-deployment manual verification** to ensure all features work correctly.

Testing & Sample Scenarios Test

Cases:

- Create vehicle and order with 0 stock → error
- Set stock = 2 → place order → stock becomes 1
- Create pending order → update stock → batch job confirms order



System Maintenance and Monitoring

To ensure smooth system performance after deployment, the following maintenance strategy was implemented:

1. Monitoring

- Use **Apex Jobs** to monitor scheduled jobs or batch classes.
- Use **Debug Logs** to trace errors or unexpected behavior.
- Enable **Email Alerts** for test drive reminders or failed processes.

2. User Feedback Loop

- The sales and operations teams used the system for a few days after deployment.
- Feedback was collected through **manual walkthroughs** to identify missing features or issues.

3. Updates and Fixes

- Minor updates, such as adding **help text** or updating **field labels**, were made in the sandbox and redeployed using **Change Sets**.
- **Quarterly reviews** were scheduled to implement enhancements or improve the user interface.

Troubleshooting Approach

If issues occur in the production environment, the following steps will be taken:

Step 1: Reproduce the Issue

- Attempt to replicate the problem in a **sandbox** or **developer org**.

Step 2: Enable Debug Logs

- Set **debug logs** for the affected user and analyze the **Flow** or **Apex execution**.

Step 3: Check Apex Jobs or Flows

- For issues related to background processes, review **Apex Job failures** or **Flow error emails**.

Step 4: Fix and Retest

- Update the **Flow** or **Apex logic** as needed.
- Retest the changes in the **sandbox** and redeploy using a **Change Set**.

Conclusion

The Salesforce implementation at **WhatNext Vision Motors** successfully achieved its goal of improving the customer ordering process and operational workflows.

Key achievements include:

- Automatic assignment of the nearest dealer using **Flows or Triggers**.
- **Stock validation** to prevent out-of-stock orders.
- Scheduled logic to update **order statuses** (if Batch Apex is used).
- Improved **customer experience** through automation.
- Reduced **manual work** for internal teams.

This project not only improves the company's customer-facing processes but also provides a solid foundation for future Salesforce expansion and automation. With this initiative, **WhatNext Vision Motors** has advanced closer to its vision of **innovation and excellence in mobility**.