Phase 3: Data Modeling & Relationships (Fuel Station Project)

This phase defines the data model, objects, and relationships required for the Fuel Station project in Salesforce.

1. Standard & Custom Objects

- Standard Objects: Account (Fuel Station), Contact (Station Manager / Employee), Opportunity (Fuel Sales Deals), Product (Fuel Types)
- Custom Objects:
  - Pump (individual fuel dispensing units)
  - Fuel Transaction (each sale at pump)
  - Maintenance Record (service logs of pumps & stations)
  - Fuel Inventory (track stock levels of petrol, diesel, CNG)

2. Fields

- Pump Object: Pump ID, Pump Type, Status (Active/Inactive), Last Service Date
- Fuel Transaction: Transaction ID, Fuel Type, Quantity, Amount, Date & Time
- Fuel Inventory: Fuel Type, Opening Balance, Current Stock, Last Refill Date
- Maintenance Record: Pump ID, Service Date, Issue Reported, Technician Name

3. Record Types, Page Layouts & Compact Layouts

- Record Types for Fuel Transaction: Retail Sale, Bulk Sale
- Record Types for Maintenance: Preventive Maintenance, Breakdown Repair
- Page Layouts customized for each object to capture relevant data
- Compact Layouts to display Pump ID, Pump Type, and Status at glance

## 4. Schema Builder & Relationships

- Account ↔ Pump: One-to-Many (One station has many pumps)
- Pump ↔ Fuel Transaction: One-to-Many (One pump can have multiple transactions)
- Pump ↔ Maintenance Record: One-to-Many (Each pump can have multiple service logs)
- Account ↔ Fuel Inventory: One-to-One (Each station has a single inventory record)

5. Relationship Types

- Lookup Relationship: Pump to Account
- Master-Detail Relationship: Fuel Transaction to Pump, Maintenance Record to Pump
- Junction Object (if needed): Fuel Supply Contracts (between Fuel Supplier and Station)
- External Objects: Fuel Supplier Data (via integration)

Phase 3 Screenshots

Screenshot 1
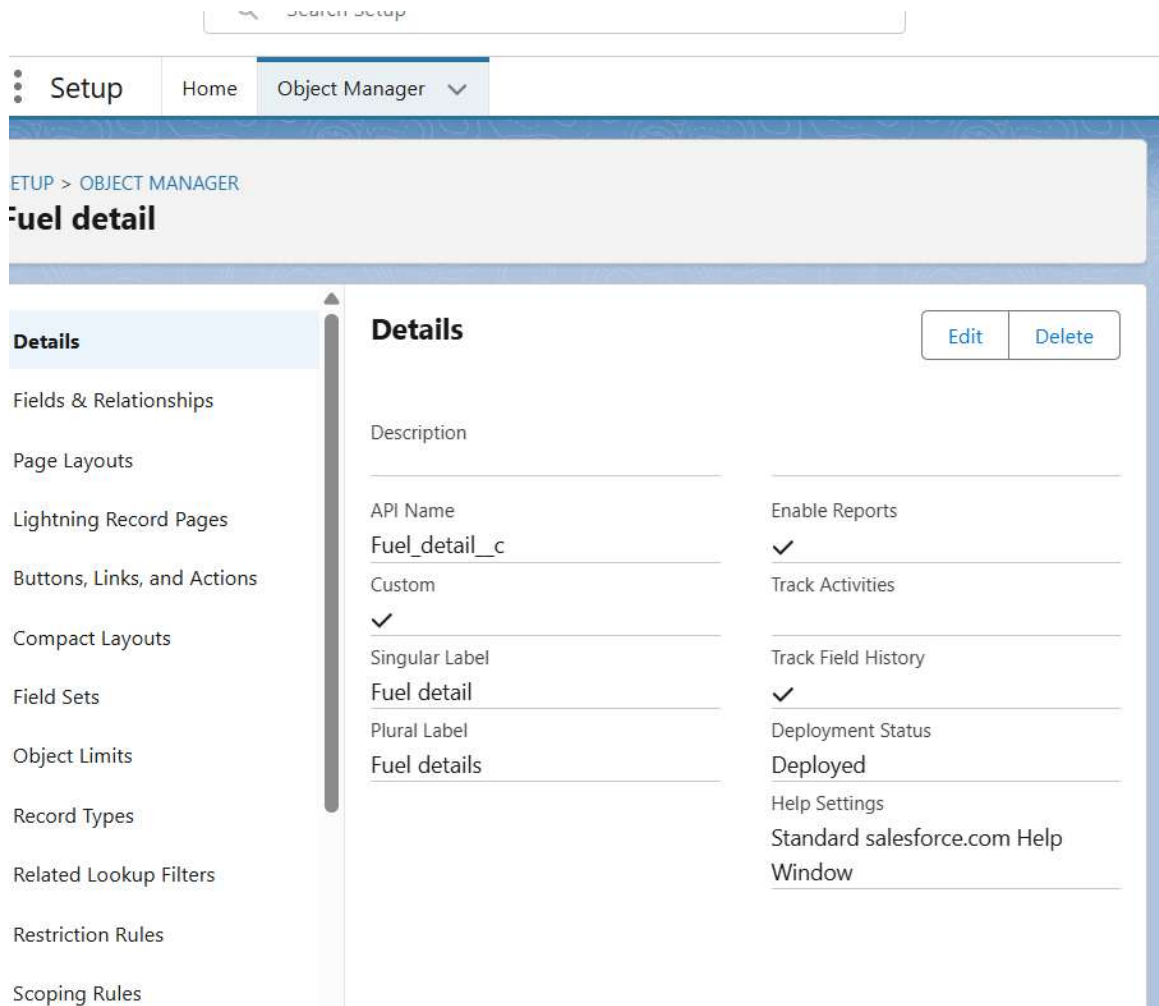
Screenshot 2

::: Setup | Home | Object Manager ∨

SETUP > OBJECT MANAGER
Fuel detail

Details
Fields & Relationships
Page Layouts
Lightning Record Pages
Buttons, Links, and Actions
Compact Layouts
Field Sets
Object Limits
Record Types
Related Lookup Filters
Restriction Rules
Scoping Rules

Q Quick Find | New | Deleted Fields | Field Dependencie

0 Items, Sorted by Field Label

FIELD LABEL ▲	FIELD NAME	DATA TYPE	CONTROLLING FIE...
Created By	CreatedById	Lookup(User)	
Fuel detail Name	Name	Text(80)	
Fuel supplied	Fuel_supplied__c	Number(18, 0)	
Gas station	Gas_station__c	Master-Detail(Gas station)	
Last Modified By	LastModifiedById	Lookup(User)	
Supplier name	Supplier_name_c__c	Master-Detail(Supplier)	

Screenshot 3

Setup   Home   Object Manager ⌄

SETUP > OBJECT MANAGER

Buyer

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Restriction Rules

Scoping Rules

Page L   🔍 Quick Find   New   Page Layout Assignment
2 Items, Sorted by Page Layout Name

PAGE LAYOUT N... ▲	CREATED BY	MODIFIED BY	
Buyer Layout	Miniki Mahalaxmi, 9/14/2025, 9:25 PM	Miniki Mahalaxmi, 9/14/2025, 9:59 PM	⌄
Name	Miniki Mahalaxmi, 9/14/2025, 10:02 PM	Miniki Mahalaxmi, 9/14/2025, 10:02 PM	⌄

Screenshot 4

Gas station   suppliers ∨   Gas stations ∨   Buyers ∨   Fuel details ∨

Fuel detail
HP

New Contact   Edit   New Opportunity ▼

Related   **Details**

Fuel detail Name
HP ✎

Fuel supplied
1,000,000 ✎

Supplier name
varun

Gas station
HP

Created By
Miniki Mahalaxmi, 9/14/2025, 10:22 PM

Last Modified By
Miniki Mahalaxmi, 9/14/2025, 10:22 PM

Screenshot 5

Screenshot 6

Phase 4: Process Automation (Admin)

Goal: Automate tasks. This phase focuses on using Salesforce's no-code/low-code tools to streamline operations like inventory checks, order approvals, and notifications, reducing manual errors in a high-volume fuel station environment.

Validation Rules

Step-by-Step: In Setup > Object Manager > [Custom Object, e.g., Fuel Order or Transaction] > Validation Rules, create a new rule. Example: Delivery_Date__c > TODAY().

Rationale: Prevents invalid data entry. Implementation Guidance: Test with sample data.

Workflow Rules (legacy)

Step-by-Step: In Setup > Workflow Rules, define criteria (e.g., when inventory falls below a threshold). Rationale: Automates notifications. Implementation Guidance: Use criteria like Inventory_Level__c < Reorder_Threshold__c.

Process Builder (legacy)

Step-by-Step: Create process on Fuel Inventory. Auto-update Fuel Status. Rationale: Ensures real-time updates. Implementation Guidance: Trigger on Quantity__c changes.

Approval Process

Step-by-Step: Create approval process on Fuel Order object. Example: Fuel Order > ₹50,000 → Manager approval.
Rationale: Ensures oversight. Implementation Guidance: Notify on approval/rejection.

Flow Builder

Step-by-Step: Create record-triggered or screen flows. Example: Calculate Total Amount.
Rationale: Automates calculations and user inputs. Implementation Guidance: Embed in Lightning pages.

Email Alerts

Step-by-Step: Create templates and link to Flows or approvals.
Rationale: Keeps stakeholders informed. Implementation Guidance: Use HTML templates with merge fields.

Field Updates

Step-by-Step: Add to Flows or approvals.
Rationale: Automatically reflects stages. Implementation Guidance: Use Assignment elements.

Tasks

Step-by-Step: Create task for agents (e.g., pump check).
Rationale: Ensures follow-ups. Implementation Guidance: Assign to roles with due dates.

Custom Notifications

Step-by-Step: In Notification Builder, trigger via Flows.
Rationale: Real-time alerts. Implementation Guidance: Use Bell Notifications with record links.

Phase 5: Apex Programming (Developer)

Goal: Add advanced logic. This phase introduces custom code using Apex to handle complex scenarios like inventory conflict checks or bulk processing, which no-code tools can't fully address in a fuel station's dynamic environment.

Classes & Objects

Step-by-Step: Create a FuelService class with methods.
Rationale: Encapsulates logic.
Implementation Guidance: Use reusable methods.

Apex Triggers

Step-by-Step: Create trigger on Fuel Order (before insert).
Rationale: Prevents conflicts.
Implementation Guidance: Query orders and use addError().

Trigger Design Pattern

Step-by-Step: Create handler class and call from trigger.
Rationale: Keeps triggers clean.
Implementation Guidance: Use FuelOrderHandler.

SOQL & SOSL

Step-by-Step: Query in Apex.
Rationale: Retrieve available fuels.
Implementation Guidance: Example SELECT query.

Collections: List, Set, Map

Step-by-Step: Use collections for bulk data.
Rationale: Avoid duplicates.
Implementation Guidance: Declare Set<Id>.

Control Statements

Step-by-Step: Use if/else, loops.
Rationale: Enforces rules.
Implementation Guidance: Check inventory limits.

Batch Apex

Step-by-Step: Implement Database.Batchable.
Rationale: Handle large datasets.
Implementation Guidance: Schedule nightly jobs.

Queueable Apex

Step-by-Step: Implement Queueable.
Rationale: Async heavy computation.
Implementation Guidance: Use enqueueJob().

Scheduled Apex

Step-by-Step: Implement Schedulable.
Rationale: Daily insights.
Implementation Guidance: Use System.schedule().

Future Methods

Step-by-Step: Annotate with @future.

Rationale: Async API callouts.

Implementation Guidance: Use future method signature.

Exception Handling

Step-by-Step: Use try-catch.

Rationale: Handles errors.

Implementation Guidance: Log error messages.

Test Classes

Step-by-Step: Create @isTest classes.

Rationale: Ensure 75% coverage.

Implementation Guidance: Insert test data and assert.

Asynchronous Processing

Step-by-Step: Combine Batch, Queueable, Future.

Rationale: Manage governor limits.

Implementation Guidance: Chain jobs.

Phase 6: User Interface Development

Goal: Make it user-friendly. This phase customizes the Lightning Experience for intuitive interactions, like quick sales entry or inventory dashboards, tailored to fuel station staff working on desktops or mobile devices.

Lightning App Builder

Step-by-Step: Create a 'Fuel Station CRM' app.

Rationale: Dedicated app for roles.

Implementation Guidance: Add role-specific tabs.

Record Pages

Step-by-Step: Edit record pages.

Rationale: Shows history.

Implementation Guidance: Add related list components.

Tabs

Step-by-Step: Add custom tabs.

Rationale: Quick access.

Implementation Guidance: Customize icons and order.

Home Page Layouts

Step-by-Step: Edit home page.

Rationale: Dashboard insights.

Implementation Guidance: Add chart components.

Utility Bar

Step-by-Step: Configure utility bar.

Rationale: Quick actions.

Implementation Guidance: Add quick action buttons.

LWC (Lightning Web Components)

Step-by-Step: Create LWCs in VS Code.

Rationale: Custom UI for searches.

Implementation Guidance: Use datatable.

Apex with LWC

Step-by-Step: Wire Apex methods.

Rationale: Real-time validation.

Implementation Guidance: Use promise handling.

Events in LWC

Step-by-Step: Use CustomEvent.

Rationale: Modular UI.

Implementation Guidance: Dispatch events.

Wire Adapters

Step-by-Step: Use @wire.

Rationale: Reactive fetching.

Implementation Guidance: Auto-update alerts.

Imperative Apex Calls

Step-by-Step: Call Apex on actions.

Rationale: Handles transactions.

Implementation Guidance: Use then/catch.

Navigation Service

Step-by-Step: Use lightning/navigation.

Rationale: Smooth flow.

Implementation Guidan

Setup   Home   Object Manager ⌄

SETUP
Object Manager

Fuel detail Validation Rule

Back to Fuel detail

Validation Rule Detail   Edit   Clone

Rule Name	Fuel_supplied_today	Active	✓
Error Condition Formula	Fuel_supplied__c >Fuel_supplied__c		
Error Message	Delivery date must be in the future for proper planning.	Error Location	Top of Page
Description			
Created By	Miniki Mahalaxmi, 9/22/2025, 11:54 PM	Modified By	Miniki Mahalaxmi, 9/22/2025, 11:54 PM

Edit   Clone

Setup   Home   Object Manager ⌄

Q workflow rule

Process Automation

Workflow Rules

Didn't find what you're looking for?
Try using Global Search.

SETUP
Workflow Rules

Edit Rule Fuel_Type__c   Help for this Page ❓

Step 3: Specify Workflow Actions	Step 3 of 3

Done

Specify the workflow actions that will be triggered when the rule criteria are met. See an example

Rule Criteria	Fuel_supplied__c > Fuel_supplied__c
Evaluation Criteria	Evaluate the rule when a record is created

Immediate Workflow Actions

No workflow actions have been added.

Add Actions ▼

Time-Dependent Workflow Actions   See an example

ⓘ No workflow actions have been added. Before adding a workflow action, you must have at least one time trigger defined.

Q   Search Setup

::::   **Setup**   Home   Object Manager ⌄

Q   workflow rule

⌐ Process Automation

   Workflow Rules

Didn't find what you're looking for?
Try using Global Search.

SETUP
Workflow Rules

Workflow Rule   Help for this Page ❓
Fuel_Type__c

ℹ️   Go with the flow! With Flow Builder, the future of low-code automation,
      you can do everything you do with workflow rules — and more! Salesforce
      plans to retire workflow rules and recommends building automation in
      Flow Builder.   Tell Me More | Migrate your workflow rules to flows

Workflow Rule Detail   [Edit] [Clone] [Deactivate]

Rule Name	Fuel_Type__c	Object	Fuel detail
Active	✓	Evaluation Criteria	Evaluate the rule when a record is created
Description			
Rule Criteria	Fuel_supplied__c > Fuel_supplied__c		
Created By	Miniki Mahalaxmi, 9/22/2025, 11:57 PM	Modified By	Miniki Mahalaxmi, 9/22/2025, 11:57 PM

Workflow Actions   [Edit]

Immediate Workflow Actions

No workflow actions have been added.

8 28°C

Flow Builder Gas station - V1 ▼

? ▼

Last saved on 9/15/2025, 11:15 AM **Active** Run Debug

Free-Form ▼

View Tests

Save As New Ve

Toolbox

Elements Manager

✓ Interaction (3)

⚡ Action

Subflow

⊘ Custom Error

✓ Logic (6)

= Assignment

Decision

Loop

Transform

⇅ Collection Sort

▶

Start
Record-Triggered Flow

Object: **Buyer**   Edit
Trigger: **A record is created or updated**
Optimize for: **Actions and Related Records**

+ Add Scheduled Paths (Optional)

⤢ Open Flow Trigger Explorer for Buyer

Run Immediately

Setup   Home   Object Manager ∨

Q approv

✓ Data

    Mass Transfer Approval Requests

✓ Feature Settings

    Approval Settings

✓ Process Automation

    Approval Processes

Didn't find what you're looking for?
Try using Global Search.

SETUP
Approval Processes

1. Read the help topic
2. View the checklist
3. Create a custom user hierarchical relationship field
4. Create email templates
5. Create an approval process using either the Jump Start or Standard Wizard
6. Add Approval History Related List to all page layouts
7. Activate the process to deploy to your users

Manage Approval Processes For:

Fuel detail   ∨

A listing of both active and inactive approval processes for **Fuel details** is displayed below. To create a new approval process, click Create New Approval Process then select Use Jump Start Wizard to set up your approval process in a few short steps. Or, select Use Standard Wizard to configure all approval options.

Create New Approval Process ▼

Active Approval Processes	Reorder

No approval processes available

Inactive Approval Processes

Action	Approval Process Name	Description
Edit	Del	Fuel manager	

Setup   Home   Object Manager ∨

Q email alerts

⌐ Process Automation

  ∨ Workflow Actions

    Email Alerts

Didn't find what you're looking for?
Try using Global Search.

SETUP
Email Alerts

Email Alert   🖨 Help for this Page ❓
**"Your fuel order for {Quantity__c}
liters of {Fuel_Type__c} is
approved."**
        Rules Using This Email Alert [0] | Approval Processes Using This Email Alert [0] |
                    Entitlement Processes Using This Email Alert [0]

Email Alert Detail   [Edit] [Delete] [Clone]

Description	"Your fuel order for {Quantity__c} liters of {Fuel_Type__c} is approved."	E Temp
Unique Name	Your_fuel_order_for_Quantity_c_liters_of_Fuel_Type_c_is_approved	O
From Email Address	Current User's email address	
Recipients	Role: Marketing Team Role: Fuel manager User: Security User	
Additional Emails		
Created By	Miniki Mahalaxmi, 9/23/2025, 12:06 AM	Mod

                        [Edit] [Delete] [Clone]

Setup Home Object Manager ∨

Q notification builder

∨ Notification Builder

Custom Notifications

Notification Delivery Settings

Didn't find what you're looking for?
Try using Global Search.

SETUP
Custom Notifications

ⓘ When you create and use custom notifications, the title and body of the
custom push notification may be saved to and processed by Google,
Microsoft and/or Apple. Salesforce is not responsible for the privacy and
security practices of third-party systems or applications like Google Cloud
Messaging or Apple Push Notification Service.

Custom Notification Types   New

Send custom notifications using Flows or Process Builder

NOTIFICATION NAME	API NAME
enablement_coaching_feedback_ready	enablement_coaching_feedback_rea
Fuel order approved	Fuel_order_approved
Storage tanks	Storage_tanks

orgfarm-6cc9db0b01-dev-ed.develop.my.salesforce.com/_ui/common/apex/debug/ApexCSIPage

Edit ▼ Debug ▼ Test ▼ Workspace ▼ Help ▼ < >

tewayService.apxc ✕ SMSService.apxc ✕ FuelService.apxc * ✕ FuelOrderTrigger.apxt * ✕ **FuelOrderHandler.apxt * ✕**

le Coverage: None ▼ API Version: 64 ▼   Go To

```
public class FuelOrderHandler {
    public static void beforeInsert(List<Fuel_Order__c> newOrders) {
        for (Fuel_Order__c order : newOrders) {
            // Check overlap logic here (see Step 6)
        }
    }
}
```

Setup | Home | Object Manager ∨ |

Quick Find

up Home

esforce Go

vice Setup Assistant

mmerce Setup Assistant

d Service Setup Home (Beta)

perforce Assistant

ease Updates

esforce Mobile App

htning Usage

timizer

es Cloud Everywhere

MINISTRATION

Users

Data

Email

SETUP
Lightning App Builder

The Lightning App Builder provides an easy to use graphical interface for creating custom Lightning pages for Salesforce Lightning Experience and mobile app. Lightning pages are built using Lightning components—compact, configurable, and reusable elements that you can drag and drop into regions of the page in the Lightning App Builder.

View: | All ∨ | Create New View

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z
Other   **All**

Lightning Pages   [New]

Action	Label ↑	Name	Namespace Prefix	Description	Type	Crea
Edit	Clone	Del	Fuel Station	Fuel_station			Record Page	min. 9/14 1:09

::: Gas station   suppliers ⌄   Gas stations ⌄   Buyers ⌄   Fuel details ⌄   ✏

Fuel detail
Fuel_Transaction__c

New Contact   Edit   New Opportunity   ▼

Related   **Details**

Fuel detail Name
Fuel_Transaction__c   ✏

Fuel supplied
1,000,000   ✏

Supplier name
Yadi Reddy

Gas station
petrol bunl

Created By
Miniki Mahalaxmi, 9/23/2025, 3:29 AM

Last Modified By
Miniki Mahalaxmi, 9/23/2025, 3:29 AM

✕

Create Report

Category

Activities

Contracts and Orders

Price Books, Products and Assets

Administrative Reports

File and Content Reports

Individuals

Other Reports

Hidden Report Types

Select a Report Type

🔍 Search Report Types...

Supplier History	Standard	▼
Gas stations	Standard	▼
Gas stations with Fuel det...	Standard	▼
Gas station History	Standard	▼
Buyers	Standard	▼
Buyer History	Standard	▼
Fuel detail History	Standard	▼
Orchestration Run Logs S...	Custom	▼
Orchestration Work Items ...	Custom	▼
Orchestration Step Runs ...	Custom	▼
Orchestration Stage Runs	Custom	▼

Details   ⊠

📇 **Fuel deta...**
Standard R...

Start Report   ▼

ⓘ **Details**

Created By You
No Reports Yet

Created By Others
No Reports Yet

Objects Used in Report Type

Gas station   suppliers ⌄   Gas stations ⌄   Buyers ⌄   * Dashboards ⌄ ✕   * More ▼   ✏

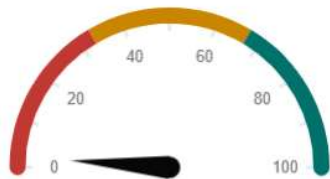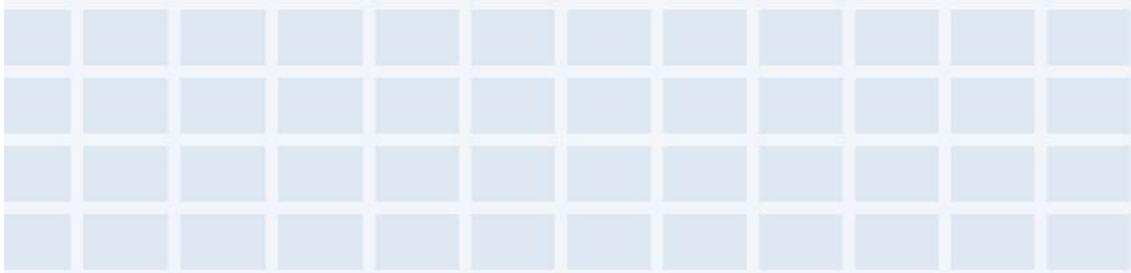current stock levels by Fuel_Type__c)   ✏   + Widget   + Filter   ↶ ↷ ✕

Fuel_Transaction...   ✏ ✕

View Report (Fuel_Transaction__c))

Lightning App Builder   📄 Pages ⌄   Fuel Supplied   ? Help

↻ ✂ 🗐 🗑   🖵 Desktop ▼   Shrink To View ▼ ↻   Activation...   Save

ponents

Search... ⚙▾

Recent Items
Report Chart
Rich Text
runtime_cdp:dataModelTab
Scheduled Service Appointments
Tableau Pulse
Tableau View
Tabs
Visualforce

Custom (1)
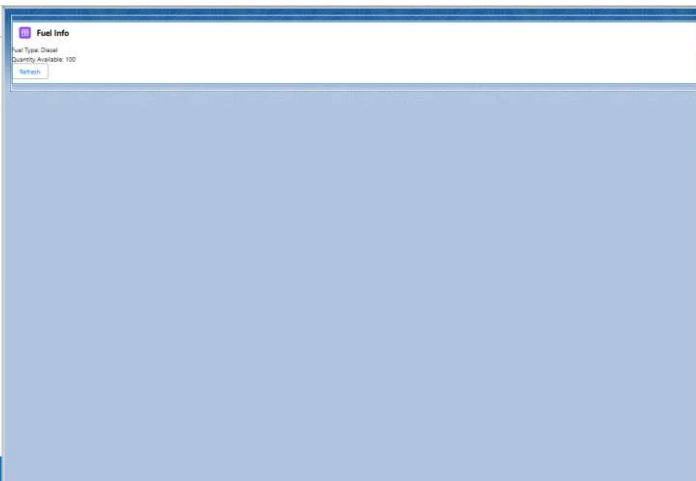
Fuel Station Org

Custom - Managed (0)

components available.

Get more on the AppExchange

🔲 Fuel Info
Fuel Type: Diesel
Quantity Available: 100
Refresh

Page > Fuel Station Org

⌄ Set Component Visibility

Filters

+ Add Filter

Desktop ▾ | Shrink To View ▾ | Activation... | Save

Fuel Info
Fuel Type: Diesel
Quantity Available: 100
Refresh

Page > Fuel Station Org

∨ Set Component Visibility

Filters

+ Add Filter

ponents

Search...

Recent Items
Report Chart
Rich Text
runtime_cdp:dataModelTab
Scheduled Service Appointments
Tableau Pulse
Tableau View
Tabs
Visualforce

Custom (1)

Fuel Station Org

Custom - Managed (0)

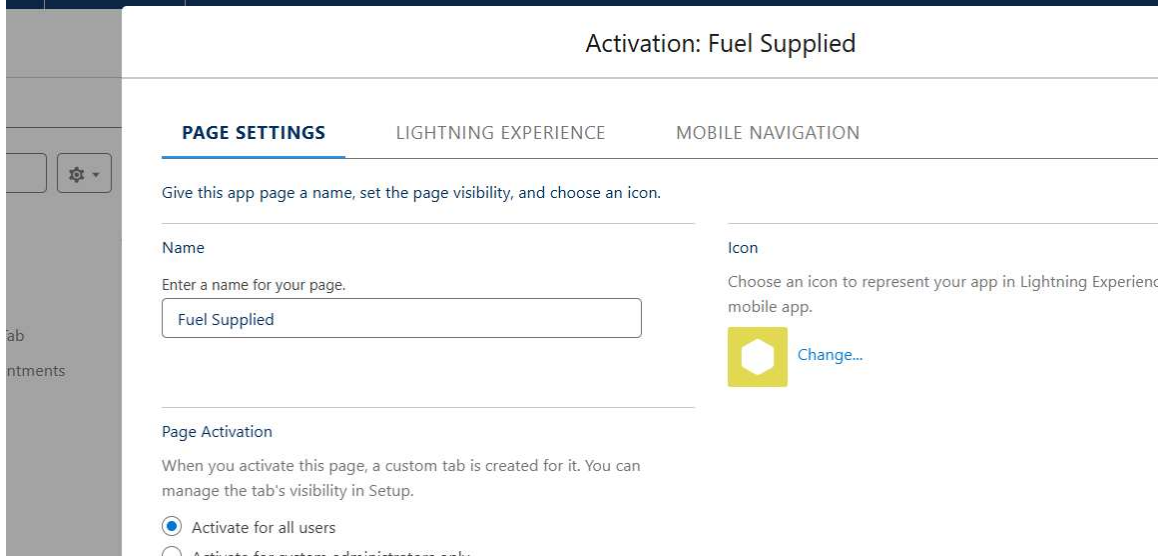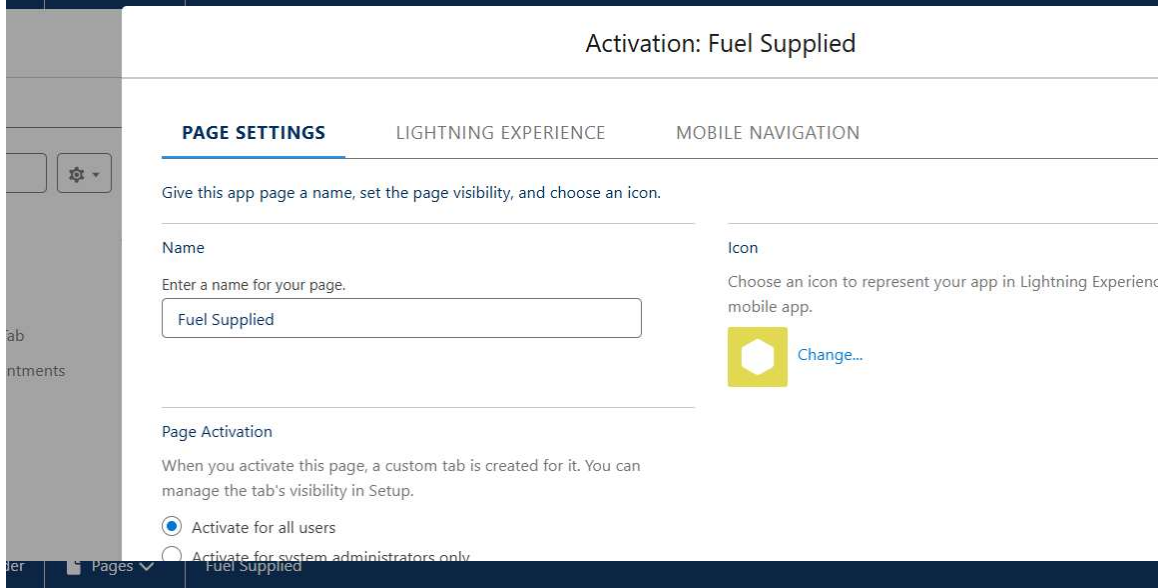:omponents available.

Get more on the AppExchange

---

der | Pages ∨ | Fuel Supplied

Activation: Fuel Supplied

PAGE SETTINGS | LIGHTNING EXPERIENCE | MOBILE NAVIGATION

Give this app page a name, set the page visibility, and choose an icon.

Name

Enter a name for your page.

Fuel Supplied

Icon

Choose an icon to represent your app in Lightning Experienc
mobile app.

Change...

Page Activation

When you activate this page, a custom tab is created for it. You can
manage the tab's visibility in Setup.

🔘 Activate for all users
⚪ Activate for system administrators only

Activation: Fuel Supplied

PAGE SETTINGS   LIGHTNING EXPERIENCE   MOBILE NAVIGATION

Give this app page a name, set the page visibility, and choose an icon.

Name

Enter a name for your page.

Fuel Supplied

Icon

Choose an icon to represent your app in Lightning Experience and mobile app.
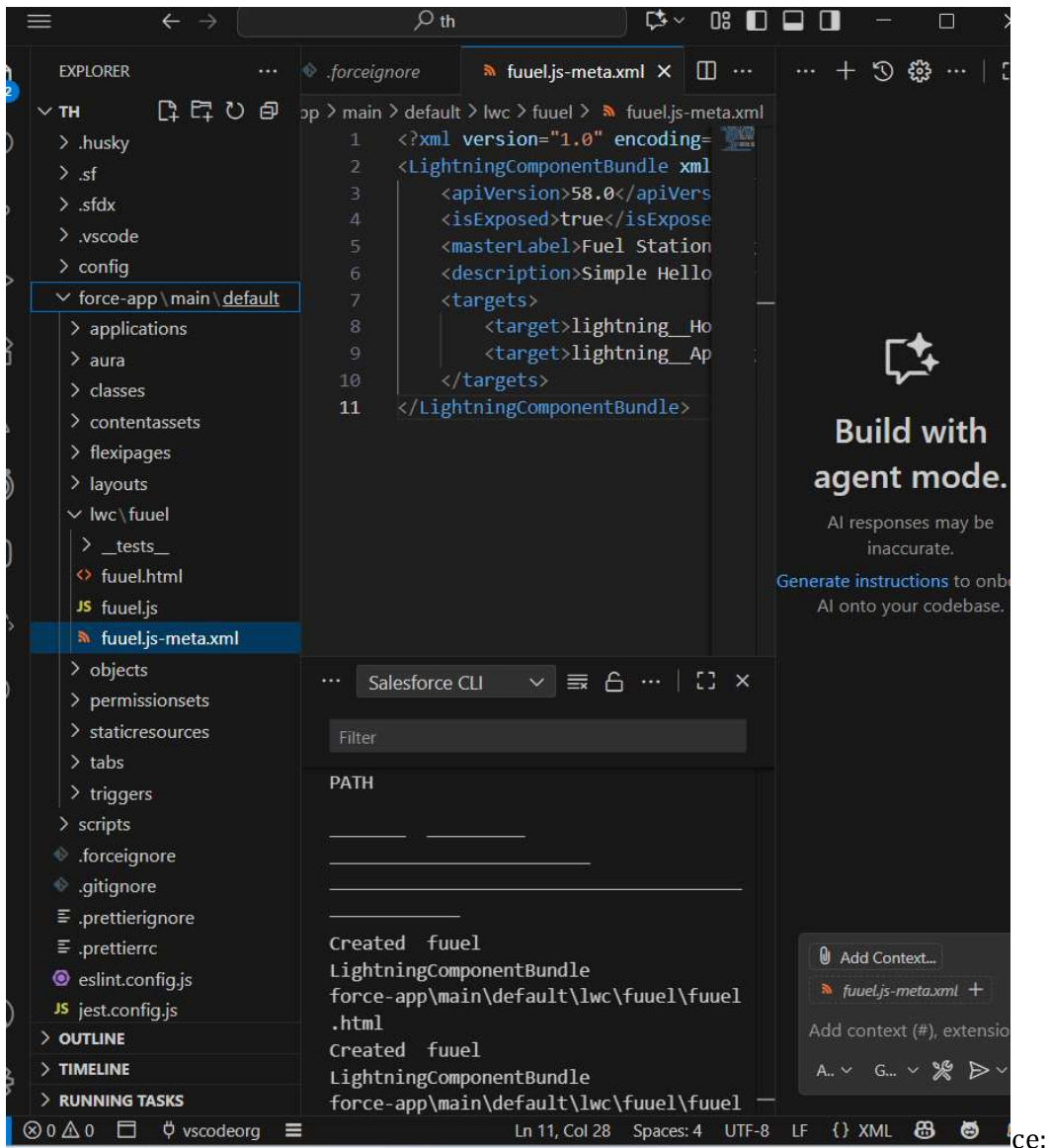
Change...

Page Activation

When you activate this page, a custom tab is created for it. You can manage the tab's visibility in Setup.

◉ Activate for all users

◯ Activate for system administrators only

To set further restrictions on who sees this page, use permission sets and profile assignments in Setup.

Cancel

ce:

Navigate to record page.