Public Transport CRM

Industry: Public Transport / Customer Relationship Management
Project Type: B2B/B2C Salesforce CRM Implementation
Target Users: Transport Managers, Ticketing Staff, Drivers, Passengers, Executives

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Project Overview

Many public transport companies struggle to manage passengers, buses, drivers, and ticket bookings efficiently. Current processes rely on manual tracking or spreadsheets, resulting in:

- Difficulty tracking bus schedules and ticket bookings in real-time
- Inefficient communication with passengers and staff
- Missed opportunities to optimize routes and occupancy
- Limited insights for management decision-making

Public Transport CRM Solution:
A Salesforce-based solution to manage passengers, buses, drivers, routes, and tickets. It provides automated notifications, ticket tracking, and dashboards for operational efficiency. Staff can manage bookings, monitor bus occupancy, and respond to feedback quickly, improving passenger satisfaction and operational decision-making.

Phase 1: Problem Understanding & Industry Analysis

1. Requirement Gathering:
  ● Passenger Management: Name, Contact Details, Ticket History
  ● Bus & Driver Management: Bus Number, Capacity, Assigned Driver
  ● Ticket Management: Ticket Number, Status, Route, Booking Date
  ● Route Management: Route Name, Stops, Schedule
  ● Feedback & Reporting: Passenger feedback, ticket occupancy, staff performance
  ● Automated Notifications: Ticket confirmation, cancellation, delay alerts

2. Stakeholder Analysis:

  ● **Transport Manager:** Full control over buses, tickets, routes, and dashboards
  ● **Ticketing Staff:** Track bookings, create tickets, assign buses and drivers
  ● **Drivers:** View assigned routes and schedules
  ● **Executives:** View analytics, occupancy trends, and revenue reports

3. Business Process Mapping:

  1. Passenger books ticket → added to CRM
  2. Assign bus & driver → track occupancy
  3. Manage ticket cancellations and refunds
  4. Collect feedback → store in CRM
  5. Generate reports → dashboards for occupancy, revenue, and feedback

4. Use Case Analysis:

  ● Manual ticketing causes delays and errors
  ● Management cannot monitor real-time occupancy or revenue trends

5. AppExchange Exploration:

Explored transport management and scheduling apps for reference features

Phase 2: Org Setup & Configuration

Purpose: Configure Salesforce org for Public Transport CRM to ensure correct users, profiles, roles, and security settings.

Steps:

1. **Salesforce Edition:** Developer Edition
2. **Company Profile Setup:** Name, Address, Timezone, Locale, Currency
3. **Business Hours & Holidays:** Mon–Sun, 6 AM – 10 PM; include public holidays
4. **Fiscal Year:** Standard
5. **User Setup & Licenses:**
    - Admin: Full access to all CRM data, tickets, and dashboards
    - Ticketing Staff: Manage tickets and assign buses/drivers
    - Driver: View assigned routes and schedules

6. **Profiles:**

    - Admin: Full access
    - Staff: Edit/View tickets
    - Driver: View only assigned tickets/routes

Roles: Admin > Ticketing Staff > Driver

6. **Permission Sets:** Assign dashboard and report access for Ticketing Staff
7. **OWD & Sharing Rules:**

   ○ Passengers: Private
   ○ Tickets: Private
   ○ Share tickets with assigned staff or drivers for tracking

8. **Login Access Policies:** Admin can login as any user
9. **Sandbox Usage & Deployment Basics:** Optional for testing workflows and ticket management

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Phase 3: Data Modeling & Relationships

Purpose: Design objects and relationships for passengers, buses, drivers, tickets, and routes.

Custom Objects:

- **Passenger:** Name, Contact, Address, City, Email, Age
- **Bus:** Bus Number, Capacity, Assigned Driver, Bus Type, Status, Route, Available Seats
- **Driver:** Name, License, Assigned Bus, Experience Years
- **Ticket:** Ticket Number, Passenger, Bus, Status, Fare, Bus, Seat Number
- **Route:** Route Name, Start Point, End Point, Schedule
- **Feedback :** Bus, Driver, Comments, Passenger, Feedback Date

Relationships:

- Passenger ↔ Ticket → Lookup (track tickets per passenger)
- Bus ↔ Ticket → Lookup (track tickets assigned to a bus)
- Driver ↔ Bus → Lookup (track assigned driver)

Additional Configuration:

- Page Layouts: Display key fields on Ticket, Passenger, Bus, Driver, and Route
- Compact Layouts: Show Name, Ticket Status, Bus Number
- Schema Builder: Visual diagram of objects and relationships

Passenger

Fields & Relationships
14 Items, Sorted by Field Label

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Address	Address__c	Text Area(255)			
Age	Age__c	Number(18, 0)			
City	City__c	Text(16)			
Created By	CreatedById	Lookup(User)			
Email	Email__c	Email			
First Name	First_Name__c	Text(18)			
ID Proof	ID_Proof__c	Text(16)			
Last Modified By	LastModifiedById	Lookup(User)			
Last Name	Last_Name__c	Text(14)			

Ticket

Fields & Relationships
13 Items, Sorted by Field Label

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Bus	Bus__c	Lookup(Bus)		✓	
Created By	CreatedById	Lookup(User)			
Fare	Fare__c	Currency(18, 0)			
Last Modified By	LastModifiedById	Lookup(User)			
Owner	OwnerId	Lookup(User,Group)		✓	
Passenger	Passenger__c	Lookup(Passenger)		✓	
Record Type	RecordTypeId	Record Type		✓	
Route	Route__c	Lookup(Route)		✓	
Seat Number	Seat_Number__c	Text(5)			

Bus

Fields & Relationships
13 Items, Sorted by Field Label

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Available Seats	Available_Seats__c	Number(18, 0)			
Bus Code	Bus_Code__c	Text(10) (External ID)		✓	
Bus ID	Name	Text(80)		✓	
Bus Number	Bus_Number__c	Text(10)			
Bus Type	Bus_Type__c	Picklist			
Capacity	Capacity__c	Number(18, 0)			
Created By	CreatedById	Lookup(User)			
Driver	Driver__c	Lookup(Driver)		✓	
Last Modified By	LastModifiedById	Lookup(User)			

Fields & Relationships
10 Items, Sorted by Field Label

Quick Find | New | Deleted Fields | Field Dependencies | Set History Tracking

FIELD LABEL ▲	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Assigned Bus	Assigned_Bus__c	Lookup(Bus)		✓	▼
Contact Number	Contact_Number__c	Phone			▼
Created By	CreatedById	Lookup(User)			
Driver ID	Name	Text(80)		✓	▼
Experience Years	Experience_Years__c	Number(18, 0)			▼
Last Modified By	LastModifiedById	Lookup(User)			
License Number	License_Number__c	Text(18)			▼
Name	Name__c	Text(20)			▼
Owner	OwnerId	Lookup(User,Group)		✓	

Fields & Relationships
13 Items, Sorted by Field Label

Quick Find | New | Deleted Fields | Field Dependencies | Set History Tracking

FIELD LABEL ▲	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Bus	Bus__c	Lookup(Bus)		✓	▼
Comments	Comments__c	Long Text Area(32768)			▼
Created By	CreatedById	Lookup(User)			▼
Driver	Driver__c	Lookup(Driver)		✓	▼
Feedback Date	Feedback_Date__c	Date			▼
Feedback ID	Name	Auto Number		✓	▼
Last Modified By	LastModifiedById	Lookup(User)			
Owner	OwnerId	Lookup(User,Group)		✓	
Passenger	Passenger__c	Lookup(Passenger)		✓	▼

Fields & Relationships
11 Items, Sorted by Field Label

Quick Find | New | Deleted Fields | Field Dependencies | Set History Tracking

FIELD LABEL ▲	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Assigned Bus	Assigned_Bus__c	Lookup(Bus)		✓	▼
Created By	CreatedById	Lookup(User)			
Distance km	Distance_km__c	Number(10, 2)			▼
End Point	End_Point__c	Text(10)			▼
Estimated Time	Estimated_Time__c	Text(6)			▼
Last Modified By	LastModifiedById	Lookup(User)			
Owner	OwnerId	Lookup(User,Group)		✓	
Record Type	RecordTypeId	Record Type		✓	
Route Code	Route_Code__c	Text(14) (External ID)		✓	▼

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
Object Access

Phase 4: Process Automation (Admin)

Purpose: Automate ticket booking, notifications, and feedback workflows.

Examples:

1. **Validation Rules:** Ensure tickets cannot be booked if bus is full

2. **Workflow / Process Builder:**

   - Notify Admin/Staff when a ticket is booked, canceled, or delayed
   - Auto-assign default bus if none selected

3. **Flow Builder:**

   - Auto-generate occupancy reports per route
   - Automate passenger notifications for tickets and cancellations

4. **Email Alerts / Custom Notifications:**

   - Notify passengers of ticket confirmation, cancellations, or delays
   - Notify staff when action is required (overbooked or canceled tickets)
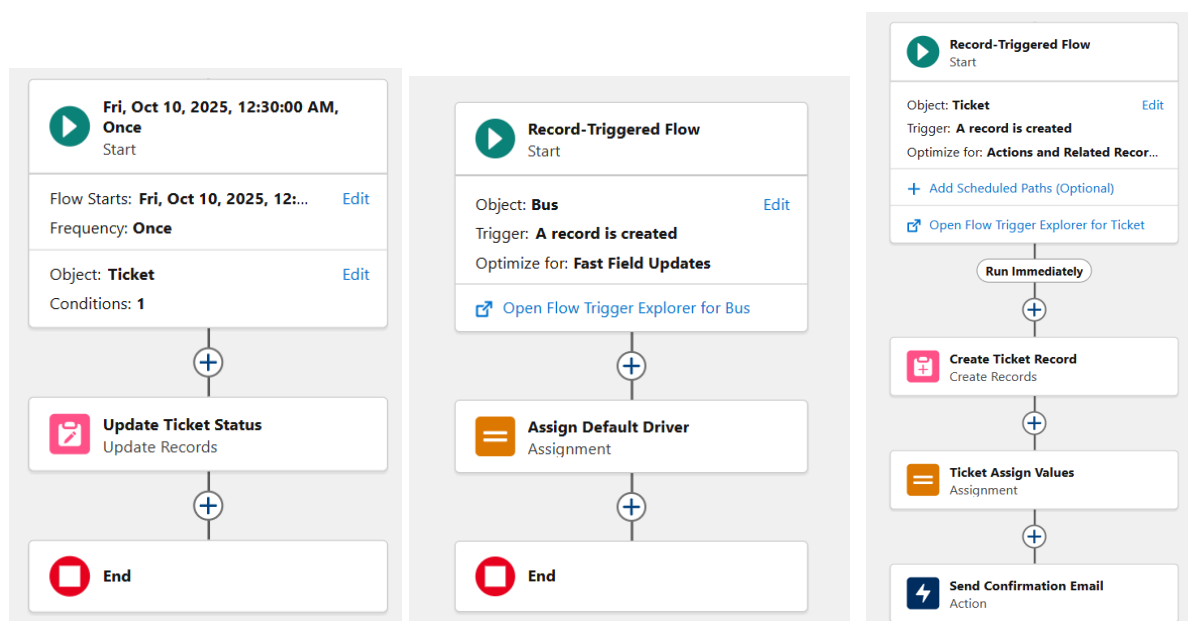
Phase 5: Apex Programming (Developer)

Purpose: Use Apex for advanced automation for ticketing and bus occupancy.

Examples:

- **Triggers:**

  - Ticket Insert → Update bus occupancy automatically
  - Ticket Cancellation → Notify staff

- **Helper Classes:**

  - Calculate occupancy per bus
  - Determine overbooked buses

- **Batch / Queueable Apex:** Bulk update ticket records and send notifications
- **Test Classes:** Validate triggers and helper classes for Salesforce deployment

```
PreventDuplicateSeatBooking.apxt

Code Coverage: None ▾   API Version:  64  ▾

1 ▾ trigger PreventDuplicateSeatBooking on Ticket__c (before insert, before update) {
2
3       // Step 1: Collect Bus + Route + Seat
4       Set<String> newSeatKeys = new Set<String>();
5       Set<Id> busIds = new Set<Id>();
6       Set<Id> routeIds = new Set<Id>();
7       Set<String> seatNumbers = new Set<String>();
8
9 ▾     for(Ticket__c t : Trigger.new){
10 ▾        if(t.Bus__c != null && t.Route__c != null && t.Seat_Number__c != null){
11             String key = t.Bus__c + '-' + t.Route__c + '-' + t.Seat_Number__c;
12             newSeatKeys.add(key);
13
14             busIds.add(t.Bus__c);
15             routeIds.add(t.Route__c);
16             seatNumbers.add(t.Seat_Number__c);
17         }
18     }
19
```

Phase 6: User Interface Development

Purpose: Create a user-friendly interface for different roles.

Steps:

- Create Public Transport App in Lightning App Builder
- Add Tabs: Passengers, Tickets, Buses, Drivers, Routes, Reports, Dashboards
- Customize Record Pages for Ticket, Passenger, and Bus objects
- Home Page Layouts: Dashboard showing tickets, occupancy, and driver workloads
- Optional LWC: Real-time bus status, ticket search, route overview
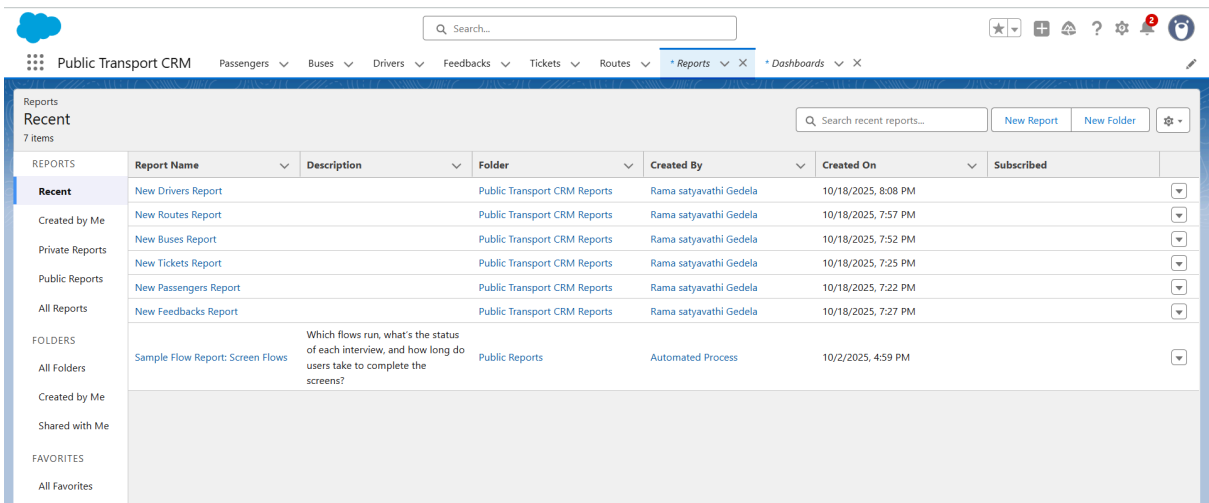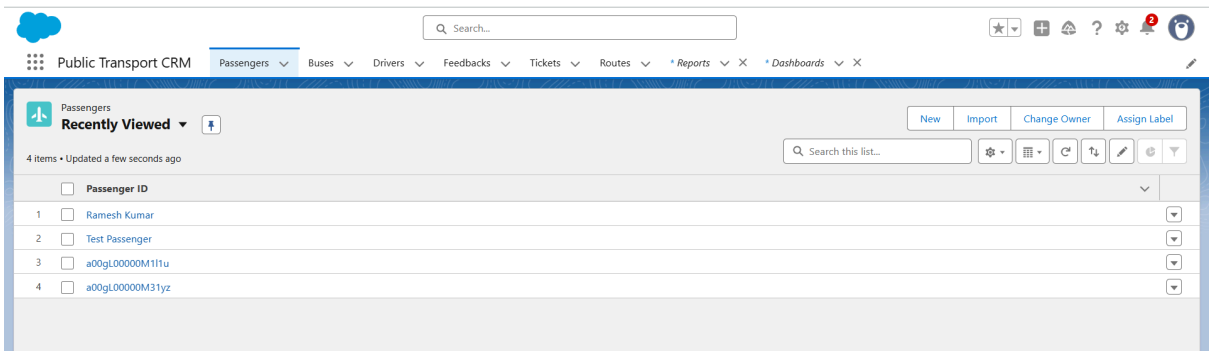
Phase 7: Integration & External Access

Purpose: Connect Salesforce with external systems for notifications and ticketing.

- **Named Credentials:** Connect with payment gateways and notification services
- **Platform Events:** Notify staff and drivers when ticket status changes
- **Remote Site Settings:** Allow external API access for notifications and route updates

Phase 8: Data Management & Deployment

Purpose: Manage and migrate data securely.

1. **Data Import Wizard:** Upload sample passengers, tickets, buses for testing

2. **Data Loader:** Bulk import or update large datasets

3. **Duplicate Rules:** Prevent duplicate passenger or ticket records

4. **Change Sets / Deployment:** Move configurations from Sandbox → Production

5. **Export / Backup:** Monthly backup of passengers, tickets, buses, and routes
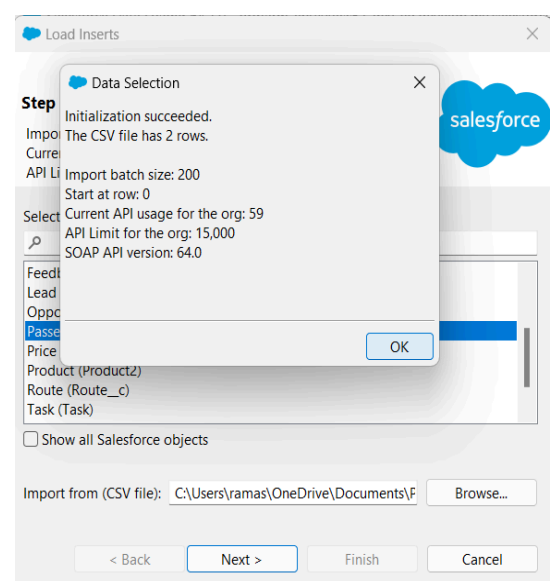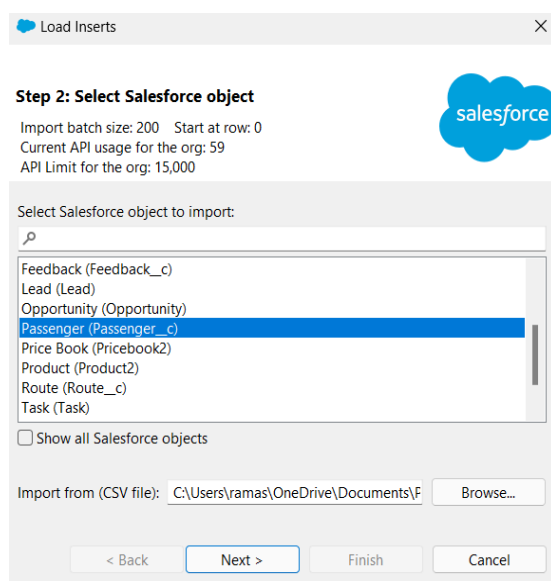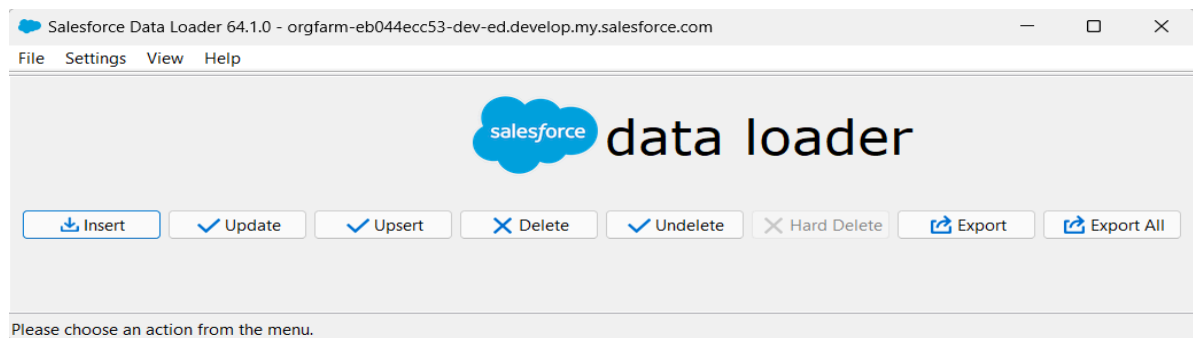
Load Inserts

Step 2b: (Optional) relate using lookup field

Relationships of Passenger__c are listed below.
Select a related object and its lookup field if the CSV refers to the
related object using the selected lookup field.

Relationship :	Related Object	-	Lookup Field of Related Object
Owner :	User	-	Id
RecordType :	RecordType	-	Id

< Back   Next >   Finish   Cancel

Mapping Dialog

Match the Salesforce object fields to your CSV column headers.

Clear Mapping   Auto-Match Fields to Columns

Field Name/Relationship	Field Label	Field Data Type
Owner:User-Id	Owner ID (User ID)	Lookup (User)
Owner-Id	Owner ID	Lookup (Group, Us
RecordType:RecordType-Id	Record Type ID (Record Type ID)	Lookup (RecordTy|
RecordType-Id	Record Type ID	Lookup (RecordTy|

Drag the Salesforce object fields down to the column mapping.
To remove a mapping, select a row and click Delete key on the keyboard.

CSV Column Header	Field Name/Relationship
Name	Name
Email__c	Email__c
Phone__c	Phone__c
Address__c	Address__c
Passenger__r.Passenger_Code__c	Passenger_Code__c

OK   Save Mapping   Cancel

Mapping Dialog

Match the Salesforce object fields to your CSV column headers.

Clear Mapping   Auto-Match Fields to Columns

Field Name/Relationship	Field Label	Field Data Type
Owner:User-Id	Owner ID (User ID)	Lookup (User)
Owner-Id	Owner ID	Lookup (Group, Us
RecordType:RecordType-Id	Record Type ID (Record Type ID)	Lookup (RecordTy|
RecordType-Id	Record Type ID	Lookup (RecordTy|

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CSV Column Header	Field Name/Relationship
Name	Name
Email__c	Email__c
Phone__c	Phone__c
Address__c	Address__c
Passenger__r.Passenger_Code__c	Passenger_Code__c

OK   Save Mapping   Cancel

Load Inserts

Step 4: Finish

Import batch size: 200   Start at row: 0
Current API usage for the org: 59
API Limit for the org: 15,000

Results Folder: C:\Users\ramas\OneDrive\Documents\Salesforce   Browse...

< Back   Next >   Finish   Cancel

Load Inserts

Step

Impo

Operation Finished

The operation has fully completed. There were 2 successful inserts and 0 errors.

View Successes   View Errors   OK

Progress

Load

Processed 2 of 2 records with 2 successes and 0 errors.

Cancel

Phase 9: Reporting, Dashboards & Security Review

**Purpose:** Track tickets, occupancy, and operational efficiency.

Reports:

- Tickets per Bus / Route
- Passenger Feedback Summary
- Daily / Monthly Occupancy

Dashboards:

- **Ticket Sales by Route** → Bar Chart
- **Feedback Summary** → Donut Chart
- **Passenger Distribution** → Number/Bar Chart
- **Buses per Driver** → Column Chart
- **Ticket Trend by Route** → Line Chart

Security:

- Field-Level Security for sensitive data (Passenger Info, Contact)
- Role-Based Sharing Rules: Admin > Staff > Driver
- Audit Trail for all ticket and passenger updates
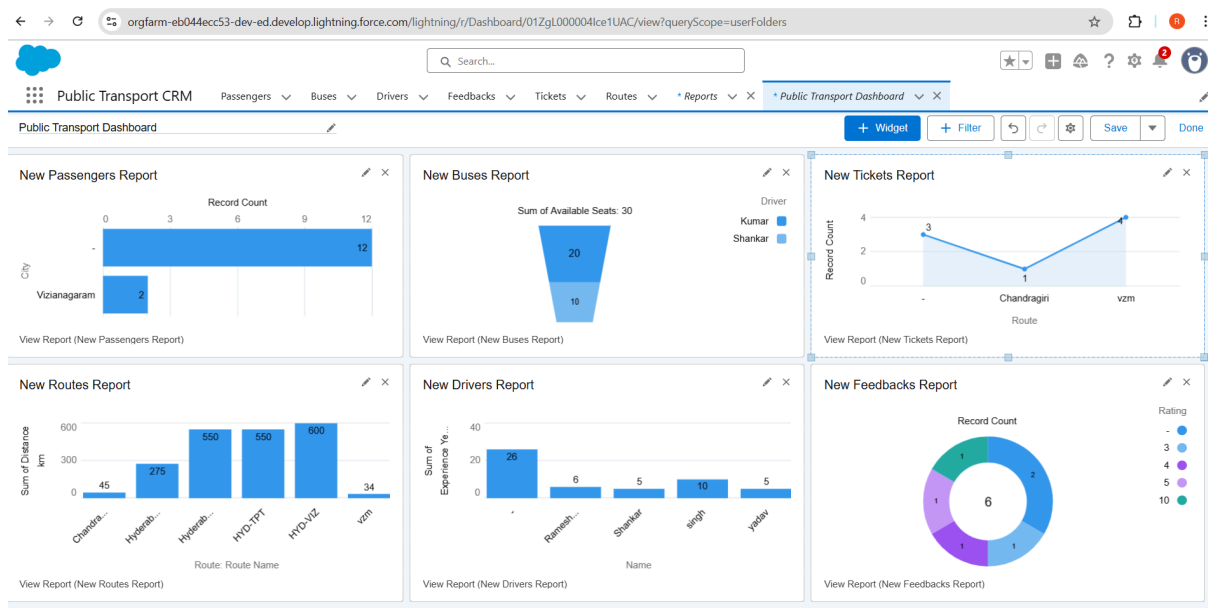
Phase 10: Final Presentation & Demo Day

Purpose: Showcase the project and its features.

Demo Walkthrough:

1. Create new Passenger
2. Assign Ticket → Bus & Driver
3. Update Ticket Status (Booked / Cancelled)
4. Show Dashboards: Tickets, Occupancy, Staff Workload

Feedback Collection: Gather input from mentors or stakeholders
Handoff Documentation: Include screenshots, reports, and GitHub repository
Portfolio Showcase: Add project to LinkedIn, resume, or portfolio

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Conclusion

The **Public Transport CRM** centralizes operations, automates ticketing, and provides dashboards for actionable insights. It reduces errors, improves passenger satisfaction, and optimizes bus and route management.

Future Enhancements:

- AI-based route optimization and bus allocation
- Chatbot for ticket queries and booking
- Predictive analysis for occupancy and revenue