

**Title:**

# **A CRM Application for Public Transport Management System**

**College:** Seshadri Rao Gudlavalleru Engineering College

**Team Details:**

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## **User Story:**

The Public Transport(RTC - Regional Transport corporation) Management System is a comprehensive Salesforce application designed to streamline and manage various operational aspects of the Public Transport. This system will enable the Transport department to efficiently maintain details of employees, their roles, bus stations, buses, ticket fares, daily bus trips, passenger counts, and the total ticket fare amount. By leveraging Salesforce's robust platform, the Transport Department can improve operational efficiency, data accuracy, and reporting capabilities.

## **1. INTRODUCTION**

### **1.1 Project Overview:**

This project is to Consolidate all Transport-related data into a single Salesforce application to ensure easy access, management, and reporting. Enable real-time insights and reports on various operational metrics such as passenger count and revenue. Maintain detailed records of all Transport employees, including personal details, contact information. Define and assign roles and responsibilities to each employee. Schedule and manage employee shifts, especially for drivers and conductors. Maintain information on all bus stations, including location, facilities. Maintain detailed records of all buses, including model, capacity. Manage bus schedules and assign buses to specific routes and trips. Define and manage ticket fares for different routes and bus types. Track daily trips for each bus, including start and end times, routes, and driver details. Record the number of passengers on each trip. Calculate and track the total ticket fare amount collected from each trip. Provide real-time dashboards for quick insights into key metrics such as passenger count, trip efficiency, and revenue.

### **1.2 Purpose:**

The primary objective of this project is to design and implement a scalable, efficient, and user-friendly Salesforce-based CRM application for managing public transport services. The system offers:

- A simplified interface to handle bus bookings and route assignments
- Automation of trip scheduling, bus-driver allocation, and passenger notifications
- Prevention of double bookings or conflicting schedules through validation logic.
- Real-time visibility into bookings, schedules, and trip statuses
- Reporting and dashboard features for operational tracking and decision-making

## **2. IDEATION PHASE**

## 2.1 Problem Statement

Public transport providers face several operational challenges, such as:

- Lack of a centralized platform to manage passenger data, bus schedules, and routes
- Manual coordination between station staff and drivers leading to delays and inefficiencies
- Duplicate or overlapping bookings due to the absence of automated validation
- No real-time visibility into bookings, seat availability, or trip statuses
- Inability to generate timely reports for management and service optimization.

## 2.2 Empathy Map Canvas

**Customer Persona:** Daily Commuter / Intercity Passenger

- **Says:** "I want a reliable bus and on-time service."
- **Thinks:** "Will my booking be confirmed and the trip be on schedule?"
- **Does:** Checks with the station or online, waits for bus updates, and calls for confirmation
- **Feels:** Frustrated with delays and confused about schedules

**Goals:**

- Hassle-free online or counter-based ticket booking
- Real-time updates on bus timings and seat availability
- Clear route and fare details with booking confirmation

**Challenges:**

- Uncertainty due to last-minute schedule changes
- Long wait times or booking errors
- No clear channel for service feedback or communication

## 2.3 Brainstorming

- Following team discussions and analysis of existing transport challenges, the following solution components were identified:
- A centralized Salesforce CRM to manage all transport operations (buses, routes, bookings, passengers)
- Automated Flows to handle ticket booking confirmations, driver assignments, and notifications
- Validation Rules to prevent schedule conflicts or overbooking
- Custom Reports and Dashboards to visualize booking trends, bus utilization, and route performance.

## 3. REQUIREMENT ANALYSIS

### 3.1 Customer Journey Map

The customer journey in the banquet hall management system follows these key stages:

- **Inquiry:** Customers contact the business through phone or website to inquire about availability and services.
- **Quotation & Confirmation:** A quotation is provided, and once approved, the booking details are entered into the CRM system.
- **Service Allocation:** Relevant services such as catering or decoration are scheduled and assigned to vendors or staff.
- **Event Execution:** The event is carried out with coordination between staff and service providers.
- **Post-Event:** Customer feedback is collected and stored for future reference.

#### Identified Pain Points:

- **Booking clashes** due to a lack of centralized scheduling.
- **Manual service assignment**, leading to delays and inefficiencies.
- **No structured system** for tracking service delivery or feedback.

### 3.2 Solution Requirements

- **Salesforce Developer Org** for building and testing the application.

#### Custom Objects:

- **Trip\_\_c:** Stores details of each trip including source, destination, date, time, and assigned bus.
- **Ticket\_Fare\_\_c:** Captures fare-related information such as fare amount, ticket class, route, and associated trip.

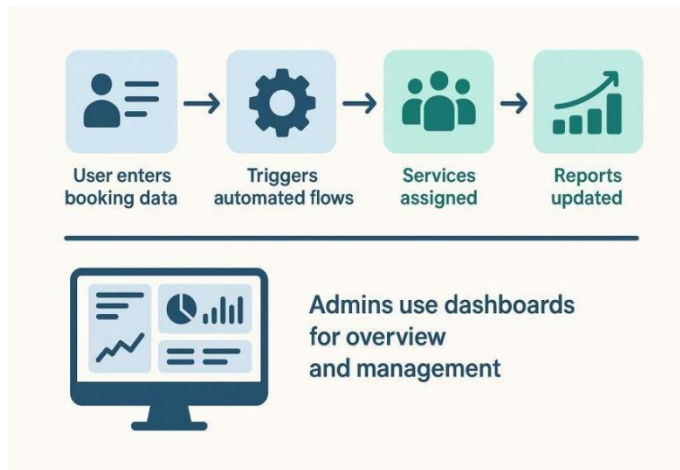
#### Standard Objects:

- **Account:** Represents customer organizations.
- **Contact:** Stores individual customer information.

#### Automation:

- **Flows** for tasks like service scheduling and feedback collection.
- **Apex Triggers** for custom logic, such as preventing overlapping bookings.
- **Validation Rules** to maintain data integrity (e.g., ensuring valid contact info and preventing past dates).
- **Reports and Dashboards** to monitor performance metrics such as bookings per month and customer feedback.

### 3.3 Data Flow Diagram



### 3.4 Technology Stack

Component	Technology Used
Platform	Salesforce Developer Org
Backend Logic	Apex Triggers, Flows
Data Management	Custom & Standard Objects
User Interface	Salesforce Lightning (Lightning App Builder)
Reporting	Dashboards & Reports
Automation	Process Builder, Flow

## 4. PROJECT DESIGN

### 4.1 Problem–Solution Fit

The existing market for banquet hall and event booking management often relies on manual methods such as spreadsheets, phone calls, or registers. These traditional methods lead to inefficiencies like double bookings, poor coordination, and lack of service tracking.

The proposed CRM-based solution addresses this gap by introducing:

- **Centralized data management** for real-time access and update.
- **Automated workflows** to reduce manual dependency
- **Role-based access** to improve staff coordination
- **Streamlined operations** that enhance customer satisfaction and business efficiency.

### 4.2 Proposed Solution

The project delivers a customized Salesforce application that:

- Enables users to **create and manage event bookings** through an intuitive UI
- Utilizes **Flow logic** to automatically assign services such as catering, decoration, or security
- Offers **interactive dashboards and reports** to track event progress and service performance
- Implements **validation rules and Apex triggers** to ensure accurate and consistent data entry.

### 4.3 Solution Architecture

The architecture is organized into three key layers:

- **Presentation Layer:**  
Built using **Salesforce Lightning Experience**, offering responsive and user-friendly interfaces for event managers and staff.
- **Logic Layer:**  
Implemented using **Apex Triggers, Flows, and Validation Rules** to handle business processes like service assignment, booking verification, and feedback capture.
- **Data Layer:**  
Comprises **Custom Objects** (e.g. Ticket\_Fare\_\_c , Trip\_\_c ) and **Standard Objects** (Account, Contact) for structured storage, along with Salesforce metadata for configuration.



## 5. PROJECT PLANNING & SCHEDULING

## 5.1 Project Planning

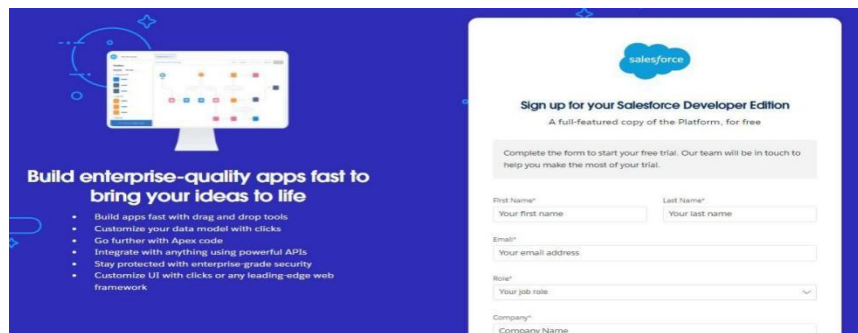
Milestones with relevant screenshots provided:

### I. Salesforce Account Setup:

#### Activity 1: Creating Developer Account

Creating a developer org in salesforce.

1. Go to <https://developer.salesforce.com/signup>
2. On the sign up form, enter the following details :



**Build enterprise-quality apps fast to bring your ideas to life**

- Build apps fast with drag and drop tools
- Customize your data model with clicks
- Go further with Apex code
- Integrate with anything using powerful APIs
- Stay protected with enterprise grade security
- Customize UI with clicks or any leading-edge web framework

**Sign up for your Salesforce Developer Edition**  
A full-featured copy of the Platform, for free

Complete the form to start your free trial. Our team will be in touch to help you make the most of your trial.

First Name\*  
Your first name

Last Name\*  
Your last name

Email\*  
Your email address

Role\*  
Your job role

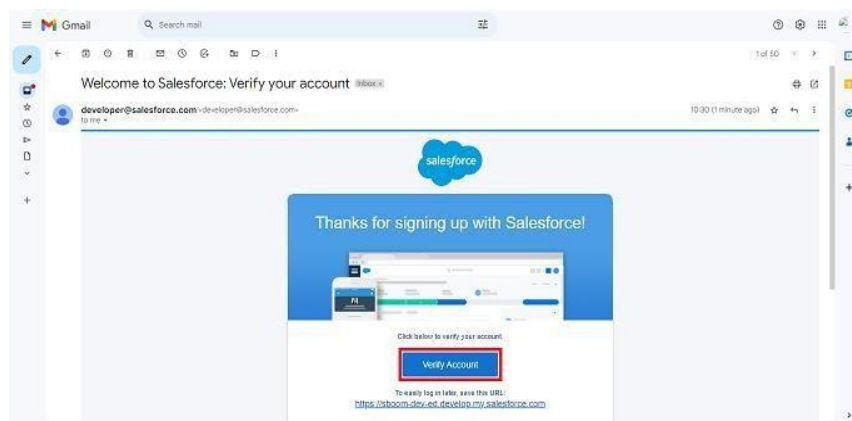
Company\*  
Company Name

1. First name & Last name
2. Email
3. Role : Developer
4. Company : College Name
5. Country : India
6. Postal Code : pin code
7. Username : should be a combination of your name and company.

This need not be an actual email id, you can give anything in the format : username@organization.com  
Click on sign me up after filling these.

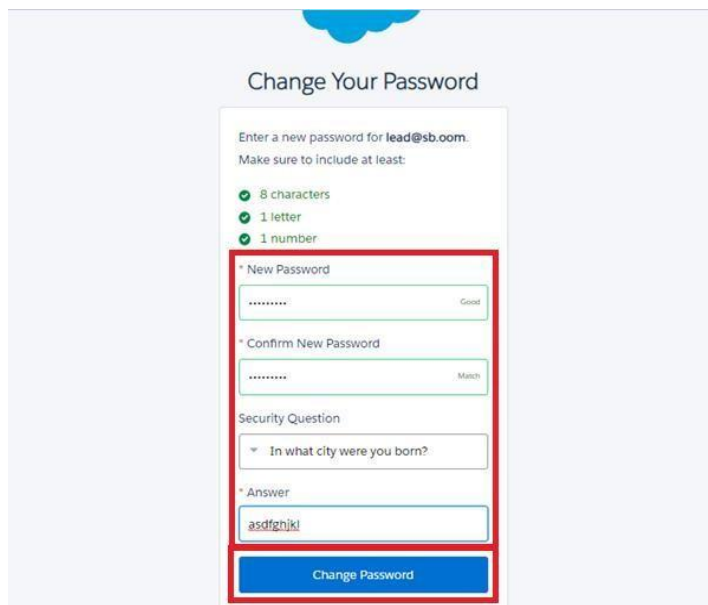
#### Activity 2: Account Activation:

1. Go to the inbox of the email that you used while signing up. Click on the verify account to activate your account. The email may take 5-10mins.



2. Click on Verify Account

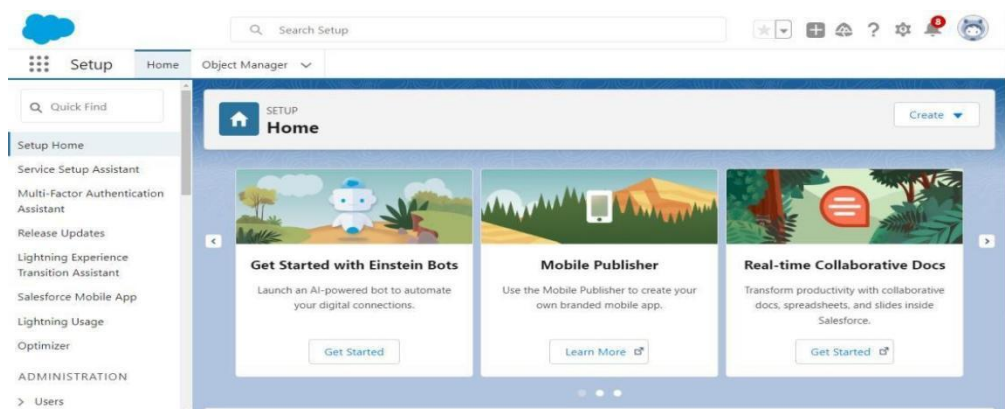
3. Give a password and answer a security question and click on change password.



The image shows the 'Change Your Password' form in Salesforce. The form is titled 'Change Your Password' and includes the following fields and options:

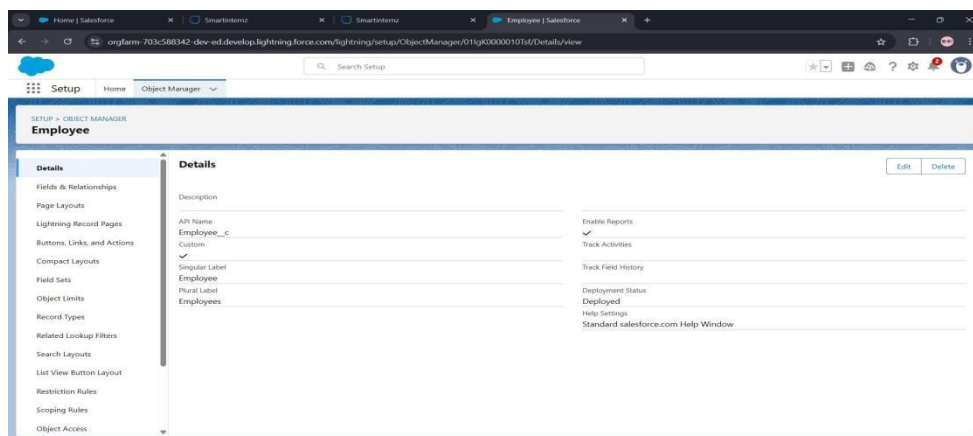
- Enter a new password for lead@sb.com.** Make sure to include at least:
  - 8 characters
  - 1 letter
  - 1 number
- \* New Password** (password field)
- \* Confirm New Password** (password field)
- Security Question** (dropdown menu with the option 'In what city were you born?')
- \* Answer** (text field with the value 'asdfghjkl')
- Change Password** (button)

4. Then you will redirect to your salesforce setup page.



## 2. Object Creation:

### i. Employee





## ii. Bus

The screenshot shows the Salesforce Setup interface for the 'Bus' object. The left sidebar contains a list of configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, Scoping Rules, and Object Access. The main content area is titled 'Details' and contains the following fields:

Details	
Description	
API Name	Bus__c
Custom	<input checked="" type="checkbox"/>
Singular Label	Bus
Plural Label	Buses
Enable Reports	<input checked="" type="checkbox"/>
Track Activities	
Track Field History	
Deployment Status	Deployed
Help Settings	Standard salesforce.com Help Window

Buttons for 'Edit' and 'Delete' are located in the top right corner of the details section.

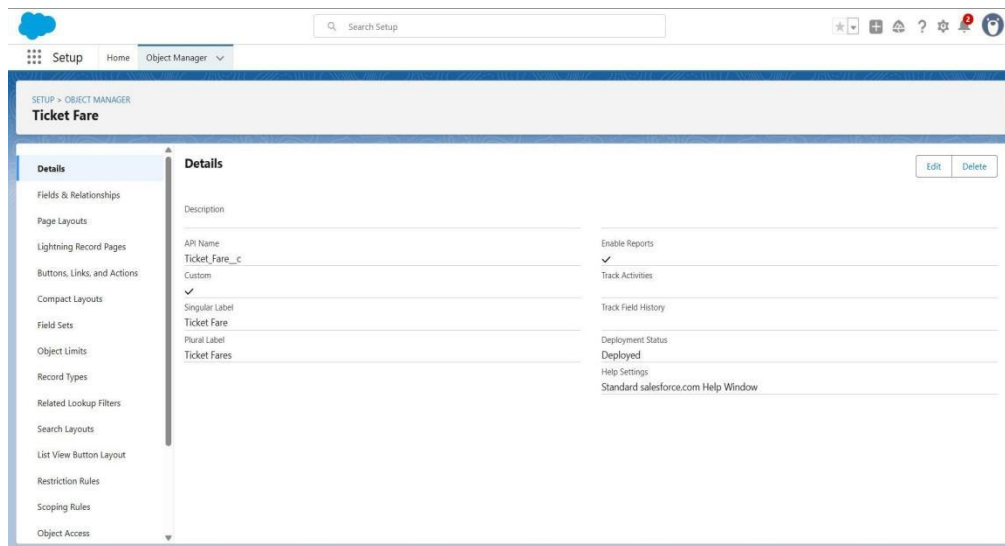
## iii. Bus Station

The screenshot shows the Salesforce Setup interface for the 'Bus Station' object. The left sidebar contains a list of configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, Scoping Rules, and Object Access. The main content area is titled 'Details' and contains the following fields:

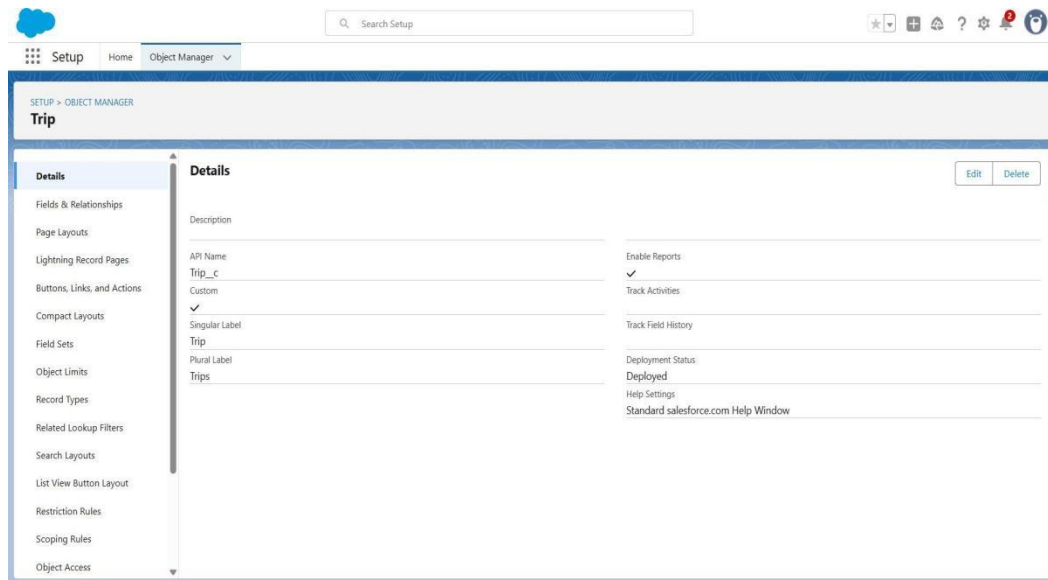
Details	
Description	
API Name	Bus_Station__c
Custom	<input checked="" type="checkbox"/>
Singular Label	Bus Station
Plural Label	Bus Stations
Enable Reports	<input checked="" type="checkbox"/>
Track Activities	
Track Field History	
Deployment Status	Deployed
Help Settings	Standard salesforce.com Help Window

Buttons for 'Edit' and 'Delete' are located in the top right corner of the details section.

## iv. Ticket Fare



## v. Trip



## 5. Lightning App Configuration

### 5.1 Lightning App for Public Transport Management

To streamline operations such as trip scheduling, fare management, bus and staff tracking, a custom **Lightning App** titled **Public Transport** was created within Salesforce. This app consolidates all key modules into one interface for administrative efficiency.

#### Steps to Create the App:

1. **Access App Manager**  
In **Setup**, search for and select **App Manager**.

## Create New Lightning App

### 2. Click **New Lightning App** and enter the **App Name** as: **Public Transport**

The screenshot shows the 'App Details & Branding' configuration page in the Lightning App Builder. The left sidebar lists navigation options: App Details & Branding (selected), App Options, Utility Items (Desktop Only), Navigation Items, and User Profiles. The main content area is divided into two sections: 'App Details' and 'App Branding'. In 'App Details', the 'App Name' is 'Public Transport', the 'Developer Name' is 'Public Transport', and the 'Description' field is empty. In 'App Branding', an 'Image' upload button is present, and the 'Primary Color Hex Value' is set to '#0070C0'. Below these, there's a checkbox for 'Org Theme Options' and a preview of the 'App Launcher' showing a blue button with 'PT' and the text 'Public Transport'.

### 3. **App Options**

Leave default options selected and proceed by clicking **Next**.

### 4. **Utility Items**

No changes made; click **Next** to continue.

### 5. **Navigation Items**

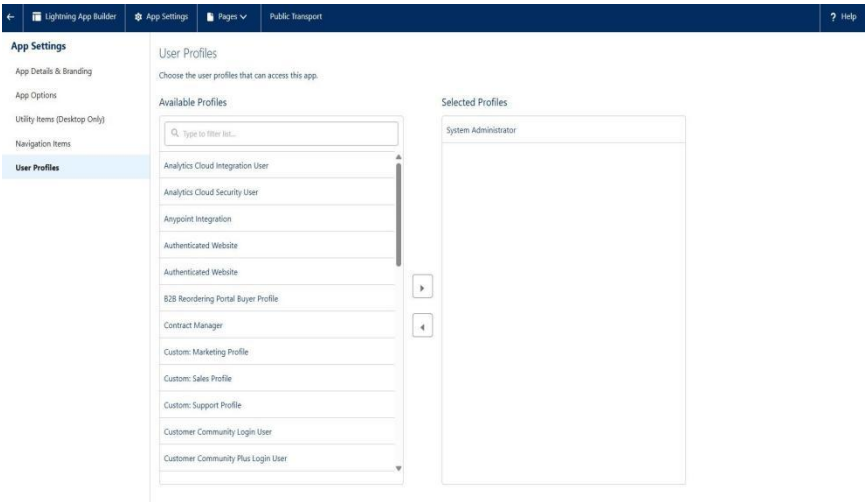
From the **Available Items** list, move the following into **Selected Items**:

- **Bus Stations**
- **Buses**
- **Trips**
- **Ticket Fares**
- **Employees**

The screenshot shows the 'Navigation Items' configuration page. The left sidebar is the same as the previous screen, with 'Navigation Items' selected. The main content area has a heading 'Navigation Items' and a sub-heading 'Choose the items to include in the app, and arrange the order in which they appear. Users can personalize the navigation to add or move items, but users can't remove or rename the items that you add. Some navigation items are available only for phone or only for desktop. These items are dropped from the navigation bar when the app is viewed in a format that the item doesn't support.' Below this, there are two columns: 'Available Items' and 'Selected Items'. The 'Available Items' column contains a search bar and a list of items including Accounts, Activation Targets, Activations, All Sites, Alternative Payment Methods, Analytics, App Launcher, Appointment Categories, Appointment Invitations, Approval Requests, Approval Submission Details, and Approval Submissions. The 'Selected Items' column is currently empty, with arrows on the right side to move items between the columns.

## 6. Assign Profiles

Move **System Administrator** to the **Selected Profiles** section to allow access.



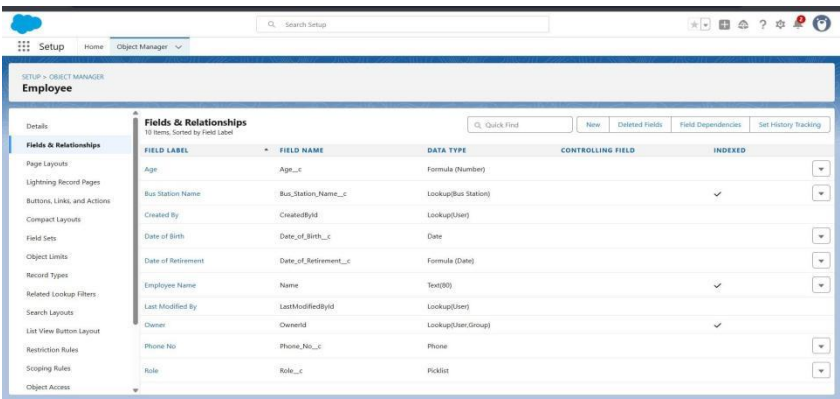
## 6. Save the App

Click **Save & Finish** to complete the app creation.

## 5. Fields:

Create respective fields for the objects

### i. Employee:



### ii. Bus:

Setup Home Object Manager

14 Search Setup

SETUP > OBJECT MANAGER

**Bus**

Details

**Fields & Relationships**  
7 Items, Sorted by Field Label

Q Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Bus Name	Name	Text(30)		✓
Capacity	Capacity__c	Number(4, 0)		
Category	Category__c	Picklist		
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Model	Model__c	Picklist		
Owner	OwnerId	Lookup(User, Group)		✓

Page Layouts  
Lightning Record Pages  
Buttons, Links, and Actions  
Compact Layouts  
Field Sets  
Object Limits  
Record Types  
Related Lookup Filters  
Search Layouts  
List View Button Layout  
Restriction Rules  
Scoping Rules

### iii. Bus Station:

Setup Home Object Manager

Search Setup

SETUP > OBJECT MANAGER

**Bus Station**

Details

**Fields & Relationships**  
6 Items, Sorted by Field Label

Q Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Bus Station Name	Name	Text(30)		✓
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Last Updated	Last_Updated__c	Formula (Date)		
Owner	OwnerId	Lookup(User, Group)		✓
Shelter available	Shelter_available__c	Checkbox		

Page Layouts  
Lightning Record Pages  
Buttons, Links, and Actions  
Compact Layouts  
Field Sets  
Object Limits  
Record Types  
Related Lookup Filters  
Search Layouts  
List View Button Layout  
Restriction Rules  
Scoping Rules  
Object Access

### iv. Ticket Fare:

Setup Home Object Manager

Search Setup

SETUP > OBJECT MANAGER

**Ticket Fare**

Details

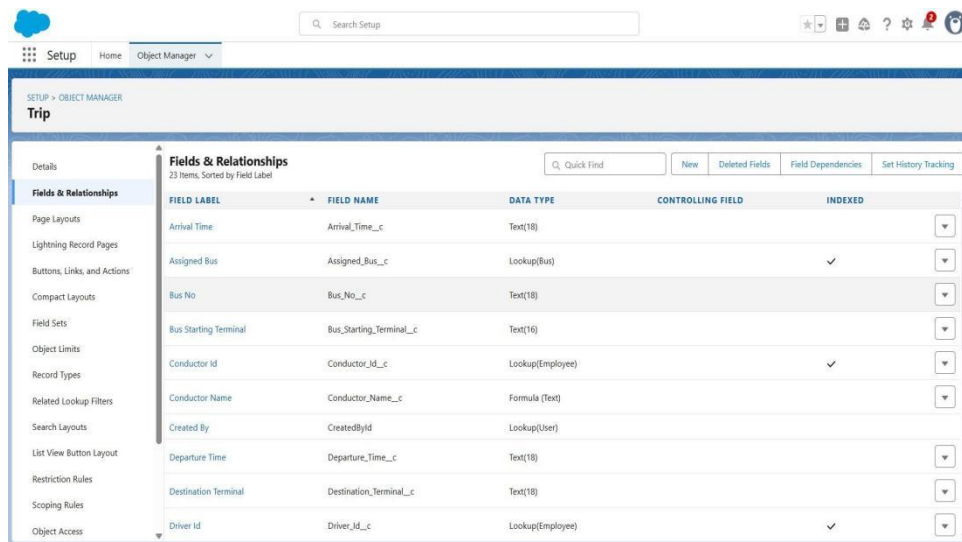
**Fields & Relationships**  
7 Items, Sorted by Field Label

Q Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Bus Model	Bus_Model__c	Text(18)		
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User, Group)		✓
Route Name	Route_Name__c	Text(16)		
Ticket Fare	Ticket_Fare__c	Currency(16, 2)		
Ticket Fare Name	Name	Text(30)		✓

Page Layouts  
Lightning Record Pages  
Buttons, Links, and Actions  
Compact Layouts  
Field Sets  
Object Limits  
Record Types  
Related Lookup Filters  
Search Layouts  
List View Button Layout  
Restriction Rules  
Scoping Rules  
Object Access

### v. Trip:



SETUP > OBJECT MANAGER

### Trip

Details

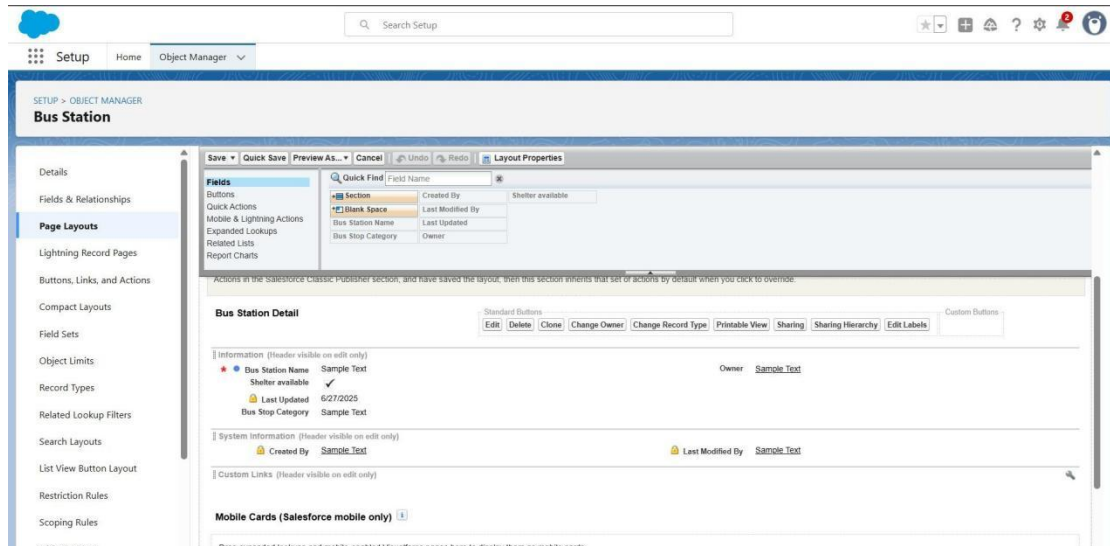
**Fields & Relationships**  
23 Items, Sorted by Field Label

Q Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Arrival Time	Arrival_Time__c	Text(18)		
Assigned Bus	Assigned_Bus__c	Lookup(Bus)		✓
Bus No	Bus_No__c	Text(18)		
Bus Starting Terminal	Bus_Starting_Terminal__c	Text(16)		
Conductor Id	Conductor_Id__c	Lookup(Employee)		✓
Conductor Name	Conductor_Name__c	Formula (Text)		
Created By	CreatedById	Lookup(User)		
Departure Time	Departure_Time__c	Text(18)		
Destination Terminal	Destination_Terminal__c	Text(18)		
Driver Id	Driver_Id__c	Lookup(Employee)		✓

## 6. Creation of Page Layouts:

### I. Bus Station:



SETUP > OBJECT MANAGER

### Bus Station

Details

**Page Layouts**

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Object Access

Save Quick Save Preview As... Cancel Undo Redo Layout Properties

**Fields**

Q Quick Find Field Name

Section Created By Shelter available

Blank Space Last Modified By

Bus Station Name Last Updated

Bus Stop Category Owner

Report Charts

Actions in the Salesforce Classic Publisher section, and have saved the layout, then this section inherits that set of actions by default when you click to override.

**Bus Station Detail**

Standard Buttons Edit Delete Clone Change Owner Change Record Type Printable View Sharing Sharing Hierarchy Edit Labels Custom Buttons

Information (Header visible on edit only)

Bus Station Name Sample Text Owner Sample Text

Shelter available ✓

Last Updated 6/27/2025

Bus Stop Category Sample Text

System Information (Header visible on edit only)

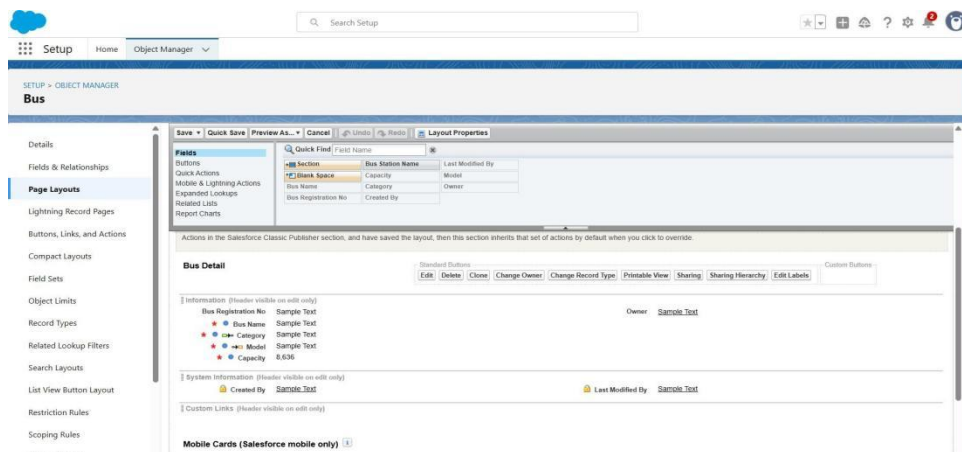
Created By Sample Text Last Modified By Sample Text

Custom Links (Header visible on edit only)

**Mobile Cards (Salesforce mobile only)**

Drag expanded lookups and mobile-enabled Visualforce pages here to display them as mobile cards.

### II. Bus :



SETUP > OBJECT MANAGER

### Bus

Details

**Page Layouts**

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Object Access

Save Quick Save Preview As... Cancel Undo Redo Layout Properties

**Fields**

Q Quick Find Field Name

Section Bus Station Name Last Modified By

Blank Space Capacity Model

Bus Name Category Owner

Bus Registration No Created By

Report Charts

Actions in the Salesforce Classic Publisher section, and have saved the layout, then this section inherits that set of actions by default when you click to override.

**Bus Detail**

Standard Buttons Edit Delete Clone Change Owner Change Record Type Printable View Sharing Sharing Hierarchy Edit Labels Custom Buttons

Information (Header visible on edit only)

Bus Registration No Sample Text Owner Sample Text

Bus Name Sample Text

Category Sample Text

Model Sample Text

Capacity 6.636

System Information (Header visible on edit only)

Created By Sample Text Last Modified By Sample Text

Custom Links (Header visible on edit only)

**Mobile Cards (Salesforce mobile only)**

### III. Employee:

Setup

Home

Object Manager

Search Setup

Setup > OBJECT MANAGER

Employee

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Object Access

Save Quick Save Preview As... Cancel Undo Redo Layout Properties

Fields

Buttons

Quick Actions

Mobile & Lightning Actions

Expanded Lookups

Related Lists

Report Charts

Quick Find

Field Name

Section

Bus Station Name

Date of Birth

Employee Name

Phone No

Street

Blank Space

City

Date of Joining

Experience

Rule

Work Place

Age

Country

Date of Retirement

Last Modified By

Salary

ZipPostalCode

Arrival Time

Created By

Employee ID

Owner

BasicProvision

Edit Delete Clone Change Owner Change Record Type Printable View Sharing Sharing Hierarchy Edit Labels

Information (header visible on edit only)

Employee ID Sample Text

Work Place Sample Text

Employee Name Sample Text

Rule Sample Text

Bus Station Name Sample Text

Date of Joining 6/27/2025

Date of Retirement 6/27/2025

Salary \$123.45

Owner Sample Text

Experience 115.34

Personal Details

Date of Birth 6/27/2025

Age 237.60

Phone No 1-415-555-1212

Address

Street Sample Text

State/Province Sample Text

City Sample Text

Country Sample Text

ZipPostalCode Sample Text

System Information (header visible on edit only)

Created By Sample Text

Last Modified By Sample Text

Custom Links (header visible on edit only)

### IV. Trip:

Setup

Home

Object Manager

Search Setup

Setup > OBJECT MANAGER

Trip

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Object Access

Save Quick Save Preview As... Cancel Undo Redo Layout Properties

Fields

Buttons

Quick Actions

Mobile & Lightning Actions

Expanded Lookups

Related Lists

Report Charts

Quick Find

Field Name

Section

Bus No

Created By

Driver Name

No of Stops

Ticket Fare

Trip No

Blank Space

Bus Starting Term...

Departure Time

Estimated Travel ...

Owner

Total Amount

Arrival Time

Conductor Id

Destination Terminal

Frequency Per Day

Passenger Count

Trip Date

Assigned Bus

Conductor Name

Driver Id

Last Modified By

Route Name

Trip Name

Edit Delete Clone Change Owner Change Record Type Printable View Sharing Sharing Hierarchy Edit Labels

Information (header visible on edit only)

Trip No Sample Text

Conductor Id Sample Text

Trip Date 6/27/2025

Conductor Name Sample Text

Trip Name Sample Text

Bus No Sample Text

Owner Sample Text

Driver Id Sample Text

Driver Name Sample Text

Assigned Bus Sample Text

Bus Schedule

Route Name Sample Text

Estimated Travel Time Sample Text

Bus Starting Terminal Sample Text

Destination Terminal Sample Text

Departure Time Sample Text

Arrival Time Sample Text

No of Stops 263

Frequency Per Day 2

Passenger Information

Passenger Count 99.121

Ticket Fare \$123.45

Total Amount \$123.45

System Information (header visible on edit only)

### V. Ticket Fare:

Setup

Home

Object Manager

Search Setup

Setup > OBJECT MANAGER

Ticket Fare

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Object Access

Save Quick Save Preview As... Cancel Undo Redo Layout Properties

Fields

Buttons

Quick Actions

Mobile & Lightning Actions

Expanded Lookups

Related Lists

Report Charts

Quick Find

Field Name

Section

Last Modified By

Ticket Fare Name

Blank Space

Owner

Bus Model

Route Name

Created By

Ticket Fare

Edit Delete Clone Change Owner Change Record Type Printable View Sharing Sharing Hierarchy Edit Labels

Ticket Fare Detail

Standard Buttons

Custom Buttons

Information (header visible on edit only)

Route Name Sample Text

Owner Sample Text

Bus Model Sample Text

Ticket Fare \$123.45

System Information (header visible on edit only)

Ticket Fare Name Sample Text

Last Modified By Sample Text

Created By Sample Text

Custom Links (header visible on edit only)

Mobile Cards (Salesforce mobile only)

Drag expanded lookups and mobile-enabled Visualforce pages here to display them as mobile cards.

7. Validation Rules:

I. Employee:

SetupHomeObject Manager

Search Setup

StarIconHomeIconHelpIconSettingsIconNotificationsIconProfileIcon

SETUP > OBJECT MANAGER

Employee

DetailsFields & RelationshipsPage LayoutsLightning Record PagesButtons, Links, and ActionsCompact LayoutsField SetsObject LimitsRecord TypesRelated Lookup FiltersSearch LayoutsList View Button LayoutRestriction Rules

Validation Rules3 Items, Sorted by Rule Name

RULE NAME	ERROR LOCATION	ERROR MESSAGE	ACTIVE	MODIFIED BY
Employee_Age_Checking	Top of Page	Employee Age Must be Greater than or equal to 21	✓	Ramanjaneyulu Yarragorla, 6/22/2025, 4:57 AM
Employees_only_for_Managed_Bus_stops	Bus Station Name	The Employees must work for Managed Bus stops	✓	Ramanjaneyulu Yarragorla, 6/22/2025, 5:42 AM
Phone_Number_Validation	Top of Page	Phone no must be 10 digits and starts with 6 or 7 or 8 or 9	✓	Ramanjaneyulu Yarragorla, 6/22/2025, 5:44 AM

II. Trip:

SetupHomeObject Manager

Search Setup

StarIconHomeIconHelpIconSettingsIconNotificationsIconProfileIcon

SETUP > OBJECT MANAGER

Trip

DetailsFields & RelationshipsPage LayoutsLightning Record PagesButtons, Links, and ActionsCompact LayoutsField SetsObject LimitsRecord TypesRelated Lookup FiltersSearch LayoutsList View Button LayoutRestriction Rules

Validation Rules2 Items, Sorted by Rule Name

RULE NAME	ERROR LOCATION	ERROR MESSAGE	ACTIVE	MODIFIED BY
Departure_and_Arrival_Time_Checking	Top of Page	The Departure Time and Arrival Time Should not be the same	✓	Ramanjaneyulu Yarragorla, 6/22/2025, 5:57 AM
Passenger_Count_Checking_for_Few_Buses	Passenger Count	For Super Deluxe, Semi Sleeper and Sleeper Buses (the Passenger Count must be less than or equal to the Capacity of the Bus	✓	Ramanjaneyulu Yarragorla, 6/22/2025, 6:07 AM

III. Bus:

SetupHomeObject Manager

Search Setup

StarIconHomeIconHelpIconSettingsIconNotificationsIconProfileIcon

SETUP > OBJECT MANAGER

Bus

DetailsFields & RelationshipsPage LayoutsLightning Record PagesButtons, Links, and ActionsCompact LayoutsField SetsObject LimitsRecord TypesRelated Lookup FiltersSearch LayoutsList View Button LayoutRestriction RulesScoping Rules

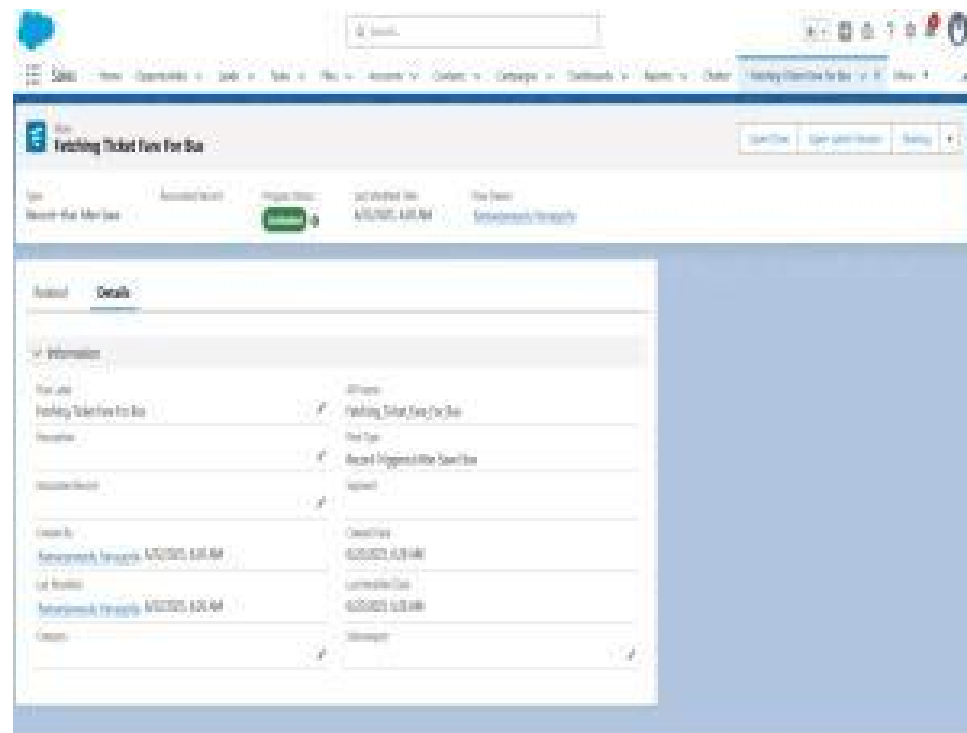
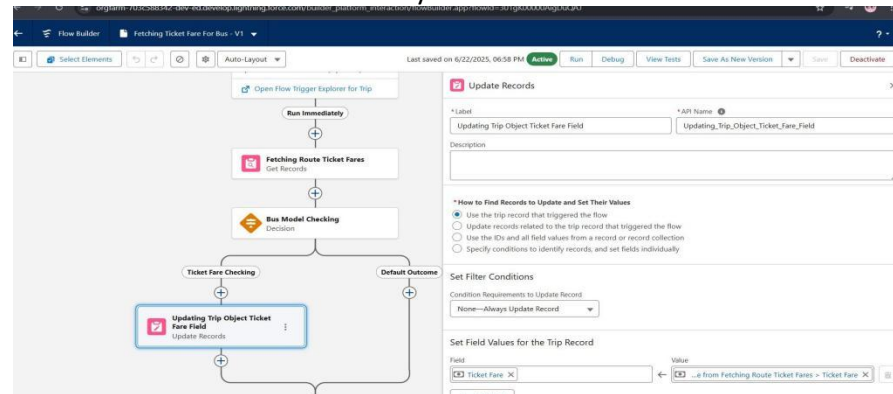
Validation Rules1 Items, Sorted by Rule Name

RULE NAME	ERROR LOCATION	ERROR MESSAGE	ACTIVE	MODIFIED BY
Bus_Registration_Number_Validation	Bus Registration No	the bus Registration Number must be in the format of 2 Capital Letters(State Code), space, 2 Numbers (District Code), space 1 or 2 Capital Letters(Series), space and 4 Numbers (Number).	✓	Ramanjaneyulu Yarragorla, 6/22/2025, 7:30 AM



## 8. Flows:

Flows are declarative, drag-and-drop tools that allow administrators to create guided experiences for users, automate complex business processes, and integrate with other Salesforce features and external systems.



## 9. Triggers:

Triggers in Salesforce are pieces of Apex code that execute before or after specific database operations, such as insert, update, delete, or undelete. They allow you to perform custom actions on records in Salesforce when certain events occur. Triggers are particularly powerful for enforcing business logic and automating workflows.

The top screenshot shows the `TripTriggerHandlerClass.apex` file. It contains two static methods: `driverValidation` and `conductorValidation`. `driverValidation` checks if a driver's ID is valid by querying the `Employee__c` table for roles 'Driver' and adding their IDs to a set. `conductorValidation` does a similar check for the role 'Conductor'.

```

1 public class TripTriggerHandlerClass {
2
3     // Check if the Driver ID belongs to a valid Driver
4     public static void driverValidation(List<Trip__c> tripList) {
5         List<Employee__c> driverList = [SELECT Id FROM Employee__c WHERE Role__c = 'Driver'];
6         Set<Id> validDriverIds = new Set<Id>();
7         for (Employee__c emp : driverList) {
8             validDriverIds.add(emp.Id);
9         }
10
11        for (Trip__c trip : tripList) {
12            if (trip.Driver_Id__c != null && !validDriverIds.contains(trip.Driver_Id__c)) {
13                trip.Driver_Id__c.addError('The assigned person is not a Driver.');

The bottom screenshot shows the TripTrigger.apex file. It contains a trigger that calls the driverValidation and conductorValidation methods from the TripTriggerHandlerClass when a new trip is inserted or updated.



```

1 trigger TripTrigger on Trip__c (before insert, before update) {
2     if (Trigger.isBefore) {
3         if (Trigger.isInsert || Trigger.isUpdate) {
4             TripTriggerHandlerClass.driverValidation(Trigger.new);
5             TripTriggerHandlerClass.conductorValidation(Trigger.new);
6         }
7     }
8 }

```


```

## 10. Reports:

Reports in Salesforce are tools that allow you to analyze and present your Salesforce data in a structured format. They help you understand and monitor key metrics and trends, providing insights into your business operations. Salesforce reports are highly customizable and can be tailored to meet specific business requirements.

### 1. Create a Employees By Bus Station(Summary) Report

The screenshot shows the Salesforce Lightning Report interface. The report is titled "Employees By Bus Station" and is located under the "Public Transport" app. The report shows a summary of employees by bus station. The table below represents the data shown in the report.

Bus Station Name	Employee: ID	Employee: Employee Name	Role
Hyderabad Terminal (1)	a06gK000002utDZ	EMP001	Driver
<b>Subtotal</b>			
<b>Total</b> (1)			

## 2. Create a Drivers and Conductors Information Report

The screenshot shows the Salesforce Reports interface. The left sidebar has a search bar and a list of report categories: Reports, Recent, Created by Me, Private Reports, Public Reports, All Reports, FOLDERS, All Folders, and Created by Me. The main area displays a table of reports. The table has columns: Report Name, Description, Folder, Created By, Created On, and Subscribed. The table contains two rows of reports.

Report Name	Description	Folder	Created By	Created On	Subscribed
Drivers And Conductors Information		Public Reports	Ramanjaneyulu Yarragorla	6/22/2025, 6:57 AM	
Employees By Bus Station		Public Reports	Ramanjaneyulu Yarragorla	6/22/2025, 6:53 AM	

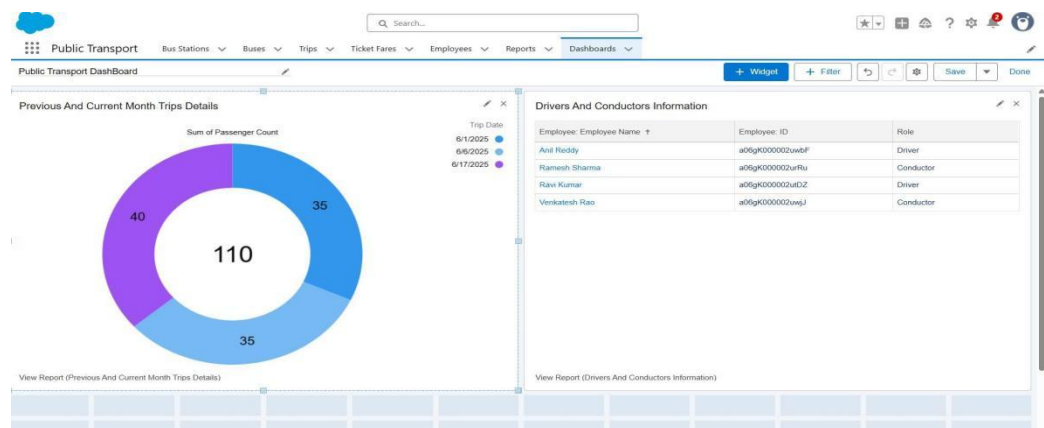
## 3. Create a Previous and Current Month Trip Details Report

The screenshot shows the Salesforce Reports interface. The left sidebar has a search bar and a list of report categories: Reports, Recent, Created by Me, Private Reports, Public Reports, All Reports, FOLDERS, All Folders, and Created by Me. The main area displays a table of reports. The table has columns: Report Name, Description, Folder, Created By, Created On, and Subscribed. The table contains three rows of reports.

Report Name	Description	Folder	Created By	Created On	Subscribed
Previous And Current Month Trips Details		Public Reports	Ramanjaneyulu Yarragorla	6/22/2025, 7:07 AM	
Employees By Bus Station		Public Reports	Ramanjaneyulu Yarragorla	6/22/2025, 6:53 AM	
Drivers And Conductors Information		Public Reports	Ramanjaneyulu Yarragorla	6/22/2025, 6:57 AM	

# 11. Dashboards

Dashboards in Salesforce are visual representations of your reports and key metrics, providing a consolidated view of your data. They allow you to monitor performance, track progress, and make informed decisions at a glance. Dashboards are composed of various components such as charts, tables, gauges, and metrics, each displaying data from one or more reports.



## 12. Conclusion:

By implementing this Salesforce-based Public Transport( RTC) Management System, the RTC department can significantly improve its operational efficiency, data management, and overall service quality to passengers. Data-driven decision-making capabilities for management. Accurate and up-to-date records of all operational data.

## 6. FUNCTIONAL AND PERFORMANCE TESTING

The application was manually tested by the developer through various real-life transport booking scenarios to ensure accurate functionality, data integrity, and system responsiveness.

### Functional Testing:

**Trip Creation, Editing, and Cancellation** workflows validated

**Ticket Fare assignments** automated using Flows

**Record-type-based page layout rendering** verified for different object types

**Lookup relationships** between Contact and Trip objects confirmed

**Validation rules** for trip dates, fare entries, and bus capacity tested

### Performance Testing:

Conducted using **30+ test records** for trips, buses, fares, and staff

Dashboards displayed metrics **accurately and with low latency**

**No duplicate entries**, errors, or crashes during manual stress testing

**Automation Flows** triggered in real-time under typical data loads

## 7. RESULTS

The final Salesforce application for the Public Transport Management System successfully achieves the following outcomes:

- **End-to-end trip scheduling and ticket fare management**
- **Automated bus and staff assignment using Flow logic**
- **Real-time monitoring** through dashboards and reports
- **High data integrity** ensured via validation rules and relationships

## 8. ADVANTAGES & DISADVANTAGES

### Advantages:

- **Cloud-based access** enables usage from any location
- **Automated workflows** reduce manual efforts and errors
- **Accurate validations** ensure consistency and reliability
- **Real-time visual dashboards** support better operational decision-making

### Disadvantages:

- **Learning curve** for new users unfamiliar with Salesforce
- **Requires stable internet connectivity** for access and operation
- **Limited flexibility** outside the Salesforce ecosystem unless integrated with external tools

## 9.FUTURE SCOPE

To enhance the application and align it further with real-world needs, the following improvements are proposed:

- **Online payment gateway integration** for full-cycle ticketing
- **Mobile app interface** using Salesforce Mobile Publisher or LWC
- **Customer feedback system** via custom objects and surveys
- **SMS/Email notifications** using Salesforce APIs or Marketing Cloud
- **Event calendar integration** to manage bus schedules and staff shifts

## 10.APPENDIX

- **Source Code / Configuration:** Implemented within the Salesforce Developer Org
- **Dataset:** Dummy records for trips, ticket fares, buses, and staff were used during testing
- **Demo Video Link:**  
<https://drive.google.com/file/d/1FFjTpNr4lsWVGdq3EN9uwOjrPFOB1Yzl/view?usp=sharing>

