

## Phase 3: Data Modeling & Relationships

### Airline Management System

## Salesforce-Based Passenger & Operations Management

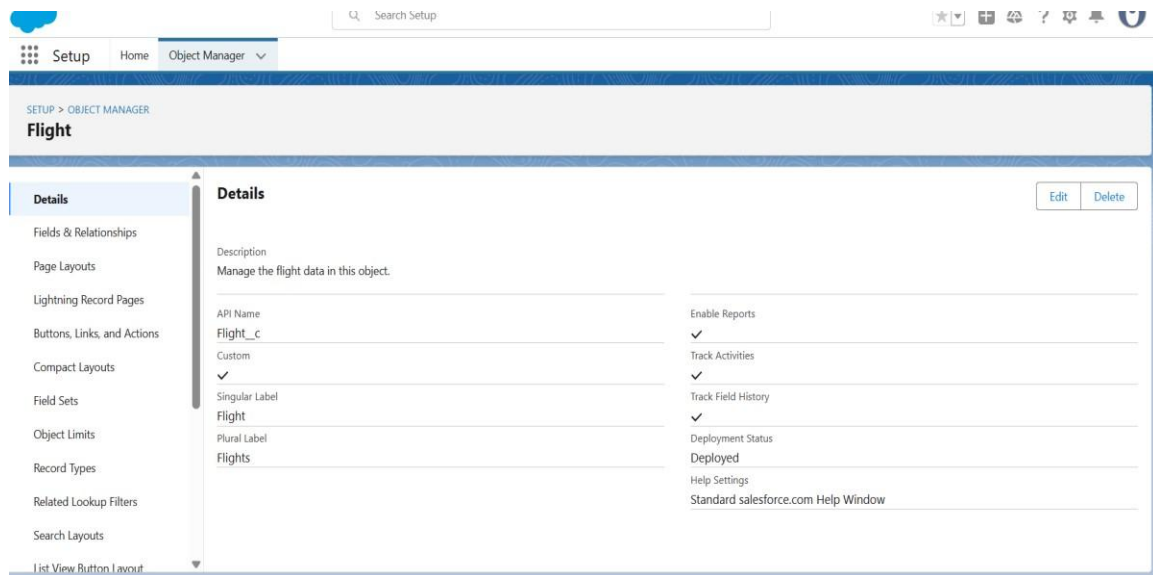
### Introduction

In this phase, the data model for the Airline Management System is designed. Salesforce provides both standard and custom objects to capture system data. The goal of this phase is to define the objects, their fields, and the relationships between them so that the system can effectively manage flights, pilots, and flight schedules.

### Objects and Fields

The following custom objects are created in Salesforce along with their key fields:

#### 1. Flight



- Flight ID (Auto Number, format: FMS-00001-DDMMYY)
- Flight Name (Text, e.g., Go-102)
- Company (Picklist – Kingfisher, Air Asia, IndiGo, GoAir, etc.)
- International/Domestic (Checkbox – active for domestic)

The screenshot shows the Salesforce Setup interface for the 'Flight' object. The 'Fields & Relationships' tab is selected, displaying a table of 7 fields. The table has columns for Field Label, Field Name, Data Type, Controlling Field, and Indexed. The fields listed are: Company (Picklist), Created By (Lookup(User)), Flight ID (Auto Number, indexed), Flight Name (Text(10)), International/Domestic (Checkbox), Last Modified By (Lookup(User)), and Owner (Lookup(User, Group), indexed).

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Company	Company__c	Picklist		
Created By	CreatedById	Lookup(User)		
Flight ID	Name	Auto Number		✓
Flight Name	Flight_Name__c	Text(10)		
International/Domestic	International_Domestic__c	Checkbox		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User, Group)		✓

## 2. Flight Schedule

The screenshot shows the Salesforce Setup interface for the 'Flight Schedule' object. The 'Details' tab is selected, displaying a form with various settings. The 'API Name' is 'Flight\_Schedule\_\_c'. The 'Singular Label' is 'Flight Schedule' and the 'Plural Label' is 'Flight Schedules'. The 'Enable Reports' checkbox is checked. The 'Track Activities' checkbox is checked. The 'Track Field History' checkbox is checked. The 'Deployment Status' is 'Deployed'. The 'Help Settings' link is 'Standard salesforce.com Help Window'.

- Select Flight (Lookup to Flight object, Master-Detail relationship)
- Source Name (Picklist/Text, e.g., Nagpur, Pune, Chennai)
- Destination Name (Picklist/Text, e.g., Nagpur, Pune, Chennai)
- Departure Date and Time (DateTime, e.g., 12/12/2022 10:00 AM)
- Arrival Time (DateTime, e.g., 12/12/2022 12:10 PM)
- Duration (Formula field to calculate journey duration, e.g., 02 Hours 10 Minutes)
- Status (Picklist – Open, In Progress, Closed, Cancelled; default = Open)
- Name of the First Pilot (Lookup to Pilot object)

- Name of the Second Pilot (Lookup to Pilot object)

The screenshot shows the Salesforce Object Manager interface for the 'Flight Schedule' object. The 'Fields & Relationships' tab is selected, displaying a table of 11 fields. The table has columns for FIELD LABEL, FIELD NAME, DATA TYPE, CONTROLLING FIELD, and INDEXED. The fields listed are: Arrival Date Time, Created By, Departure Date Time, Destination Name, Flight Schedule ID, Last Modified By, Name of the First Pilot, Name of the Second Pilot, Select Flight, Source Name, and Status. The 'Name of the Second Pilot' field is a Lookup(Pilot) type, which is the field of interest for the requirement.

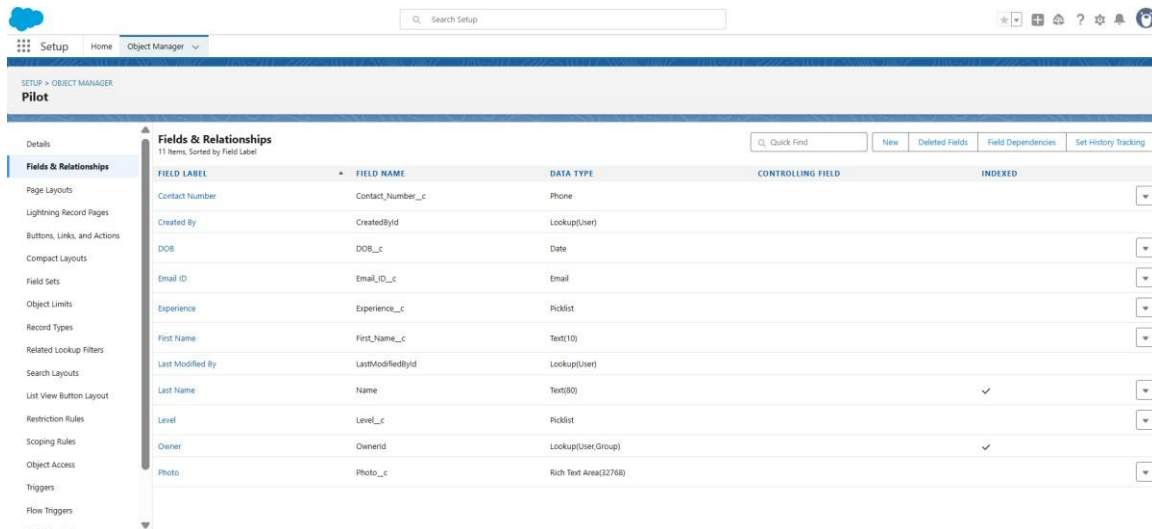
FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Arrival Date Time	Arrival_Date_Time__c	Date/Time		
Created By	CreatedById	Lookup(User)		
Departure Date Time	Departure_Date_Time__c	Date/Time		
Destination Name	Destination_Name__c	Picklist		
Flight Schedule ID	Name	Auto Number		✓
Last Modified By	LastModifiedById	Lookup(User)		
Name of the First Pilot	Name_of_the_First_Pilot__c	Lookup(Pilot)		✓
Name of the Second Pilot	Name_of_the_Second_Pilot__c	Lookup(Pilot)		✓
Select Flight	Select_Flight__c	Master-Detail(Flight)		✓
Source Name	Source_Name__c	Picklist		
Status	Status__c	Picklist		

### 3. Pilot

The screenshot shows the Salesforce Object Manager interface for the 'Pilot' object. The 'Details' tab is selected, displaying the object's configuration. The 'API Name' is 'Pilot\_\_c', and the 'Singular Label' is 'Pilot'. The 'Plural Label' is 'Pilots'. The 'Enable Reports' checkbox is checked. The 'Track Activities' checkbox is checked. The 'Track Field History' checkbox is checked. The 'Deployment Status' is 'Deployed'. The 'Help Settings' are set to 'Standard salesforce.com Help Window'.

- First Name (Text, e.g., Sachin)
- Last Name (Text, e.g., Sharma)
- Date of Birth (Date, e.g., 12/04/1996)
- Age (Formula based on DOB, must be  $\geq 18$ )
- Contact Number (Phone, e.g., 7020768921)
- Email ID (Email, mandatory, e.g., sachin@gmail.com)
- Experience (Number – years of service)

- Level (Picklist – Junior <1 year, Senior 2–5 years, Super Senior >5 years)
- Photo (Rich Text Area/Image upload)



Setup > OBJECT MANAGER  
**Pilot**

Details

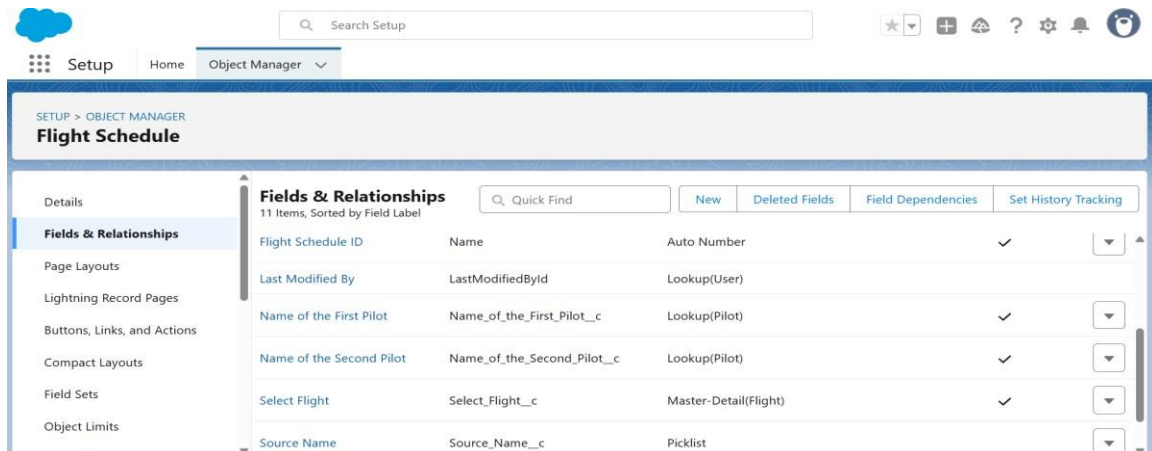
**Fields & Relationships**  
11 Items, Sorted by Field Label

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Contact Number	Contact_Number__c	Phone		
Created By	CreatedById	Lookup(User)		
DOB	DOB__c	Date		
Email ID	Email_ID__c	Email		
Experience	Experience__c	Picklist		
First Name	First_Name__c	Text(10)		
Last Modified By	LastModifiedById	Lookup(User)		
Last Name	Name	Text(30)		✓
Level	Level__c	Picklist		
Owner	OwnerId	Lookup(User,Group)		✓
Photo	Photo__c	Rich Text Area(32768)		

## Relationships

The following relationships are defined among objects:

- One Flight can have multiple Flight Schedules (One-to-Many).
- Each Flight Schedule is linked to exactly one Flight (Lookup/Master-Detail).
- Each Flight Schedule can reference two Pilots (two Lookup fields to Pilot).
- One Pilot can be assigned to many Flight Schedules (One-to-Many).



Setup > OBJECT MANAGER  
**Flight Schedule**

Details

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

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Flight Schedule ID	Name	Auto Number		✓
Last Modified By	LastModifiedById	Lookup(User)		
Name of the First Pilot	Name_of_the_First_Pilot__c	Lookup(Pilot)		✓
Name of the Second Pilot	Name_of_the_Second_Pilot__c	Lookup(Pilot)		✓
Select Flight	Select_Flight__c	Master-Detail(Flight)		✓
Source Name	Source_Name__c	Picklist		

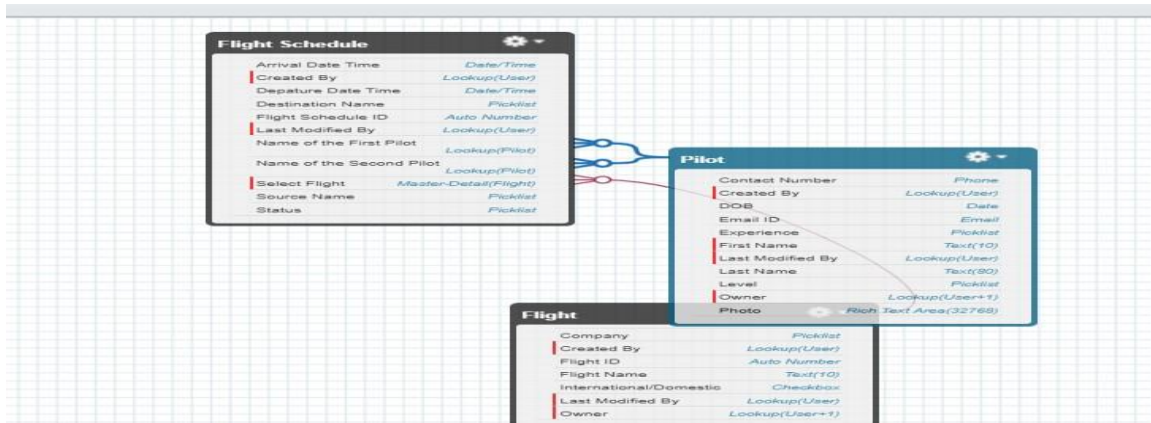
## Validation Rules and Business Rules

- Source Name and Destination Name must not be the same.
- Default Status of a Flight Schedule is Open when created.

- First Name and Last Name of Pilot must not be identical.
- Pilot Age must be greater than or equal to 18.

## Schema / ER Description

The Entity-Relationship (ER) model of the Airline Management System consists of three custom objects: Flight, Flight Schedule, and Pilot. Flight has a one-to-many relationship with Flight Schedule, allowing multiple schedules per flight. Flight Schedule also contains lookup fields for two Pilots, establishing a many-to-many relationship between Pilots and Flight Schedules. This structure ensures that every scheduled flight is linked to its respective flight and assigned pilots.



## Conclusion

The data modeling and relationship design for the Airline Management System lays the foundation for the project. By creating Flight, Flight Schedule, and Pilot objects with well-defined fields and relationships, the system is capable of handling flight operations, scheduling, and pilot assignments efficiently. This structured model also supports automation, reporting, and dashboard creation in later phases.

Flight Edit

New Flight

Help for this Page

Flight Edit

Save Save & New Cancel

Information

Flight Name

Company

--None--

International/Domestic

Owner

Niveditha Paturu

Save Save & New Cancel