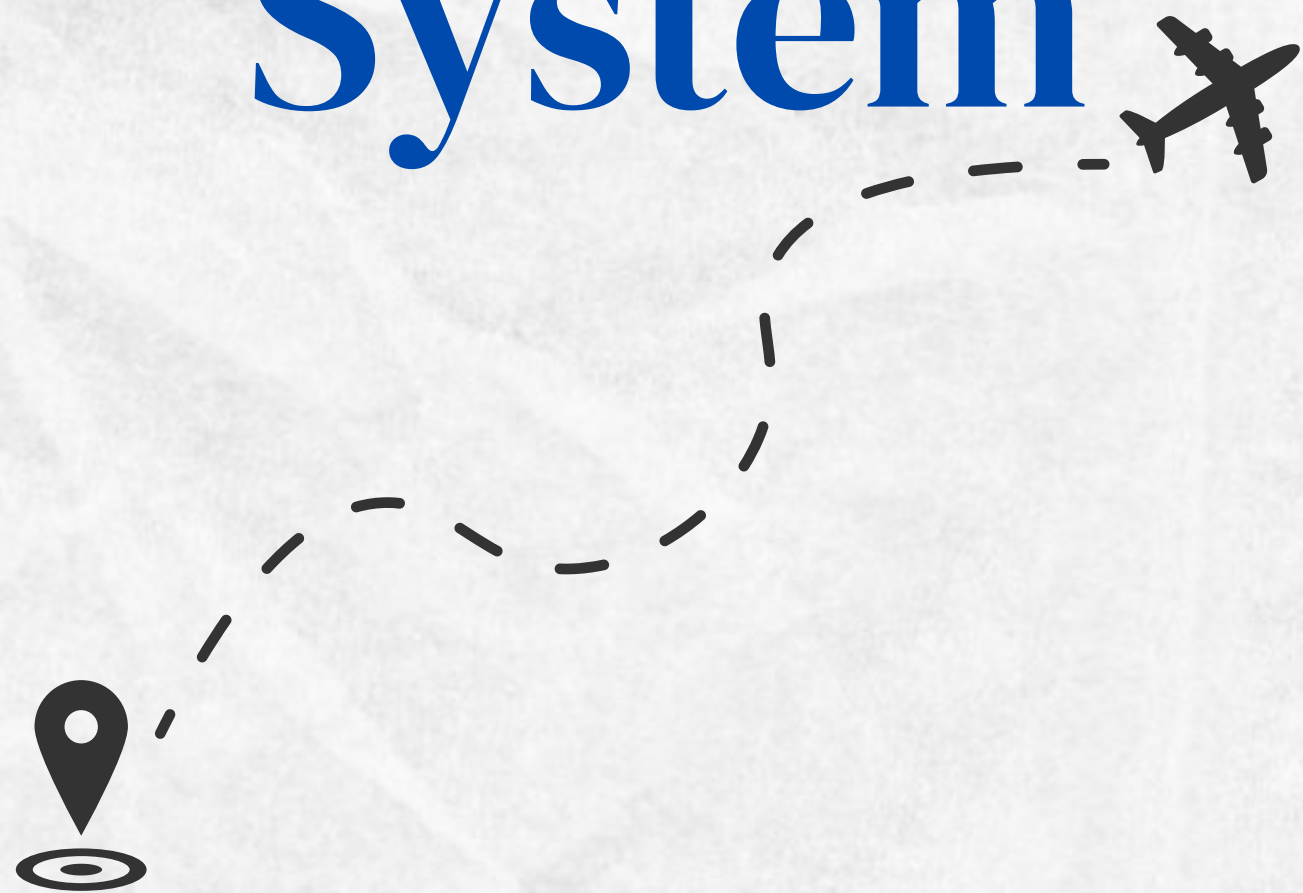


# Airline Management System



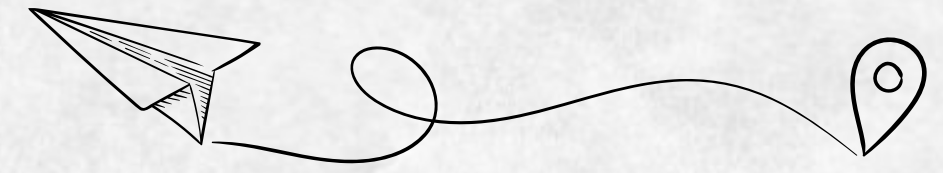


# Problem Statement

- Retrieve information about all airlines:
- Retrieve information about all aircraft:
- Retrieve a list of passengers for a specific flight:
- Retrieve a list of flights for a specific airline:
- Retrieve available seats for a specific flight:
- Retrieve the total number of reservations for a specific flight:
- Retrieve a list of passengers with their flight details for a specific airline







# Project Description

**An airline management system plays a critical role in enhancing operational efficiency, improving customer experiences, and maintaining compliance with industry regulations. It serves as a centralized platform to coordinate and optimize the diverse aspects of airline operations for smooth and reliable services.**





# Key Entities and Relationships:

## Airline Entity:

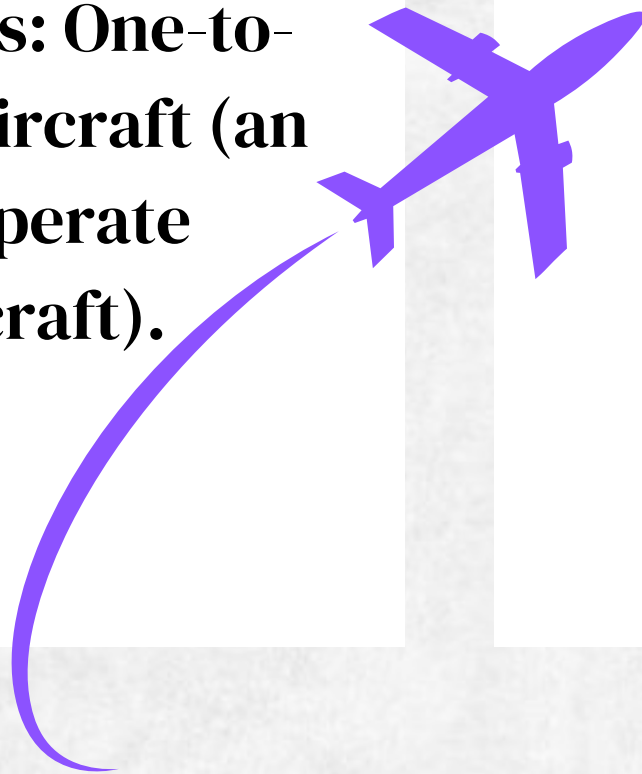
- **Attributes:** AirlineID (Primary Key), AirlineName, Headquarters, ContactNumber.
- **Relationships:** One-to-Many with Aircraft (an airline can operate multiple aircraft).

## Aircraft Entity:

- **Attributes:** AircraftID (Primary Key), Aircraft Type, Registration Number, Capacity, CurrentStatus.
- **Relationships:** Many-to-One with Airline (an aircraft belongs to one airline), One-to-Many with Flights (an aircraft can be assigned to multiple flights).

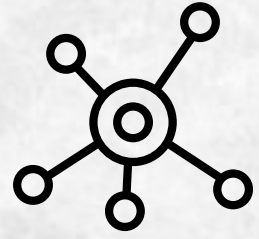
## Flight Entity:

- **Attributes:** FlightID (Primary Key), FlightNumber, DepartureAirport, ArrivalAirport, Departure Time, ArrivalTime.
- **Relationships:** Many-to-One with Airline (a flight is operated by one airline), Many-to-One with Aircraft (a flight is performed by one aircraft), One-to-Many with Reservations (a flight can have multiple passenger reservations).





# Project Implementation



- **Insert Sample Data:**
- **Populate the database with sample customer records, product listings, categories, and initial inventory.**
- **Implement CRUD Operations:**
- **Create SQL queries for inserting, updating, and deleting records in each table.**
- **Query and Reporting:**
- **Develop SQL queries to retrieve information such as customer order history, product details, and sales reports.**

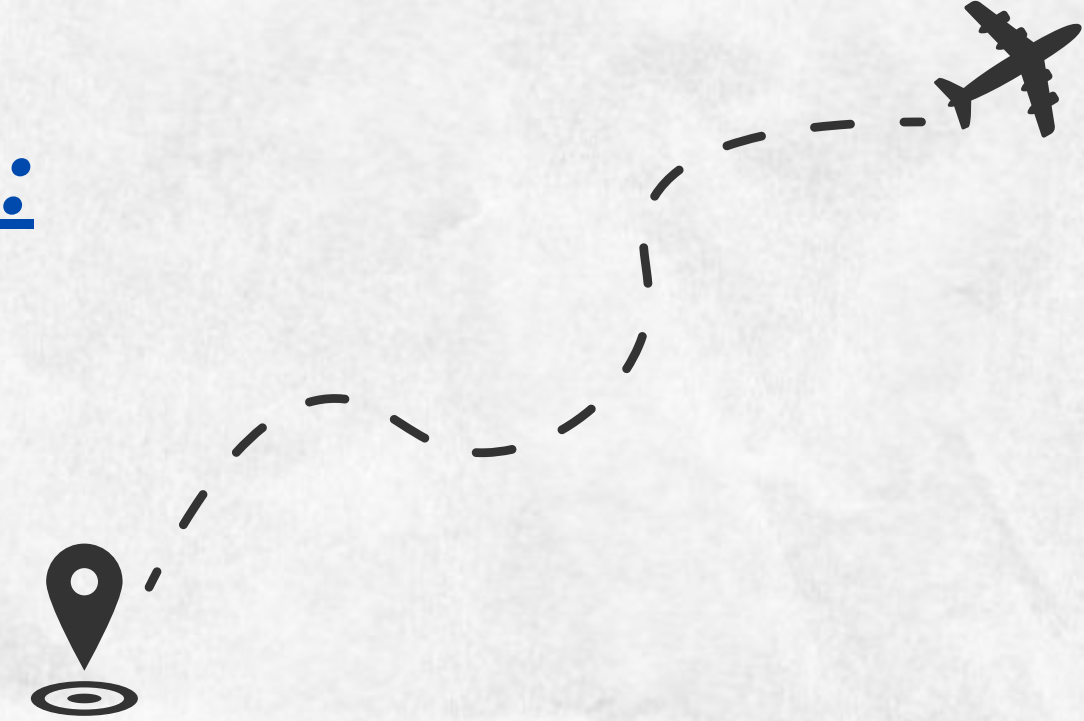




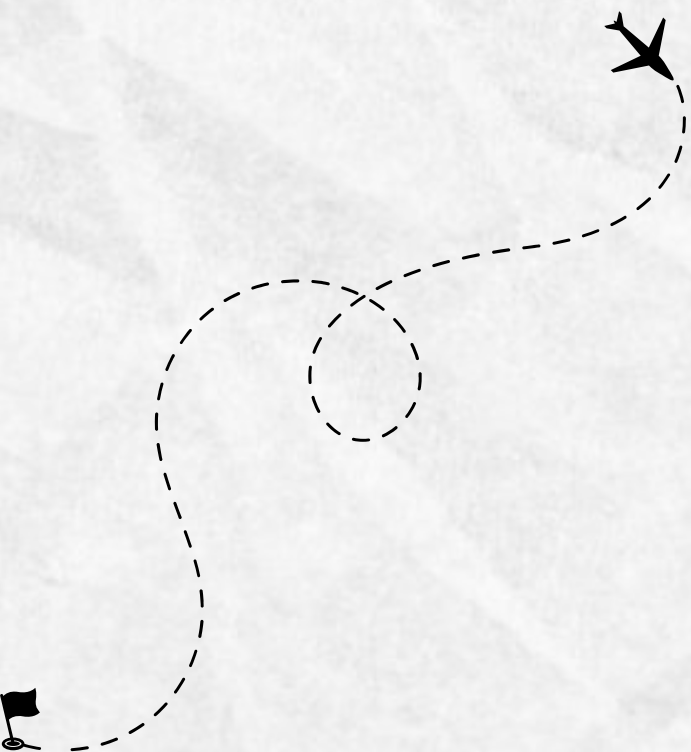


# 1. Retrieve information about all airlines:

```
SELECT * FROM Airlines;
```

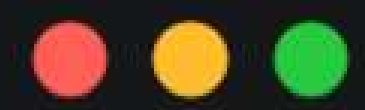


|   | AirlineID | AirlineName | Headquarters | ContactNumber |
|---|-----------|-------------|--------------|---------------|
| ▶ | 1         | Airline A   | City A       | 123-456-7890  |
|   | 2         | Airline B   | City B       | 987-654-3210  |
| ● | NULL      | NULL        | NULL         | NULL          |



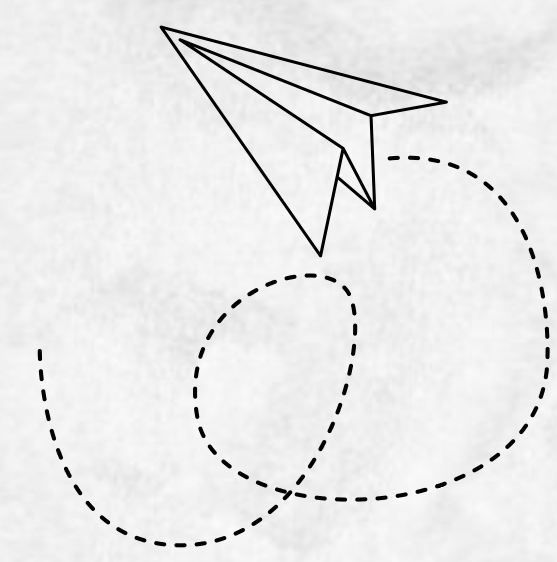
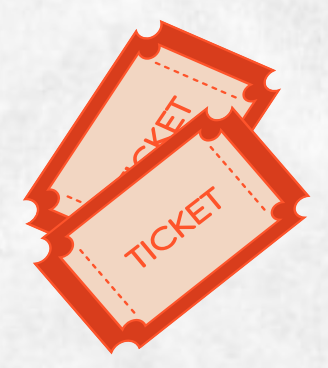


## 2. Retrieve information about all airlines:



```
SELECT * FROM Aircrafts;
```

|   | AircraftID  | AircraftType | RegistrationNumber | Capacity    | CurrentStatus | AirlineID   |
|---|-------------|--------------|--------------------|-------------|---------------|-------------|
| ▶ | 1           | Boeing 737   | ABC123             | 150         | Active        | 1           |
|   | 2           | Airbus A320  | XYZ789             | 180         | Active        | 2           |
| ● | <b>HULL</b> | <b>HULL</b>  | <b>HULL</b>        | <b>HULL</b> | <b>HULL</b>   | <b>HULL</b> |







### 3. Retrieve a list of passengers for a specific flight:



```
SELECT Passengers.*  
FROM Passengers  
JOIN Reservations ON Passengers.PassengerID = Reservations.PassengerID  
WHERE Reservations.FlightID = 1;
```

|   | PassengerID | FirstName | LastName | Email              | Phone    |
|---|-------------|-----------|----------|--------------------|----------|
| ▶ | 1           | John      | Doe      | john.doe@email.com | 555-1234 |

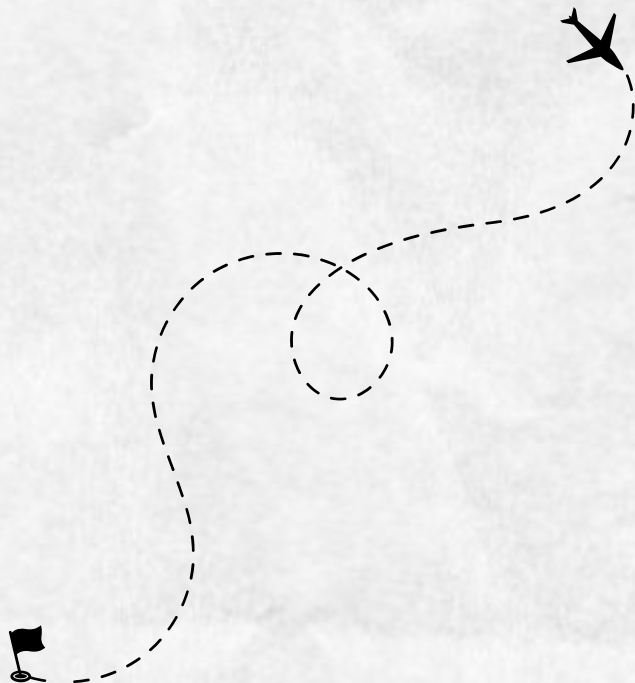




# 4. Retrieve a list of flights for a specific airline:



```
SELECT * FROM Flights WHERE AirlineID = 1;
```

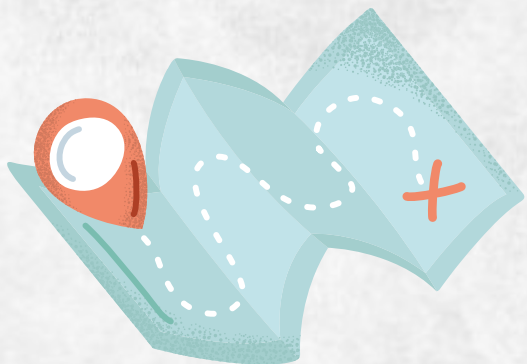


|   | FlightID | FlightNumber | DepartureAirport | ArrivalAirport | DepartureTime       | ArrivalTime         | AirlineID | AircraftID |
|---|----------|--------------|------------------|----------------|---------------------|---------------------|-----------|------------|
| ▶ | 1        | AA101        | JFK              | LAX            | 2023-01-01 08:00:00 | 2023-01-01 12:00:00 | 1         | 1          |
| • | NULL     | NULL         | NULL             | NULL           | NULL                | NULL                | NULL      | NULL       |





# 5. Retrieve available seats for a specific flight:



```
SELECT
    Flights.FlightNumber,
    Flights.DepartureTime,
    Flights.ArrivalTime,
    Flights.DepartureAirport,
    Flights.ArrivalAirport,
    Flights.AircraftID,
    Aircrafts.Capacity
FROM
    Flights
JOIN
    Aircrafts ON Flights.AircraftID = Aircrafts.AircraftID
LEFT JOIN
    Reservations ON Flights.FlightID = Reservations.FlightID
WHERE
    Flights.FlightID = Reservations.FlightID
    AND (Reservations.ReservationID IS NULL OR Reservations.ReservationTime < NOW());
```

|   | FlightNumber | DepartureTime       | ArrivalTime         | DepartureAirport | ArrivalAirport | AircraftID | Capacity |
|---|--------------|---------------------|---------------------|------------------|----------------|------------|----------|
| ▶ | AA101        | 2023-01-01 08:00:00 | 2023-01-01 12:00:00 | JFK              | LAX            | 1          | 150      |
|   | BA202        | 2023-01-02 10:00:00 | 2023-01-02 12:30:00 | LHR              | CDG            | 2          | 180      |





## 6. Retrieve the total number of reservations for a specific flight:



```
SELECT COUNT(*) AS ReservationCount FROM Reservations  
WHERE FlightID = 1;
```

|   | ReservationCount |
|---|------------------|
| ▶ | 1                |





7. Retrieve a list of passengers with their flight details for a specific airline:

```
SELECT
    Passengers.FirstName,
    Passengers.LastName,
    Flights.FlightNumber,
    Flights.DepartureAirport,
    Flights.ArrivalAirport
FROM
    Passengers
JOIN
    Reservations ON Passengers.PassengerID = Reservations.PassengerID
JOIN
    Flights ON Reservations.FlightID = Flights.FlightID
WHERE
    Flights.AirlineID = 1;
```



|   | FirstName | LastName | FlightNumber | DepartureAirport | ArrivalAirport |
|---|-----------|----------|--------------|------------------|----------------|
| ▶ | John      | Doe      | AA101        | JFK              | LAX            |







Thank  
you

