Problem Statement: Airline Management System

Company: Delta Air Lines

Introduction:

Delta Air Lines, one of the largest airlines in the world, operates with a vast network of flights, crew, and passengers. Managing flight schedules, ticket bookings, and airline operations efficiently is crucial for smooth functioning and customer satisfaction.

Objective:

Develop an **Airline Management System** for Delta Air Lines using C++ that supports CRUD operations for flights, passengers, and crew members. The system should maintain details of flights, provide key analytics on flight occupancy, and optimize airline operations.

System Attributes:

Each flight has the following properties:

- **flight_id**: A unique identifier for each flight (integer).
- **destination**: The destination of the flight (string).
- **departure_time**: The scheduled departure time (string).
- **arrival_time**: The scheduled arrival time (string).
- **capacity**: The maximum number of passengers the flight can carry (integer).
- **current_passenger_count**: The number of passengers currently booked on the flight (integer).

Functional Requirements:

1. Create (Add a New Flight)

- The system should allow adding a new flight by specifying its **flight_id, destination, departure_time, arrival_time, capacity**.
- Ensure the **flight_id** is unique.

2. Read (Display Flight Information)

- View all flights with their details.
- Search for a flight by its **flight_id** and display its details.

3. Update (Modify Flight Information)

- Modify an existing flight's details by specifying its **flight_id**.
- Allow updating **destination, departure_time, arrival_time, or capacity**.
- Ensure that the flight exists before updating.

4. Delete (Remove a Flight)

- Remove a flight from the system by specifying its **flight_id**.
- Ensure the flight exists before deletion.

5. Aggregation & Reports

- Calculate and display the **total number of flights** in the system.
- Calculate and display the **average occupancy rate** for all flights.
- Retrieve the **most and least occupied flights** with details.

Constraints:

- The system should support **at least 1000 flights**.
- Flight **id** should be a **positive integer**.
- Capacity should be a **positive integer**.
- Handle edge cases, such as trying to update or delete a non-existent flight.

Sample Input/Output:

Example Execution

```
Delta Air Lines Management System

1. Add Flight
2. View All Flights
3. Search Flight by ID
4. Update Flight Information
5. Delete Flight
6. Calculate Total Number of Flights
7. Calculate Average Occupancy Rate
8. Fetch Most & Least Occupied Flights
0. Exit

Enter your choice: 1
Enter flight ID: 301
Enter destination: New York
Enter departure time: 10:30 AM
Enter arrival time: 1:45 PM
Enter capacity: 180

Flight added successfully.

Enter your choice: 2
All Flights:
ID: 301, Destination: New York, Departure: 10:30 AM, Arrival: 1:45 PM, Capacity:
180, Current Passengers: 0

Enter your choice: 6
Total Number of Flights: 1
```