IN311

TP1 Database Modeling for Airline Management

The company AirVoyage is an international airline that wishes to modernize its organization to better manage all of its activities (flight and reservation management).

AirVoyage operates a fleet of aircraft of different types. Each aircraft is uniquely identified by a registration number (for example, 'F-GTAS') and is assigned to an aircraft type (such as 'A321-200').

This aircraft type is described by a label and specifies the number of available seats in three categories: Business (AffT), First (PremT), and Economy (EcoT).

Each aircraft belongs to a single airline and is permanently attached to a reference airport, called the parking airport (for example, 'Paris-CDG').

The company itself is characterized by:

- its name
- its country of origin
- a unique IATA code (such as 'AF')

Airports are central elements of the system. Each airport is identified by:

- its name (e.g., 'Paris-CDG')
- located in a country
- defined by its altitude

A flight is the company's main activity. A flight is identified by a flight number (e.g., 'AF-22') and is always operated by a single aircraft at any given time.

- Each flight is necessarily operated by a single airline
- It has a departure airport and an arrival airport, each with a precise date and time (DateDep/HeureDep and DateArr/HeureArr)
- For each flight, the current reservation status is tracked by the number of reserved seats in each category (AffR, PremR, EcoR). These numbers can never exceed the theoretical capacity of the aircraft assigned to the flight.

A passenger is identified by a unique number and is described by:

- Their last name, first name
- Their address (street number, street name, city, country)

A passenger can make multiple reservations over time.

- A reservation is a unique record, identified by a reservation number, and it is necessarily made by a single passenger and concerns a single flight
- Each reservation records the date and time of the operation, as well as the number of seats actually reserved for this customer in each category (Aff, Prem, Eco)
- A customer can reserve one or more seats of a category on the flight

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Work to be Done

The work to be done consists of:

a. Analyzing the entire subject, deducing the entities and relationships, and creating the corresponding Conceptual Data Model (CDM)

b. Converting the obtained CDM into a Logical Data Model (LDM) while explaining the conversion rules implemented