COMP3278

Project: Part-2

AIRLINE SYSTEM

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DESCRIPTION

The proposed Airline System finds its application in retrieval and manipulation of *Flight Reservations Data* and *Flight Scheduling Data*. Information related to Flight Reservations and Customers can be stored in the Proposed Manner, and this facilitates Queries to be performed on the same, in order to extract useful information.

BUSINESS RULES & ASSUMPTIONS

- I. Each Airport is represented by its own Database, wherein the Name, City, and Province is recorded. Each Airport is Identified by its unique *AIRPORT CODE*.
- II. Each Flight, of a particular Airline, wherein Airline Name, days of the week the flight operates on, as well as unique *FLIGHT_ID* is recorded.
- III. A particular flight may be composed of one or more legs. Each Leg stores Departure Airport, Scheduled Time of Departure, Arrival Airport, Schedules Time of Arrival. A Leg is uniquely identified by its LEG_ID. Thus, the Database design caters for the Efficient Data Management of Connecting Flights.
- IV. E.g. A Flight from A to B, may be composed of the following 2 legs:
 - a) Leg 1, from A to C
 - b) Leg 2, from C to B
- V. A Leg Instance, refers to a particular instance of a leg, concluded on a particular date. The data recorded for a leg instance includes, Actual time of Departure, Actual time of Arrival, Number of Seats Available, and the Aircraft.
- VI. Information regarding Aircrafts is also recorded. For each, the Type of Aircraft, the Owning Company, as well as the maximum seating capacity is recorded.
- VII. The Airport Data also is recorded, including information regarding whether a particular aircraft, can be physically accommodated in a particular airport.

SUPPORTED SYSTEM FUNCTIONALITIES

- I. Finding out the number of aircraft types, capable of landing on a particular airport.
- II. Finding out the aircrafts, which have greater than 200 seats(i.e. passenger aircrafts).
- III. Listing the Reservations for all Direct Flights.
- IV. Printing of Pre-departure list of passengers for each flight.
- V. Listing the Total Number of Delayed Flights (i.e. flights for which actual departure time is after the scheduled departure time, or actual arrival time is after the scheduled arrival time, or both.)
- VI. Listing out the Passengers eligible for the Frequent Flyers Rewards Programme (i.e. Top 5 Customers with highest accumulated miles).
- VII. Listing out the Busiest Departure & Arrival Ports of 2020 (i.e. Ranking of airports based on highest number of gross arrived and departed flights)
- VIII. Listing out the Overall Busiest Port of 2020

DATA REQUIREMENTS ANALYSIS

1. AIRPORT

ATTTRIBUTE	DESCRIPTION		
AIRPORT_CODE	Unique identifying	Mandatory/	Mandatory
	Airport Number.	Optional	
		Туре	INT
		Length	
		Format	
		Validation	
		Default	
		EXAMPLE	001
AIRPORT NAME	Name of Airport.	Mandatory/	Mandatory
	·	Optional	
		Туре	VARCHAR
		Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	Hong Kong
			International

			Airport
ALDDODT, CITY	City of Origin.	Mandatory/ Optional	Mandatory
AIRPORT_CITY	and an arrangement	Туре	VARCHAR
		Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	Mumbai
AIRPORT PROVINCE	Province of Location.	Mandatory/	Mandatory
_		Optional	
		Type	VARCHAR
		Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	Maharashtra

2. FLIGHT

ATTTRIBUTE	DESCRIPTION		
ELICHT ID	Unique Flight ID	Mandatory/ Optional	Mandatory
FLIGHT_ID	assigned by the Airline.	Туре	INT
	assigned by and a minimum	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	33
		Mandatory/	Mandatory
AIRLINE NAME	Name of the operating	Optional	
/ ((\text{\tint{\text{\tint{\text{\text{\tint{\text{\tint{\text{\text{\text{\tint{\text{\tint{\text{\tint{\text{\tin\text{\tint{\text{\text{\text{\text{\text{\text{\tint{\text{\tint{\tint{\text{\text{\text{\texi}\tint{\text{\texi}\tint{\text{\texit{\text{\texit{\ti}\tint{\text{\texit{\texi}\titt{\text{\ti}\tiint{\text{\text{\texi}\tint{\text{\texit{\texi{\texi{\texi{\texi}\ti	Airline.	Туре	VARCHAR
		Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	Lufthansa
		Mandatory/	Mandatory
FLIGHT DAYS	Days of operation of	Optional	
	flight.	Type	DATE
		Length	
		Format	
		Validation	

1	Default		
[EXAMPLE	2020-01-01	

3. FLIGHT_LEG

ATTTRIBUTE	DESCRIPTION		
LEC ID	Unique LEG_ID of	Mandatory/ Optional	Mandatory
LEG_ID	the Leg within a	Туре	INT
	_	Length	
	particular flight.	Format	
		Validation	
		Default	
		EXAMPLE	1002
DEDARTURE AIRPORT	The AIRPORT_CODE	Mandatory/ Optional	Mandatory
DEPARTURE_AIRPORT	of the Port of	Туре	INT
_CODE		Length	
	Departure.	Format	
		Validation	
		Default	
		EXAMPLE	001
SCHEDINED DEDARTHRE	Scheduled Time of	Mandatory/ Optional	Mandatory
SCHEDULED_DEPARTURE	Departure.	Туре	DATETIME
_TIME	Departure.	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	'2020-01-01
			20:59:59'
		Mandatory/	Mandatory
ARRIVAL_AIRPORT	The AIRPORT CODE	Optional	
	of the Port of	Туре	INT
_CODE	Arrival.	Length	
	AITIVAL.	Format	
		Validation	
		Default	
		EXAMPLE	002
		Mandatory/	Mandatory
SCHEDULED_ARRIVAL_TIME	Scheduled Time of	Optional	
00.1200225_///1111/12	Arrival.	Туре	DATETIME
	7 11 17 03 11	Length	

Format	
Validation	
Default	
EXAMPLE	'2020-01-01
	20:59:59'

4. AIRPLANE_TYPE

ATTTRIBUTE	DESCRIPTION		
Airplana TVDE	The Predefined TYPE	Mandatory/ Optional	Mandatory
Airplane_TYPE	of the Aircraft.	Туре	VARCHAR
	of the Aircraft.	Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	American
		Mandatory/	Mandatory
MAX_SEATS	Maximum	Optional	
1V1/1X_3E/(13	Manufactured	Type	INT
	Seating Capacity of	Length	
	. ,	Format	
	the Aircraft.	Validation	
		Default	
		EXAMPLE	300
		Mandatory/	Mandatory
COMPANY	The Name of the	Optional	
COMI AIVI	Firm Manufacturing	Туре	VARCHAT
	the Aircraft.	Length	
	the Ancialt.	Format	
		Validation	
		Default	
		EXAMPLE	USA.CO

5. AIRPLANE

ATTTRIBUTE	DESCRIPTION		
AIDDI ANE ID	The unique ID of the	Mandatory/ Optional	Mandatory
AIRPLANE_ID	Aircraft.	Туре	INT
	All Clart.	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	5001
		Mandatory/	Mandatory
AVAILABLE_SEATS	Available Seating	Optional	
7.07.022_327.03	Capacity of the	Type	INT
	Aircraft.	Length	
	All Clart.	Format	
		Validation	
		Default	
		EXAMPLE	290
		Mandatory/	Mandatory
Airplane TYPE	The Predefined TYPE	Optional	
/ II plane_TH E	of the Aircraft.	Туре	VARCHAR
		Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	American

6. LEG_INSTANCE

ATTTRIBUTE	DESCRIPTION		
LECDATE	The date of	Mandatory/ Optional	Mandatory
LEGDATE	occurrence of the	Туре	DATE
		Length	
	leg.	Format	
		Validation	
		Default	
		EXAMPLE	2020-01-01
		Mandatory/	Mandatory
AVALLABLE SEATS	The Seats available	Optional	
AVAILABLE_SEATS	on the leg.	Туре	INT
	on the leg.	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	150
		Mandatory/	Mandatory
DEPARTURE_TIME	Actual Time of	Optional	
	Departure.	Туре	DATETIME
		Length	
		Format	
		Validation	
		Default	
		EXAMPLE	'2020-01-01
			20:59:59'
		Mandatory/	Mandatory
ARRIVAL TIME	Actual Time of	Optional	
_	Arrival.	Туре	DATETIME
		Length	
		Format	
		Validation	
		Default	
		EXAMPLE	'2020-01-01
			20:59:59'

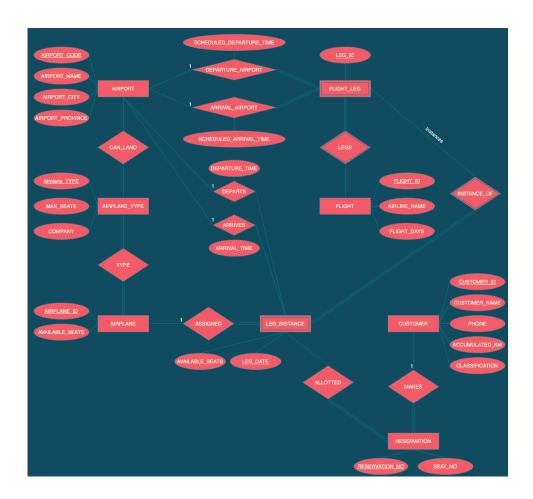
7. CUSTOMER

ATTTRIBUTE	DESCRIPTION		
CUSTOMER_ID	Unique ID of the	Mandatory/ Optional	Mandatory
COSTOWIEK_ID	Customer.	Туре	INT
	customer.	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	30001
CLISTONAED NIANAE	Name of the	Mandatory/ Optional	Mandatory
CUSTOMER_NAME	Customer.	Туре	VARCHAR
	customer.	Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	Ross
PHONE	Phone Number of the	Mandatory/ Optional	Mandatory
FIIONL	Customer.	Туре	INT
	customer.	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	64639958
ACCUMULATED KM	Accumulated	Mandatory/ Optional	Mandatory
ACCOMOLATED_KIVI	Frequent flier	Туре	INT
	kilometers of the	Length	
		Format	
	Customer.	Validation	
		Default	
		EXAMPLE	1500
CLASSIFICATION	Classification of the	Mandatory/ Optional	Mandatory
CLASSITICATION	Customer.	Туре	VARCHAR
		Length	50
		Format	
		Validation	
		Default	
		EXAMPLE	Silver

8. RESERVATION

ATTTRIBUTE	DESCRIPTION		
RESERVATION NUMBER	RESERVATION NUMBER The unique ID of the	Mandatory/ Optional	Mandatory
RESERVATION_NOWBER	Reservation.	Type	INT
	Neservation.	Length	
		Format	
		Validation	
		Default	
		EXAMPLE	6001
		Mandatory/	Mandatory
SEAT NUMBER	The Seat Number on	Optional	
32711 <u>-</u> 1131113211	the flight.	Туре	INT
		Length	
		Format	
		Validation	
		Default	
		EXAMPLE	104

ENITITY RELATIONSHIP MODEL DIAGRAM



ER MODEL DIAGRAM EXPLANATION

- I. A leg instance is assigned to one and only one aircraft.
- II. Seats are assigned to one and only one leg instance.
- III. A Flight leg has one and only one airport of departure.
- IV. A Flight leg has one and only one airport of arrival.
- V. A leg instance has exactly one airport of departure.
- VI. A leg instance has exactly one airport of arrival.
- VII. An aircraft has exactly one aircraft type.
- VIII. A leg instance can be instantiated as exactly one flight leg.
 - IX. A flight can contain one or more than one flight legs.

RELATIONAL SCHEMA

