INFO6210 Flight Service Management Database

Database Specification: Purpose, Business Problem Addressed and Business Rules

Database Purpose:

The purpose of the database is to maintain the data used to generate and support flight ticket booking. It will be used by administrative staff only and will not duplicate information from the airplane website. The data can be search in different ways and give administrative staff various ways to manage.

Business Problem Addressed:

- Allow the administrative staff of airline companies to generate descriptive reports.
- Provide information to enhance or improve flight scheduling (e.g. Consideration of flight conflict or redundancy when managing the flight schedule).
- Supply insight to drive marketing initiatives (e.g. to find out particular market needs required by consumers such as specific time slot, convenience service and other features customers love).
- Allow support crew to be prepared according to the anticipation of sales of flight tickets.

Business Rules:

- Each flight may have zero or more tickets.
- Each flight will have one airplane.
- Each airport will have one address.
- Each address will have one or many passengers.
- Each airplane may have zero or more airplane employees.
- Each airplane will have one airline company.
- A ticket may have zero or more promotions.
- A passenger may have zero or more tickets.

Design Decisions:

Entity Name	Why Entity Included	How Entity is Related to Other Entities
Flight	One of the primary purposes of the database is to manage booking information of flights. The important booking information we collect includes Flight Number,	As the core entity in the database, the Flight entity's FlightID, Airplane_AirplaneID, Destination_DestinationID, DeparturePalce_DepartureID relate to Ticket, Destination as well as DeparturePlace Entities.

	Destination, Arrive Time, Depature Place and Depart time. The information we collected for each flights can be used to forecast ticket sales and promotions.	For each flight has one-to-one relationship with Destination entity and DeparturePlace entity and has zero-to-many relationship with Ticket entity.
Ticket	Another key function of the database is to manage the sales status of flight tickets. It is important to gain information about the types of tickets sold (that is to say, the destination, departure place, price and time of the flight), the point of purchase and whether each ticket was used or rescheduled for actual attendance. The team is interested to know the actual amount of attendance to manage overbooking.	The Ticket entity is related to the Flight entity as a crucial factor in flight attendance. It ties the passenger and promotion to each flight. The Ticket entity is related to the Flight entity due to a zero-to-many relationship. Many tickets are sold per flight and each flight sales many tickets. It also relates to Passenger entity through a zero-to-many relationship. One ticket can only be owned by one passenger, but one passenger can have many tickets.
Promotion	The team is interested in tracking the impact of promotions on the sales of tickets and attendance as they relate to other factors, such as booking.	The Promotion entity is directly related to the Ticket entity through an associative entity due to the many-to-many relationship. Many promotions can occur and there are many tickets for which a particular promotion may apply.
Passenger	Keeping and managing the detail of potential customers. This entity provides the franchise with email addresses and phone numbers for direct marketing campaigns.	Information about Booking comes from this entity. It is related to Ticket entity through the associative entity Booking due to the one-to-many relationship. A passenger can book many tickets but one ticket can only be booked by one passenger.
Airport	In order to manage booking information of flights, Airport entity must	The Airport entity relates to the Flight entity as a crucial factor because it demonstrates where

	be included. It is important to gain information about which airport the flights set off and arrive.	the flights go. Each specific flight can have one departure airport and one destination airport, and one airport have zero or many flights.
Address	The Address entity collects and manages the addresses of both airports and passengers。	The Address entity relates to the Airport entity through a zero-to-one relationship, and relates to PassengerAddress entity through a one-to-one relationship. Each airport has one and at most one address and one address relates to zero or one airport. Besides, one passenger should register with one address, but one address may have many passengers live together.
Employee	This helps the administrative staff to have an overview to the working status of every employees, and the transfer of staff member can be well managed	The Employee entity relates to the Airplane entity through the associative entity AirplaneEmployee due to a many-to-many relationship. Many airplanes can occur and there are many employees working on a particular airplane.
Email	This helps the airline company to record and manage the emails of both employees and passengers.	The Email entity has a zero-to-one relationship with Passenger entity. One passenger should have one email to register, but an email may relates to zero or one passenger.
AirlineCompany	Customers may buy tickets according to the companies they like. Also, different AirlineCompany may have different services. So the airline companies should be recorded.	Airline Company entity has a one-to-many relationship with Airplane entity. One AirlineCompany can have one or many Airplanes, and an airplane should only belong to one company.
Airplane	Airplane as the most crucial part of each Flight,	Airplane entity has relationships with

	it is carrier of each flight.When we take planes, we care about which plane to take.Thus Airplane entity should be included without doubt.	AirlineCompany, Flight and Employee Entity. It has a many-to-one relationship with AirlineCompany, a zero-to-many relationship with Flight and a many-to-many relationship with Employee Entity.
FlightEmployee	The FlightEmployee entity provides an atomic decomposition of the employee, so that the transfer of staff member can be well managed and the flight attendants' information for each flight can also be collected.	The FlightEmployee entity is closely related to the Airplane entity and Employee entity.
PassengerAddress	The PassengerAddress entity provides an atomic decomposition of the addresses, so that the address of each passenger can be well recorded and managed.	The Booking entity is closely related to the Address entity and Passenger entity.
TicketPromotion	The TicketPromotion entity provides an atomic decomposition of the promotions, so that the promotions of each ticket can be well recorded and managed.	The TicketPromotion entity is closely related to the Promotion entity and Ticket entity.
EmployeeEmail	The EmployeeEmail entity provides an atomic decomposition of the employees' emails, so that the email of each employee can be well recorded and managed.	The EmployeeEmail entity is closely related to the Employee entity and Email entity.