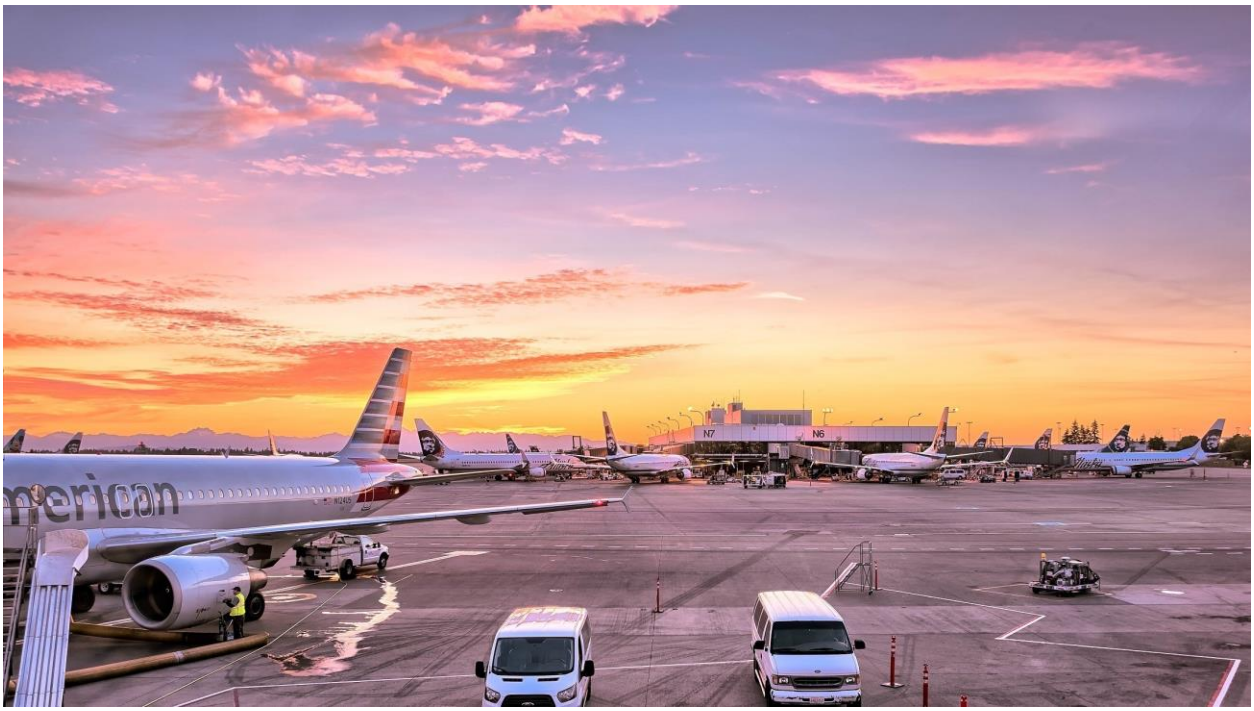
Northeastern University

Airport Management System



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Database Purpose:

Airline reservation system is one of the most used database systems in the world. It is an example of Transaction processing systems. **Transaction processing systems** are systems with large databases and hundreds of concurrent users executing database transactions. These systems require high availability and fast response time for hundreds of concurrent users.

We define the concept of a transaction, which is used to represent a logical unit of database processing, that must be completed in its entirety to ensure correctness. A transaction is typically implemented by a computer program, which includes database commands such as retrievals, insertions, deletions, and updates.

The system that is being described in here handles everything that the most practical systems would do. The complexity of the database system has been handled by trying to make most basic entities resembling the real world objects.

Our database handles the most basic functions of an airline reservation system, including reservation, cancellation and updating of a flight trip transaction.

Feasibility Study & Risk Analysis:

It is the most difficult area to assess because objectives, functions, and performance are somewhat hazy; anything seems possible if right assumptions are made.

A clinical attitude should prevail during an evaluation of technical feasibility. The considerations normally attached with the technical feasibility:

Economical Feasibility:

An evaluation of development cost weighed against the ultimate income or benefit derived from the development system or product. It includes a broad range of concerns such as:

- Cost-benefit Analysis
- Long-term corporate income strategies
- Impact on other profits/products

- Cost of resources needed for development
- Potential market growth

The work being done is economically feasible since the work is not being done at a very large scale, although it might be a bit complex. The cost of resources needed to do the work would not be big. The whole task could be completed by a single resource in a given time.

Business Rule:

- One Airplane Company can have 0 or more airplanes
- One Airplane can have one or more seats
- One Airport can have Access to 0 or more Airplanes
- One Airplane can have Access to 0 or 1 Airport
- One Airplane can have 0 or 1 schedule
- One Airplane can have 1 or more seats
- One user can book 0 or more Passengers for a flight
- One Air Schedule can have 1 or more Passenger Itinerary
- One Passenger can have multiple Passenger Itinerary
- Booking of each user can be calculated from 1 or more Passenger Itinerary
- One Airplane Can be given 1 Base Fare
- One Hotel can have 0 or more rooms available
- One Hotel booking can have 1 Available Room
- One user can have 0 or more Hotel bookings
- One Airport can have 0 or more Parking spots available
- One Airport can have 0 or more Restaurants available

Entity Name	**Business Problem**	**How are they related to other entities?**
Airport	It contains the details of the airport to keep track of the airplanes coming in and going out of the airport so that the airport capacity is not overwhelmed by aircrafts.	Airport entity is connected to parking and restaurants to manage the parking capacity and to maintain the restaurant chain. Finally it is connected to an

		access point which is like a associate table.
Airline Company	It has the details of all the aircraft company and it's specification	Airline companies are connected to different airplane entities because an airline company can have different aircrafts.
Airplane	It consists of airplane seating capacity for passenger booking management.	Airplanes can have different seats so it is connected to the seat entity. Also it is connected to base fare so as to calculate the total fare on that particular airbus.
User	This entity is the data collected from the user who creates an account on the website to schedule a flight	The User can book a hotel as well as book the flight so the user entity is connected to the passenger entity.
Hotel Booking	In case the passenger takes a package tour he/she might have a hotel booked along with the ticket. So this entity helps to keep track of hotel along with the ticket	While booking a hotel it is necessary to get the details of the room availability and its location details. So it is connected to a room entity.
Air Schedule	This entity contains the aircraft travel details that could help the passenger to keep track of their flight schedules in real time.	Airschedule should match up with the passenger's itinerary so this is connected to the passenger's itinerary entity.
Access	This is a gateway for the airport where the number of aircraft can be tracked so that the runway and spaces don't get	This is a bridge table that connects the airport to the airplane so as to get a smooth operation of the

	overwhelmed with aircrafts.	airport.
Seat	This entity shows the status of different seats in different aircrafts for the airplane authority to keep track of.	The seat has the details of the passenger which is associated with the passenger itinerary. When the user books a seat it gets added to the passengers itinerary as well. So this seat is connected to the passengers itinerary entity.
Booking	This keeps the track of different users booking different seats in the airplane.	Booking is connected to the passenger itinerary as the booking entity counts the number of seats.
Passenger Itinerary	It contains the details of the passenger travel route which the customer keeps the track of.	Passenger itinerary is connected to the passenger entity as it contains all the details of the travel date as well as it needs some details of the passenger as well.
Passenger	This consists of passenger personal details.	As the user creates a user id and starts booking a flight which is scheduled for him or her then the passenger entity comes into the picture where the unique passenger ID is created so it is connected to the passenger entity.

Base Fare	This contains the total cost of each seat and helps the airline company on calculating the return on investment.	Base fare is connected to aeroplane entities because of the total fare calculation cost of a particular airbus.
Room Availability	It has the room details which the passenger booked.	Room availability is connected to the hotel entity because the hotel contains different rooms so this relationship will give us the status of different rooms available in a particular hotel.
Hotel	This has the details of the hotel where the passenger can navigate to	The hotel is connected to the room availability entity because a particular hotel needs details of the availability of different rooms in it.
ParkingManagement	This entity is associated with airport parking management which monitors the parking space availability and transaction data for the space with time. This Entity keeps track of the Car registration number entering the airport facility	Parking entity is connected to the airport Via the ParkingAvailability entity because the airport manages the parking space.
Restaurant	This is the third party service that operates throughout different airports.	Restaurant is directly associated with the airport so the restaurant entity is connected with the airport entity.

Parking Availability	The entity has the list of parking spaces available at different airport spaces and keeps track of the Parking spots that are occupied and the spots which are available	This entity is placed between the Airport table and the Parking management entity