

Airport Management System

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# Overview

The objective of this system is to build an airport management system which can work globally for an airport located in any city in any part of the world. The system will provide a broad overview of the underlying factors that determines the operation of an airport.

# Problem Specification

The system deals with the management of an airport, which includes:

* Data of all commercial flights which operates in the airport, either through their office which can be located inside the airport or just for commutation purposes
* Every airport and airlines is identified by IATA with a unique code. This unique code will help in retrieving a passenger’s travel information.
* Airports will contain their own employee databases with specific work responsibilities
* Airlines will have different flight routes, which will have arrival and departure timing along with different travel segments like, Economy, Business and First Class
* A passenger flying using an airline or multiple airlines would have a unique identifier alphanumeric code (Confirmation Number/PNR) which would contain information about the passenger.
* A ticket will contain all the above listed information like arrival and departure timing, passenger name and id, airlines information and departure and destination location

# Database Design Requirements

* The database must have a list and data of all commercial service airports
* Location of the airports in the list
* A unique identification code for the airport. It will be a 3-digit code provided IATA.. (US airports would be preceded by the letter K)  
  <https://www.iata.org/publications/Pages/code-search.aspx>
* An airline is uniquely identified by a 2 letter airline designator. They will also have a 3-digit code printed on the tickets.  
  <http://www.iata.org/publications/Pages/code-search.aspx>
* Airline companies will have flights, those flights can be uniquely identified by a flight code, which will be a combination of airline code followed by a 4-digit flight code
* Passengers will use the services provided by airlines and every passenger will have a unique identification number
* Every passenger will need a ticket to board the flight, and ticket will contain all the flight information
* Airport will have employees working for it
* Each employee will be uniquely identified by their SSN. The database will contain other information like age, name, phone number and role

# ER Diagram:

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# ENTITIES

**CITY :** Contains information about the location of the airport

**AIRPORT :** Contains name and location about the specific airport

**AIRLINE :** Contains name, Airline ID and unique 3-digit code

**FLIGHT :** Contains flight details, which includes source and destination, duration, status, arrival and departure

**PASSENGER :** Contains information about the passenger, including name, age, sex, nationality, phone, passenger ID and passport number

**TICKET :** Contains travel information, including ticket number, source and destination, timing , passenger id, date of travel, seat number and class

**EMPLOYEE :** Contains generic information about the employees working at the airport, including name, age, sex and unique id (SSN)

**ADMINISTRATIVE SUPPORT:** Contains information about the administrative support type

**ENGINEER:** Contains the type of engineer working at the airport

**AIR TRAFFIC MONITOR:** Contains the shift of the traffic monitor

**AIRPORT AUTHORITY :** Contains the Profile of the authorized personnel

ER Diagram contains following relationship:

|  |  |  |  |
| --- | --- | --- | --- |
| **Entity1** | **Relationship** | **Entity 2** | **Cardinality** |
| City | has | Airport | 1:1 |
| Airport | contains | Airline | m:m |
| Airport | has | Employee | 1:m |
| Airline | has | Flight | 1:m |
| Flight | carries | Passengers | 1:m |
| Employee | serves | Passengers | m:m |
| Passenger | books | Ticket | 1:m |
| Passenger | cancels | Ticket | 1:m |

|  |  |
| --- | --- |
| **Type of Binary Relationship** | **Relationship in a system** |
| one-to-one | 1. A city can contain only one international airport |
| one-to-many | 1. An airline has multiple flights, many flights belongs to the same airline company 2. A flight carries multiple passengers 3. A passenger can book multiple tickets 4. A passenger can cancel multiple tickets |
| many-to-many | International airlines operating through various locations will have their offices located in all major airports. Thus, an airport will have many airlines |