**MiFly**

## Term Project | Database Fundamentals | Fall 2014

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# Classes & Attributes

***ServiceArea*** | A general area on land, such as a county, which accommodates one or more airports.

* **Area** – the name of the place where the service area is located

***Airports*** | An establishment on land that accommodates flights for passengers to travel between.

* **FAA\_Abbr** – *surrogate key*; a unique 3-letter abbreviation assigned to each airport by the FAA
* **Port\_Name** – the name of the airport
* **Location** – the specific name of the city or town in which the airport is stationed

***Flights*** | An accommodation hosted by an airline that flies passengers in a plane from one destination to another (assuming each flight is arranged to fill the maximum amount of passengers in a plane).

* **Flight\_Num** – a unique 3-digit identifier for each flight
* **Arr\_Port** – the airport at which a flight arrives
* **Dept\_Port** – the airport at which a flight departs
* **Arr\_Time** – the time of day at which the flight arrives
* **Dept\_Time** – the time of day at which the flight departs
* **F\_Date** – the date on when the flight departs or arrives
* **F\_Length** – number of minutes a flight takes to get from one destination to another

**Airlines** | An aeronautical company that owns planes to host and manage flights.

* **Airline\_Name** – the unique name of the airline company
* **City** – the city in which the company’s airline is headquartered
* **Fly\_Type** – the type of trips the company’s flights take (local, domestic, international)

**Planes** | A machine built by a manufacturer for transporting passengers aerially.

* **FAA\_Tail** – *surrogate key*; a unique tail-number assigned to each individual plane by the FAA
* **Manufacturer** – the company factory that originally built the plane
* **Model\_Num** – the type of model that the manufacturer built
* **Num\_Pssgrs** – the maximum amount of passengers that a plane can hold
* **Plane\_Name** – an optional nickname given to a plane

**Crew** | A group of people assigned to manage and maintain each flight.

* **Crew\_Num** – a unique 3-digit ID assigned to a specific combination of flight crew members
* **Attndt\_Qty** – the number of attendants assigned to a crew, usually 3 to 5 attendants

**Cost** | The possible expenses that might be charged by each flight.

* **C\_Type** – the factor being charged on the flight, such as pillows, blankets, or bag check
* **Cost** – the price attached to each factor charged

**Personnel** | A worker employed at an airport.

* **Emp\_ID** – a unique 4-digit ID assigned to each individual employee
* **Emp\_Name** – the name of the employee
* **E\_Type** – the type of job assigned to each employee

**FlightCrew** | A disjoint subclass of *Personnel*; an employee from an airport’s roster of personnel qualified to join a flight crew.

* **Emp\_Name** – the name of the flight crew member
* **Job** – the type of job the flight crew member is assigned (i.e., pilot, co-pilot, navigator)
* **FAA\_Num** – a 4-character alphanumeric assigned by the FAA only to a member allowed to enlist in a flight crew team

**GroundMembers** | A disjoint subclass of *Personnel*; an employee who is not assigned to a flight and works in the airport.

* **Emp\_Name** – the name of the ground member employee
* **Job** – the task they are assigned inside the airport

**IncidentReports** | A report that is filed by a crew member in order to assess a conflict associated with a certain flight pertaining to another crew member.

* **Flight\_Num** – the flight on which this report pertains to
* **Filed\_FAA** – the FAA\_Num of the flight crew member that filed the report
* **Reported\_FAA** – the FAA\_Num of the flight crew member in subject
* **Inc\_Type** – the type of report filed (i.e., conflict, complain, commendation)
* **Inc\_Desc** – a short description of the report

# Class Associations

One **service area** *accommodates* zero to many **airports**.  
One **airport** is *accommodated* by one and only one **service area**.

One **flight** flies *to* one and only one **airport**.  
One **airport** is flown *into* by zero to many **flights**.

One **flight** flies *from* one and only one **airport**.  
One **airport** is flown *away* *from* by zero to many **flights**.

One **flight** *has* zero to many **costs**.  
One **cost** is unique *to* one and only one **flight**.

One **airline** *manages* zero to many **flights**.  
One **flight** is *managed* by one and only one **airline**.

One **airline** *owns* one to many **planes**.  
One **plane** is *owned* by one and only one **airline**.

One **personnel** can *enlist* exclusively as zero to many **flight crew** members OR **ground workers**.  
One **flight crew** member is exclusively *enlisted from* one and only one **personnel**.  
One **ground worker** is exclusively *enlisted* from one and only one **personnel**.

One **crew** is *assigned* to zero to many **flights**.  
One **flight** is *assigned* to one and only one **crew**.

One **crew** *recruits* one to many **flight crew** members.  
One **flight crew** member is *recruited* by one and only one **crew**.

One **flight crew** member *writes* zero to many **incident** **reports**.  
One **incident report** is *written* by one and only one **flight crew** member.

One **incident report** is *about* one and only one **flight crew** member.  
One **flight crew** member is *involved* in zero to many **incident reports**.

One **incident report** is *recorded* in one and only one **flight**.  
One **flight** *records* zero to many **incident reports**.

# Normalization

For this project, we originally intended it to be *denormalized* when we built the relations from the bottom up, where **Location** was originally intended to be a general **Area** of an airport, a potential subclass, but since no other attributes depended on this as a subkey, it was redefined to be more local, whereas **ServiceArea** was included to define the local area where multiple airports could be stationed. **Personnel** was *normalized* because **FlightCrew** was originally going to be a pool of possible candidates to become part of a crew, until it was established that an FAA\_Num is assigned only to those qualified to join the flight crew, and there are other employees in an airport that do not pertain to a flight, and therefore need a separate table to manage the whole set of airport employees.

# Class Diagram

