In our assignment we created a proposal to simulate a project needed to create a DBMS for a discount airline company. Our airline known as Low-Fares-4-Canadians consists of small Canadian company that operates within 4 major Canadian Cities (Vancouver, Toronto, Calgary and Montreal). In order to make this system as simple as possible the following entities were created: Aircraft, Passenger, Staff, Route, and Airport. In most cases a large multinational airline would require additional entities to make operations run smoothly but for project purposes the proposal was kept simple to incorporate functionalities into a GUI interface.

Below is the following proposal created:

Low Fares 4 Canadians airlines has assigned us to develop a database to manage their flight reservation system to streamline their operations. The company only operates in four Canadian cities, Vancouver(YVR), Calgary(YYC), Toronto(YYZ) and Montreal(YUL) as a way to keep costs low. As a result of these operations Low Fares 4 Canadians provides the cheapest flight options for Canadians since its operations are restricted to these four cities. In order to keep costs low and profits high Low Fares 4 Canadians airlines operates 4 routes in total with 2 flights daily departing each city. As a result of having only 4 routes, this airline hosts only 8 planes each assigned to a particular route.

The required design needed for Low Fares 4 Canadians Airlines must have the following:

* Low Fares 4 Canadians have the following routes operating twice a day: YVR-YYZ,YYZ-YVR, YYC-YUL, YUL-YYC.
* Each route has its own plane assigned identified with unique identifier.
* Each plane is assigned a particular crew consisting of a pilot, co-pilot, and two attendants.
* A pilot and co-pilot are mandatory for each flight.
* The operations of Low Fares 4 Canadians are kept simple to keep down costs and avoid confusion.
* Each plane has a maximum of 48 passengers, with certain passengers identified as frequent flyers.

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Description automatically generated

Figure 1. ER-Diagram for Low-Fares-4-Canadians Airlines.

As shown in our ER diagram created, the following entities are centered around Plane which has the primary key planeId which acts as a foreign key to connect and establish relationships with our other entities. Setting up the ER diagram this way helps to reduce update, deletion, and insertion anomalies. In our proposal the company has its airline fleet restricted to 8 airplanes in total, if a plane needs to be retired from operations the new plane will use its existing number to prevent any issues.