CSC370 – Spring 2015 – Project – Due Date: March 31, 2015

In this project you will design a database for the following application, implement the design in ORACLE, and test your implementation with sample data entered by you.

The application required is for an international airport that wants to keep track of airlines, flights, passengers, baggage, etc. From the requirements for this database, suppose that the following information was collected.

- Each airline has a name, code, website, and a set of flights it operates.
- Each flight has a number, source, destination, and is operated by some airline using a certain plane model.
- Plane models have a code and capacity.
- There are two kinds of flights. Incoming and Outgoing. Incoming flights have a planned arrival time. Outgoing flights have a planned departure time.
- There are departures and arrivals.
    - A departure has a gate, departure date, and arrival status (e.g. "departed at 10:40", "delayed to 12:30", etc.)
    - An arrival has a gate, arrival date, and arrival status (e.g. "arrived at 10:40", "delayed to 12:30", etc.)

  The status statements should be constrained to be from certain sets of statements for departures and arrivals, respectively.
- With each departure and arrival there is a set of passengers associated with it.
- For each passenger the airport records the name, date and place of birth, and citizenship.
- Passengers belong to classes (first class, regular, special needs, infants, etc.) Each class can have certain attributes, which are particular for the class (be creative when finding attributes for such classes).
- Each passenger can have checked-in baggage. All baggage needs to be recorded for each passenger and flight.

What to Do

1. Draw an E/R diagram for the given problem.
2. Translate your E/R diagram into tables. Create the tables in ORACLE. Create the necessary constraints on your tables.
3. Create forms to populate (insert data into) your tables. Create forms to perform some deletions (demonstrate also automatic deletions due to foreign key constraints).
4. Create forms/interfaces and queries for extracting the following information.
    a. Given an airline find all the flights it operates.
    b. Given a place (e.g. Toronto) find all the flights from and to that place.
    c. Given a time of the day find all the arrivals and departures around that time and print their status.
    d. Given a departure or arrival find all the passengers recorded for it. Print all the information about these passengers.

e. For a given passenger in a flight find his/her baggage.

5. Create SQL queries for extracting the following information.
   a. List all the connecting flights, i.e. pairs (f1, f2) of incoming-outgoing flights such that the scheduled arrival time of f1 is not more than 3 hours earlier than the scheduled departure time of f2.
   b. Find all the passengers in transit.
   c. List the top three passengers with respect to the number of flights they have taken.
   d. For each (from, to) route, find the airline with the most delays.

What to Submit

1. E/R diagram
2. Table creation statements
3. SQL queries for extracting the required information

Demo

Each group should demo the functionality of implementation. The demos will take place on Mar 31 and Apr 1 in the labs.

Remarks

You can use HTML forms/tables backed by Java Servlets. The results of the above query requirements can be displayed as HTML tables. Alternatively, you can use Java SWING. Connect with ORACLE using the ORACLE (thin) JDBC driver.

The graphical interfaces do not need to be fancy. They only need to be functional.

Add any other functionality you think is useful. Also, you can extend the description outlined in the previous page with other useful attributes. **Be creative**.

Regarding the data, you can easily retrieve information about flights, departures, arrivals, gates, etc. from the website of some big international airport, say YVR, or from http://www.flightstats.com. Plane models of Boeing, Airbus, and other companies can be found in Wikipedia or Freebase.com.