National University of Computer and Emerging Sciences, Islamabad

CS2005 Database Systems Spring 2022

Assignment # 02

Structured Query Language (DDL and DML)

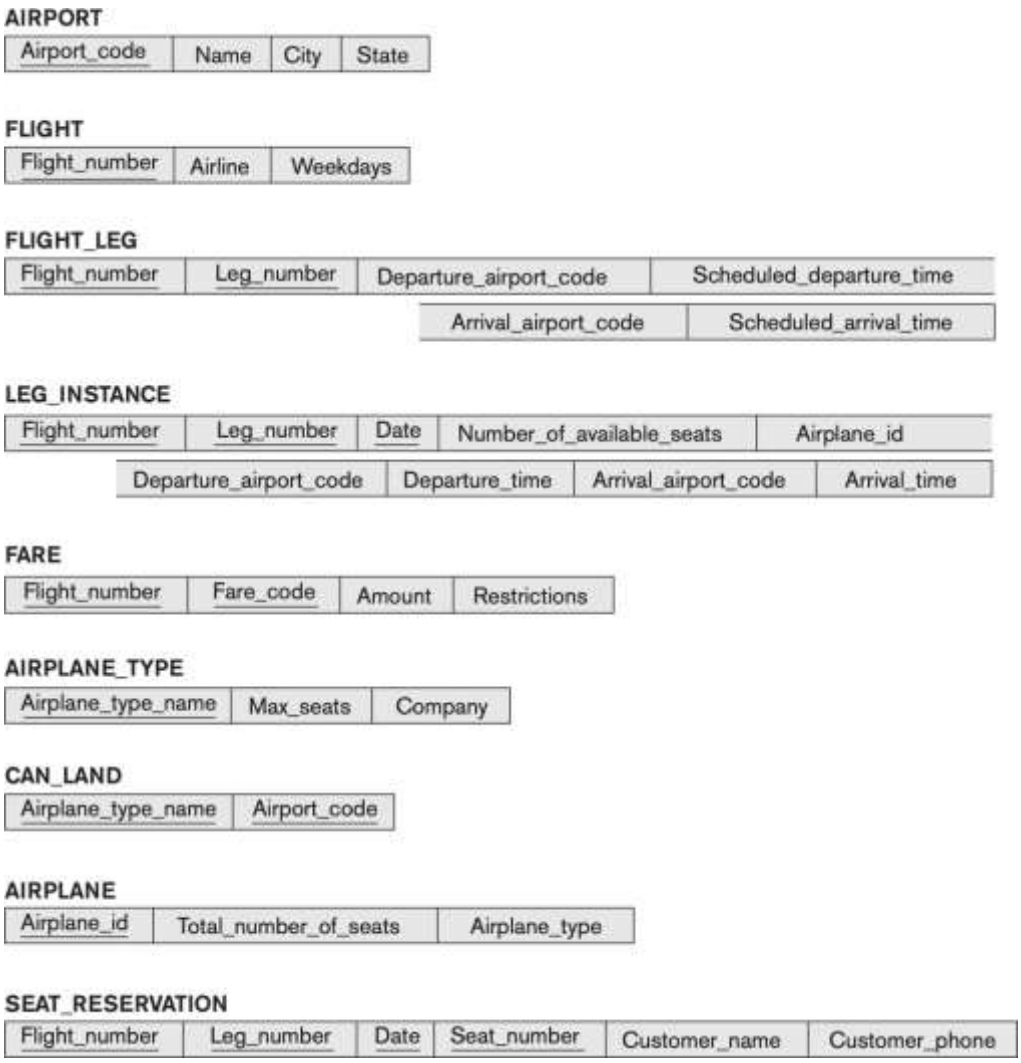
Due date: 28th March, 2022

Total Marks: 110

Submission Instructions:

- *Submit a zip folder containing 3 text files having SQL scripts for database creation, data insertion and data manipulation.*
- *Name the zip folder as roll-number_section_Assignemt2. Failing to follow submission instructions will result in deduction of marks.*
- *Plagiarism will lead to ZERO marks in the assignment.*
- *Note: This is an INDIVIDUAL assignment.*

Consider the AIRLINE relational database schema shown in following Figure, which describes a database for airline flight information. Each FLIGHT is identified by a Flight_number, and consists of one or more FLIGHT_LEGs with Leg_numbers 1, 2, 3, and so on. Each FLIGHT_LEG has scheduled arrival and departure times, airports, and one or more LEG_INSTANCEs— one for each Date on which the flight travels. FAREs are kept for each FLIGHT. For each FLIGHT_LEG instance, SEAT_RESERVATIONs are kept, as are the AIRPLANE used on the leg and the actual arrival and departure times and airports. An AIRPLANE is identified by an Airplane_id and is of a particular AIRPLANE_TYPE. CAN_LAND relates AIRPLANE_TYPEs to the AIRPORTs at which they can land. An AIRPORT is identified by an Airport_code.



Consider the above AIRLINE relational database schema:

1. Write appropriate SQL DDL statements to define the Airline database. Apply all key constraints where required. Also apply the following constraints. [25 Marks]

   - The number in the FLIGHT must be unique.
   - The fare amount is in the range of ($0 to $1000).
   - The maximum number of seats for any airplane type can't exceed 600.
   - The maximum number of flight legs (Leg_number in the FLIGHT_LEG) cannot exceed 4.

2. After creating the tables, write SQL commands to insert the data given in file

AirlineResDB. You are allowed to enter more data if you want to get appropriate result for a query. [10 Marks]

3. After the insertion of data, specify the following queries on the database by using SQL commands. [15x5= 75 Marks]

a) For each flight, list the flight number, the departure airport for the first leg of the flight, and the arrival airport for the last leg of the flight.
b) List the flight numbers and weekdays of all flights or flight legs that depart from Ontario-International Airport (airport code 'ont') and arrive in Los Angeles International Airport (airport code 'lax').
c) List the flight number, departure airport code, scheduled departure time, arrival airport code, scheduled arrival time, and weekdays of all flights or flight legs that depart from some airport in the city of Ontario and arrive at some airport in the city of Los Angeles.
d) List all fare information for flight number 'UA560'.
e) Retrieve the number of available seats for flight number 'DL1149' on '2018-02-09'.
f) Create a list of aircraft types that can land at Washington-Dulles-International airport.
g) Create a list of direct flights (including scheduled departure time and arrival time) starting from Chicago-OHare-International Airport and terminating at San-Diego-International Airport which have more than 2 seats available on 2018-02-09.
h) Create a list of direct running flights from MDW to IAD on 2018-08-05.
i) Write a query to find the average cost of the tickets in each flight on all scheduled dates.
j) Display number of flights flying from each city mentioned in the database.
k) Write a query to display name(s) of the customer(s) who book maximum number of tickets.
l) Write a query to intimate the passengers who are boarding San Francisco to New York Flight on 2018-01-31 stating the delay of 1hr in the departure time. The query should display the passenger's name, phone number, flight_id, flight_departure_date, actual departure time as "Actual_Departure_Time", actual arrival time as"Actual_Arrival_Time", delayed departure time as "Delayed_Departure_time", delayed arrival time as "Delayed_Arrival_Time".
m) Display flight id,from location, to location and fare amount of flights whose departure is in the month of January.
n) Write a query to display the Flight_Id, Flight_Departure_Date, From_Location,To_Location and Duration which has duration of travel less than 1 Hour, 10 Minutes.
o) Write a query to display name and phone number of passenger who booked maximum number of tickets

Good Luck ☺