NYU Tandon School of Engineering
CS-UY 3083-B
Professor Salim Arfaoui

Assignment 3: SQL

Due: 11:59pm, Sunday, March 16, 2024

This assignment covers the following topics

- **ER Modeling**
- **SQL**
  - **DDL**
  - **DML**
  - **DQL**

Submission instructions

- You should submit your assignment on Gradescope.
- For this assignment you should turn in **5 separate files**:
  1. *(20pts)* `CREATE.sql` **file that includes all the** `CREATE TABLE`
  2. *(20pts)* `INSERT.sql` **file that includes all the** `INSERT` **statements**
  3. *(12pts)* `ALTER.sql` **file that includes all the** `ALTER TABLE` **statements**
  4. *(18pts)* `UPDATE_DELETE.sql` **file that includes all the** `UPDATE` **and** `DELETE` **statements**
  5. *(30pts)* `SELECT.sql` **file that includes all the** `SELECT` **statements**

Each file you submit should contain a header comment block as follows:

```
--Author: [Your name here]
--Assignment# ???? / Part ???? (etc.)
--Date due: ?????
--I pledge that I have completed this assignment without collaborating
--with anyone else, in conformance with the NYU School of Engineering
--Policies and Procedures on Academic Misconduct.
```

Grading:

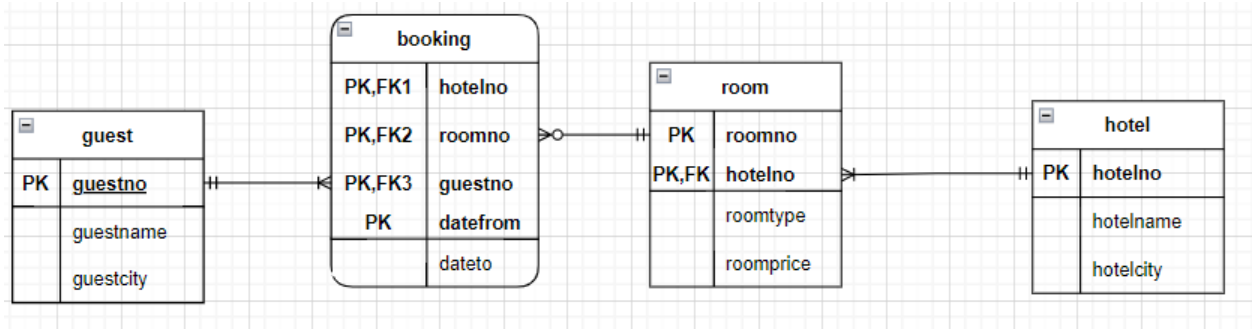
- This assignment is made up of **5 parts**, collectively worth 100 points.
- Homeworks must be submitted on time.
- **Late submissions will not be accepted.**

Part1: DDL - *CREATE*

The following database is used by a booking agency to book hotel reservations for their client.

Figure 1:

```
hotel(hotelno, hotelname, hotelcity)
room(roomno, hotelno, roomtype, roomprice)
booking(hotelno, guestno, roomno, datefrom, dateto)
guest(guestno, guestname, guestcity)
```



In the room table:

- `roomno` and `hotelno` **combined** make up the primary key of `room` table
- `hotel_no` is a foreign key which refers to the primary key of the `hotel` table.
- `roomtype` of room is a one-character that refers to smoking (S) or non-smoking (N).
- `roomprice` refers to the price of the room per night.

In the booking table:

- `roomno, hotelno, roomno,` and `detfrom` **combined** make up the primary key of `booking` table
- `guestno` refers to the primary key of the `guest` table.
- `hotelno` and `room_no` **combined** refer to the primary key of the room table.

Your task is to create the hotel database, write and execute schema statements (SQL CREATE TABLE) representing the tables and details from the provided ERD. For every table, it is up to you to decide which is the appropriate data type for each one of the columns based on the column descriptions given above. **You may refer to Part2 for more details.**

What to submit:

- *(20pts)* ***`CREATE.sql`* file that includes all the `CREATE TABLE` statements used to accomplish this task.**

Part2: DML - *INSERT*

After you created the tables in Part1, it is now time to **populate** them with data. For each one of the following tables, write and execute SQL INSERT statements to populate them with the appropriate data.

hotel Table

hotelno (CHAR(4))	hotename (VARCHAR (50))	hotelcity (VARCHAR (50))
H111	Marriott	New York
H235	Hilton	New York
H432	Kempinski	Cancun
H498	Hyatt Zilara	Cancun
H193	Ramada Encore	Istanbul
H437	Primero	Istanbul

room Table

roomno (INT)	hotelno	roomtype (CHAR(1))	roomprice (DECIMAL(8,2))
313	H111	N	145.00
412	H111	N	145.00
1267	H235	N	175.00
1289	H235	N	195.00
876	H432	N	124.00
898	H432	N	124.00
345	H498	N	160.00
467	H498	N	180.00
1001	H193	N	150.00
1201	H193	N	175.00
257	H437	N	140.00
223	H437	N	155.00

guest Table

guestno (CHAR(4))	guestname (VARCHAR(50))	guestcity (VARCHAR(50))
G256	Adam Wayne	New York
G367	Tara Cummings	London
G879	Vanessa Parry	California
G230	Tom Hancock	Istanbul
G467	Robert Swift	Istanbul
G190	Edward Cane	London

booking Table

hotelno	guestno	datefrom (DATE)	dateto (DATE)	roomno
H111	G256	2023-08-10	2023-08-15	412
H111	G367	2023-08-18	2023-08-21	412
H235	G879	2023-09-05	2023-09-12	1267
H498	G230	2023-09-15	2023-09-18	467
H498	G256	2023-11-30	2023-12-02	345
H498	G467	2023-11-03	2023-11-05	345
H193	G190	2023-11-15	2023-11-19	1001
H193	G367	2023-09-12	2023-09-14	1001
H193	G367	2023-10-01	2023-10-06	1201
H437	G190	2023-10-04	2023-10-06	223
H437	G879	2023-09-14	2023-09-17	223

What to submit:

- *(20pts)* ***INSERT.sql*** **file that includes all the `INSERT` statements used to accomplish this task.**

Part3: DDL - *ALTER*

The `ALTER TABLE` statement is used to add, delete, or modify columns in an existing table.
The `ALTER TABLE` statement is also used to add and drop various table constraints..

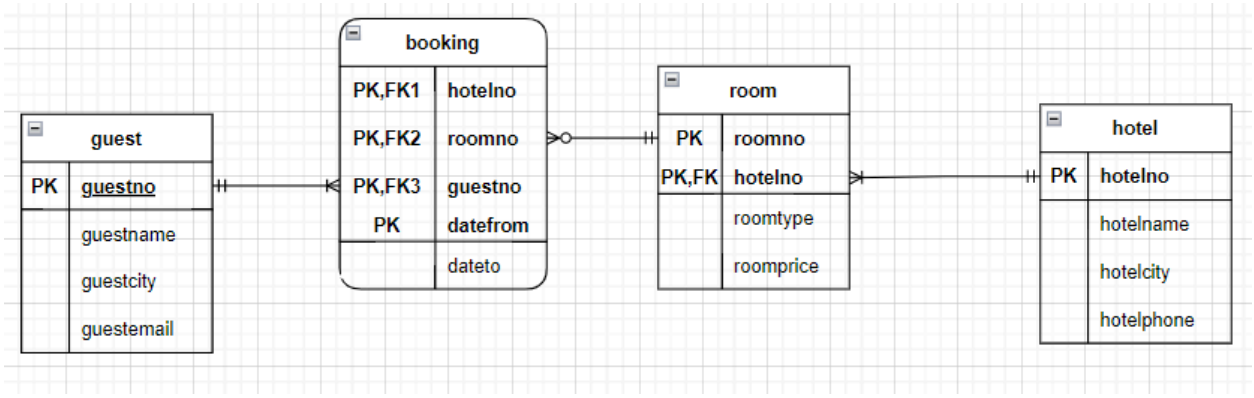
Create and execute statements to perform the following DDL activities. Save the changes permanently to the database.

1) Add a default value of non-smoking (N) for the `roomtype` column of the `room` table.
2) Add a column named `hotelphone` to the `hotel` table. This column needs to hold hotel phone numbers of variable character length up to 15.
3) Add a column named `guestemail` to the `guest` table. This column needs to accommodate values of variable character length up to 25.
4) Change the `hotelname` column in the `hotel` table to accommodate up to 35 characters

After successfully completing section A, the hotel database will now look as shown below:

Figure 2:

hotel(<u>hotelno</u>, hotelname, hotelcity, hotelphone)
room(<u>roomno</u>, hotelno, roomtype, roomprice)
booking(<u>hotelno, guestno, roomno, datefrom</u>, dateto)
guest(<u>guestno</u>, guestname, guestcity, guestemail)



What to submit:

- *(12pts)* ***ALTER.sql*** **file that includes all the `ALTER TABLE` statements used to accomplish this task.**

Part4: DML - *UPDATE/DELETE*

Create and execute statements to perform the following DML activities. Save the changes permanently to the database.

1) Set the `roomtype` value to smoking (S) for the following rooms:
    a) room 313 of the Marriott hotel
    b) rooms 876 and 898 of the Kempinski hotel
    c) room 1001 of Ramada Encore hotel

2) Fill email addresses for all the guests (you can make these up)
3) Fill phone numbers for all the hotels (you can make these up)
4) Increase the room price by 5% for all the rooms of the Marriott hotel
5) Delete the guest with `guestno` G190 from the guest table.
6) Did the DELETE statement in Q5 execute successfully? Explain what happened?
   For Q6, you can start your answer with `--` for single line comments
   Example: `-- this is my answer to question 6`

What to submit:

- *(18pts)* ***UPDATE_DELETE.sql*** **file that includes all the statements used to accomplish this task.**

Part5: DQL -SELECT

Data Query Language (DQL) is used to fetch the data from the schema or object (ie table, index, view, function, etc). With the help of a DQL query, we can get the data from the database to perform actions or operations like analyzing the data.

Create and execute statements to perform the following DQL activities.

1) Fetch full details of all hotels.
2) Fetch full details of all hotels located in Istanbul.
3) List the names and cities of all guests, ordered according to their cities.
4) List all details for non-smoking rooms in ascending order of price.
5) Find the total number of hotels there are.
6) List the cities in which guests live. Each city should be listed only once.
7) Find the average price of a room.
8) List hotel names, their room numbers, and the type of that room.
9) List the hotel names, booking dates, and room numbers for all hotels in New York.
10) What is the number of bookings that started in the month of September?
11) List the names and cities of guests who began a stay in New York in August.
12) List the hotel names and room numbers of any hotel rooms that have not been booked.
13) Find the hotel name and city of the hotel with the highest priced room.
14) List hotel names, room numbers, cities, and prices for hotels that have rooms with prices lower than the lowest priced room in a Cancun hotel.
15) Find the average price of a room for each city

What to submit:

- *(30pts)* ***SELECT.sql*** **file that includes all the statements used to accomplish this task.**