

## Assessment: Hotel Reservation Schema

Submit Assignment

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<b>Due</b>	No Due Date	<b>Points</b>	100	<b>Submitting</b>	a file upload
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### Overview

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Hotel Software Guild is a resort hotel on the West Arm of Lake Minnetonka. It is a relatively small hotel, with three floors of rooms. The top floor includes two large suites, and each of the other floors has eight standard-sized hotel rooms. The ground floor includes the customer service counter, a lounge area, a small exercise room, and a restaurant.

The hotel staff currently uses Excel spreadsheets to keep track of the rooms, guests, and reservations, and they have hired you to convert the existing data into a more flexible relational database.

You will build a database that satisfies at least second normal form (2NF) using the data provided here. While you are given the data itself, you are expected to identify the tables, fields, and relationships that will house this data.

This exercise uses realistic data, but not necessarily real data. Some options (like extra beds or room service) that a real hotel is likely to include have been excluded to simplify the exercise.

# Hotel Data

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## Rooms

Room details are listed below:

### Rooms 201-204 and 301-304

- Each of these rooms is a Double room with two queen beds and can sleep up to 4 people.
- Each room includes a refrigerator or a microwave, but not both.

### Rooms 205-208 and 305-308

- Each of these rooms is a Single room with a single king bed and can sleep up to 2 people.
- Each room includes both a microwave and a refrigerator.

### Rooms 401 and 402

- Each suite includes two separate bedrooms: one with two queen-sized beds and the other with one king-sized bed.
- Each suite also includes a shared living room space with a sleeper sofa.
- Each suite can sleep up to 8 people.
- Each suite includes a full kitchen, with a refrigerator, an electric stove and oven, and a microwave oven.
- Each suite is ADA accessible.

## Base Room Prices

The base prices for the rooms are the following:

- Double: \$174.99/night for 2 adults, with an additional \$10 for each additional adult per night.
- Single: \$149.99/night for 2 adults.
- Suite: \$399.99/night for 3 adults, with an additional \$20 for each additional adult per night.
- A jacuzzi adds \$25 to the base price.

### Additional Data

- All even-numbered rooms on the second and third floor are ADA accessible.
- All odd-numbered rooms on the second and third floor have a jacuzzi bath.
- Children (under age 18) do not incur additional charges if there is at least one adult per room on the reservation.

### Room Data

The room data is as follows:

Room	Type	Amenities	ADA Accessible	Standard Occupancy	Maximum Occupancy	Base Price	Extra Person
201	Double	Microwave, Jacuzzi	No	2	4	\$199.99	\$10
202	Double	Refrigerator	Yes	2	4	\$174.99	\$10
203	Double	Microwave, Jacuzzi	No	2	4	\$199.99	\$10
204	Double	Refrigerator	Yes	2	4	\$174.99	\$10
205	Single	Microwave, Refrigerator, Jacuzzi	No	2	2	\$174.99	NA
206	Single	Microwave, Refrigerator	Yes	2	2	\$149.99	NA
207	Single	Microwave, Refrigerator, Jacuzzi	No	2	2	\$174.99	NA
208	Single	Microwave, Refrigerator	Yes	2	2	\$149.99	NA

Room	Type	Amenities	ADA Accessible	Standard Occupancy	Maximum Occupancy	Base Price	Extra Person
301	Double	Microwave, Jacuzzi	No	2	4	\$199.99	\$10
302	Double	Refrigerator	Yes	2	4	\$174.99	\$10
303	Double	Microwave, Jacuzzi	No	2	4	\$199.99	\$10
304	Double	Refrigerator	Yes	2	4	\$174.99	\$10
305	Single	Microwave, Refrigerator, Jacuzzi	No	2	2	\$174.99	NA
306	Single	Microwave, Refrigerator,	Yes	2	2	\$149.99	NA
307	Single	Microwave, Refrigerator, Jacuzzi	No	2	2	\$174.99	NA
308	Single	Microwave, Refrigerator	Yes	2	2	\$149.99	NA
401	Suite	Microwave, Refrigerator, Oven	Yes	3	8	\$399.99	\$20
402	Suite	Microwave, Refrigerator, Oven	Yes	3	8	\$399.99	\$20

## Guests

Guest information is collected only when a guest makes a reservation, so all guests have at least one reservation in the system. Guests who have made reservations include the following:

Name	Address	City	State	Zip	Phone
Your Name	Your Address	City	State	Zip	Phone
Mack Simmer	379 Old Shore Street	Council Bluffs	IA	51501	(291) 553-0508

Name	Address	City	State	Zip	Phone
Bettyann Seery	750 Wintergreen Dr.	Wasilla	AK	99654	(478) 277-9632
Duane Cullison	9662 Foxrun Lane	Harlingen	TX	78552	(308) 494-0198
Karie Yang	9378 W. Augusta Ave.	West Deptford	NJ	08096	(214) 730-0298
Aurore Lipton	762 Wild Rose Street	Saginaw	MI	48601	(377) 507-0974
Zachery Luechtefeld	7 Poplar Dr.	Arvada	CO	80003	(814) 485-2615
Jeremiah Pendergrass	70 Oakwood St.	Zion	IL	60099	(279) 491-0960
Walter Holaway	7556 Arrowhead St.	Cumberland	RI	02864	(446) 396-6785
Wilfred Vise	77 West Surrey Street	Oswego	NY	13126	(834) 727-1001
Maritza Tilton	939 Linda Rd.	Burke	VA	22015	(446) 351-6860
Joleen Tison	87 Queen St.	Drexel Hill	PA	19026	(231) 893-2755

## Reservations

The following reservations appear in the current reservation system:

Room Number	Name	Adults	Children	Start Date	End Date	Total Room Cost
308	Mack Simmer	1	0	2/2/2023	2/4/2023	\$299.98
203	Bettyann Seery	2	1	2/5/2023	2/10/2023	\$999.95
305	Duane Cullison	2	0	2/22/2023	2/24/2023	\$349.98
201	Karie Yang	2	2	3/6/2023	3/7/2023	\$199.99
307	Your Name	1	1	3/17/2023	3/20/2023	\$524.97
302	Aurore Lipton	3	0	3/18/2023	3/23/2023	\$924.95
202	Zachery Luechtefeld	2	2	3/29/2023	3/31/2023	\$349.98

Room Number	Name	Adults	Children	Start Date	End Date	Total Room Cost
304	Jeremiah Pendergrass	2	0	3/31/2023	4/5/2023	\$874.95
301	Walter Holaway	1	0	4/9/2023	4/13/2023	\$799.96
207	Wilfred Vise	1	1	4/23/2023	4/24/2023	\$174.99
401	Maritza Tilton	2	4	5/30/2023	6/2/2023	\$1,199.97
206	Joleen Tison	2	0	6/10/2023	6/14/2023	\$599.96
208	Joleen Tison	1	0	6/10/2023	6/14/2023	\$599.96
304	Aurore Lipton	3	0	6/17/2023	6/18/2023	\$184.99
205	Your Name	2	0	6/28/2023	7/2/2023	\$699.96
204	Walter Holaway	3	1	7/13/2023	7/14/2023	\$184.99
401	Wilfred Vise	4	2	7/18/2023	7/21/2023	\$1,259.97
303	Bettyann Seery	2	1	7/28/2023	7/29/2023	\$199.99
305	Bettyann Seery	1	0	8/30/2023	9/1/2023	\$349.98
208	Mack Simmer	2	0	9/16/2023	9/17/2023	\$149.99
203	Karie Yang	2	2	9/13/2023	9/15/2023	\$399.98
401	Duane Cullison	2	2	11/22/2023	11/25/2023	\$1,199.97
206	Mack Simmer	2	0	11/22/2023	11/25/2023	\$449.97
301	Mack Simmer	2	2	11/22/2023	11/25/2023	\$599.97
302	Maritza Tilton	2	0	12/24/2023	12/28/2023	\$699.96

Comments:

- In the database, a reservation can include multiple rooms reserved by the same guest and for the same dates. There are two examples in the table above.
- Adults are guests whose age is 18 or older.
- Children are guests under the age of 18.
- Start date represents the first evening the guest will stay at the hotel.
- End date represents the day the guest plans to check out.

## Assessment Instructions

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### Part 1: ERD

Using the data presented above, create an ERD that represents the database.

Specifications for the ERD:

- The ERD should be created separately from the RDBMS. (E.g., Draw.io; shapes in Google Docs, Word, or PowerPoint; or paper and pencil)
- The design should be in second normal form.
- All tables and columns should be named appropriately so that it is easy to map data to the database.
- The ERD should specify the data type and field size (where appropriate) for each column.
- The ERD should indicate the nullability of all non-key fields.
- The ERD should identify primary keys and foreign keys in each table.
- The ERD should identify all relationships between tables.

Save the ERD as a file named *YourName-HotelERD.jpg*. If you choose to use paper and pencil, submit a clear scan or image that is easy to read.

When you have completed the ERD, submit it to your instructor for review, make any necessary changes based on feedback, and resubmit. Once the instructor has approved the ERD, you are ready to move to the next part.

## Part 2: Define the Database

Using your ERD as an example, create a SQL script that performs the following steps:

- Drops the existing database, if it exists, so that the script can rebuild a database with the same name.
- Creates the tables with all appropriate fields, data types, and keys, using the structure indicated in the ERD.
  - Tip: Create the primary tables first, followed by the tables with foreign keys.

The script should run from beginning to end without errors.

Name the file *YourName-HotelDB.sql*.

## Part 3: Manage the Data

Create a separate SQL script to manage data in the tables.

First, using the data provided in the tables above, create the required SQL statements to populate the tables with the data above.

- Include your name, address, and phone number in the first record of the table for guests. You may use a fictitious address and phone number, as long as you use your own name.
- As with the tables, add data to the primary tables before adding data to the tables with foreign keys.



Second, after adding all of the data above, create SQL statements that will delete Jeremiah Pendergrass and his reservations from the database.

- Deleting data should start with records that reference Jeremiah Pendergrass using a foreign key and then delete the record from the guest table as the last step.
- The scripts should only delete records related to Jeremiah Pendergrass and his reservations. They should not delete any room data.

The script should run from beginning to end without errors.

Name the file *YourName-HotelData.sql*.

## Part 4: Query the Database

Create a third SQL script that includes queries to retrieve the following data from the database.

1. Write a query that returns a list of reservations that end in July 2023, including the name of the guest, the room number(s), and the reservation dates.
2. Write a query that returns a list of all reservations for rooms with a jacuzzi, displaying the guest's name, the room number, and the dates of the reservation.
3. Write a query that returns all the rooms reserved for a specific guest, including the guest's name, the room(s) reserved, the starting date of the reservation, and how many people were included in the reservation. (Choose a guest's name from the existing data.)
4. Write a query that returns a list of rooms, reservation ID, and per-room cost for each reservation. The results should include all rooms, whether or not there is a reservation associated with the room.
5. Write a query that returns all the rooms accommodating at least three guests and that are reserved on any date in April 2023.

6. Write a query that returns a list of all guest names and the number of reservations per guest, sorted starting with the guest with the most reservations and then by the guest's last name.
7. Write a query that displays the name, address, and phone number of a guest based on their phone number. (Choose a phone number from the existing data.)

For each query, include:

- The request from this assignment as a comment above the query, including the number
- The query itself
- The results of the query in a comment under the query

Name the file *YourName-HotelQueries.sql*.

## Submit Your Work

When you have completed all steps above, submit all of the following files:

- *YourName-HotelERD.jpg*
- *YourName-HotelDB.sql*
- *YourName-HotelData.sql*
- *YourName-HotelQueries.sql*

To prepare for the code review, review the steps above, and be prepared to discuss:

- What choices you made to put the database in first normal form and second normal form, including how you defined relationships between the tables
- Your choices for data types and field sizes
- How the SELECT statements are designed to produce the requested data

## Hotel Reservation Database

Criteria	Ratings			Pts
<b>ERD: Second Normal Form</b> The database design reasonably meets the requirements for second normal form.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<b>ERD: Primary Keys</b> Each table has an appropriate primary key.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<b>ERD: Relationships</b> Relationships between tables are defined correctly, with appropriate foreign keys.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<b>ERD: Field Settings</b> Each field uses a reasonably appropriate data type and field size.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<b>Create script: Delete Database</b> The script deletes the database before rebuilding it.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts

Criteria	Ratings			Pts
Create script: Tables and Fields The script creates tables and fields that meet the design presented in the ERD.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
Data script: Adds data to tables The script successfully populates all tables and fields, using the data provided.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
Data script: Primary Keys Primary key values are appropriate.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
Data script: Delete Record The script successfully deletes the requested record.	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts

Criteria	Ratings			Pts
<p>Queries: Query 1</p> <p>There is a query that returns a list of reservations that end in July 2023, including the name of the guest, the room number(s), and the reservation dates.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<p>Queries: Query 2</p> <p>There is a query that returns a list of all reservations for rooms with a jacuzzi, displaying the guest's name, the room number, and the dates of the reservation.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<p>Queries: Query 3</p> <p>There is a query that returns all the rooms reserved for a specific guest, including the guest's name, the room(s) reserved, the starting date of the reservation, and how many people were included in the reservation.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<p>Queries: Query 4</p> <p>There is a query that returns a list of rooms, reservation ID, and per-room cost for each reservation. The results should include all rooms, whether or not there is a reservation associated with the room.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts

Criteria	Ratings			Pts
<p>Queries: Query 5</p> <p>There is a query that returns all the rooms accommodating at least three guests and that are reserved on any date in April 2023.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<p>Queries: Query 6</p> <p>There is a query that returns a list of all guests and the number of reservations per guest, sorted starting with the guest with the most reservations and then by the guest's last name.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<p>Queries: Query 7</p> <p>There is a query that displays the name, address, and phone number of a guest based on their phone number.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts
<p>Code Style</p> <p>All code is written and formatted to make it easy for another developer to read, including appropriate indents, object names, and comments.</p>	<b>5.0 pts</b> <b>Meets</b> <b>Expectations</b>	<b>3.0 pts</b> <b>Needs</b> <b>Improvement</b>	<b>0.0 pts</b> <b>Not</b> <b>Submitted</b>	5.0 pts

Criteria	Ratings			Pts
Code Review: Database Design Apprentice can explain the choices they made to make their design meet the requirements of second normal form.	5.0 pts Meets Expectations	3.0 pts Needs Improvement	0.0 pts Not Submitted	5.0 pts
Code Review: Field Settings Apprentice can justify their choices for data types and field sizes.	5.0 pts Meets Expectations	3.0 pts Needs Improvement	0.0 pts Not Submitted	5.0 pts
Code Review: Query Design Apprentice can explain how their queries are set up to provide the requested information, including the use of filters, sorting, grouping, and joins.	5.0 pts Meets Expectations	3.0 pts Needs Improvement	0.0 pts Not Submitted	5.0 pts
Total Points: 100.0				