



HOTEL RESERVATION ANALYSIS



INTRODUCTION

In the hospitality industry, data plays a pivotal role in making informed decisions that drive business success. With the ever-growing competition and the dynamic nature of customer preferences, it is crucial to leverage data effectively to stay ahead. This is where SQL, or Structured Query Language, comes into play as a powerful tool for managing and analyzing data.

My presentation today will delve into how SQL can be utilized to analyze hotel reservation data, providing valuable insights that can enhance operational efficiency, improve customer satisfaction, and ultimately boost revenue.



OBJECTIVE

Understanding the Data:

We will start by familiarizing ourselves with the key tables and their structures in a typical hotel reservation database.

Advanced SQL Queries:

We will explore more complex queries to perform deeper analyses, such as revenue calculation and identifying trends.

Practical Applications:

Finally, we'll look at how these insights can be applied in real-world scenarios to drive business decisions.

DATASET DETAILS

- Booking_ID: A unique identifier for each hotel reservation.
- no_of_adults: The number of adults in the reservation.
- no_of_children: The number of children in the reservation.
- no_of_weekend_nights: The number of nights in the reservation that fall on weekends.
- no_of_week_nights: The number of nights in the reservation that fall on weekdays.
- type_of_meal_plan: The meal plan chosen by the guests.
- room_type_reserved: The type of room reserved by the guests.
- lead_time: The number of days between booking and arrival.
- arrival_date: The date of arrival.
- market_segment_type: The market segment to which the reservation belongs.
- avg_price_per_room: The average price per room in the reservation.
- booking_status: The status of the booking.



DATASET OVERVIEW

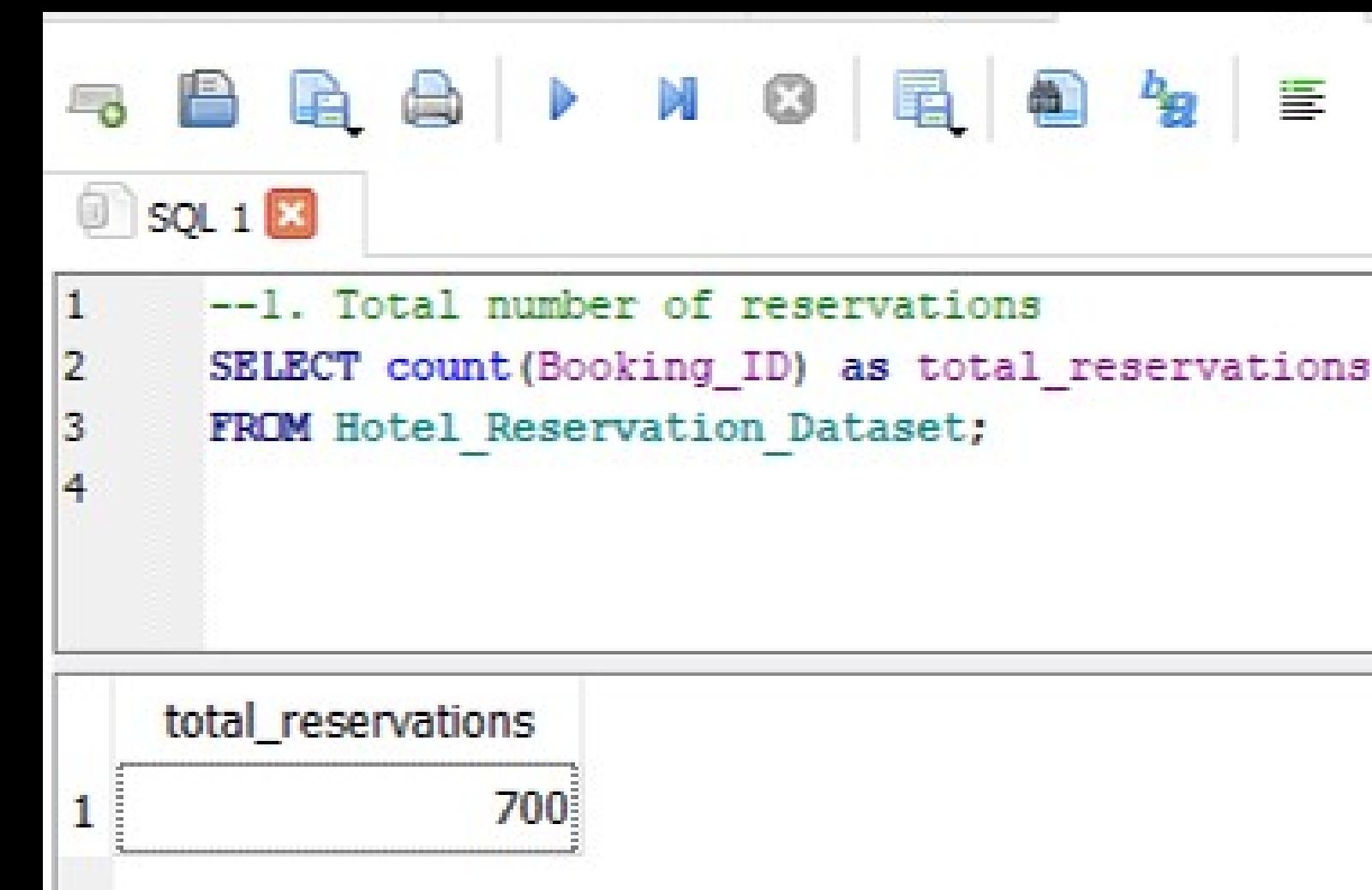
ID	Age	Gender	Room Type	Meal Plan	Room Type	Check-in Date	Check-out Date	Status	Cancelation
INN00001	2	0	1	2 Meal Plan 1	Room_Type 1	224	02-10-2017	Offline	65 Not_Canceled
INN00002	2	0	2	3 Not Selected	Room_Type 1	5	06-11-2018	Online	106.68 Not_Canceled
INN00003	1	0	2	1 Meal Plan 1	Room_Type 1	1	28-02-2018	Online	60 Canceled
INN00004	2	0	0	2 Meal Plan 1	Room_Type 1	211	20-05-2018	Online	100 Canceled
INN00005	2	0	1	1 Not Selected	Room_Type 1	48	11-04-2018	Online	94.5 Canceled
INN00006	2	0	0	2 Meal Plan 2	Room_Type 1	346	13-09-2018	Online	115 Canceled
INN00007	2	0	1	3 Meal Plan 1	Room_Type 1	34	15-10-2017	Online	107.55 Not_Canceled
INN00008	2	0	1	3 Meal Plan 1	Room_Type 4	83	26-12-2018	Online	105.61 Not_Canceled
INN00009	3	0	0	4 Meal Plan 1	Room_Type 1	121	06-07-2018	Offline	96.9 Not_Canceled
INN00010	2	0	0	5 Meal Plan 1	Room_Type 4	44	18-10-2018	Online	133.44 Not_Canceled
INN00011	1	0	1	0 Not Selected	Room_Type 1	0	11-09-2018	Online	85.03 Not_Canceled
INN00012	1	0	2	1 Meal Plan 1	Room_Type 4	35	30-04-2018	Online	140.4 Not_Canceled
INN00013	2	0	2	1 Not Selected	Room_Type 1	30	26-11-2018	Online	88 Canceled
INN00014	1	0	2	0 Meal Plan 1	Room_Type 1	95	20-11-2018	Online	90 Canceled
INN00015	2	0	0	2 Meal Plan 1	Room_Type 1	47	20-10-2017	Online	94.5 Not_Canceled
INN00016	2	0	0	2 Meal Plan 2	Room_Type 1	256	15-06-2018	Online	115 Canceled
INN00017	1	0	1	0 Meal Plan 1	Room_Type 1	0	05-10-2017	Offline	96 Not_Canceled
INN00018	2	0	1	3 Not Selected	Room_Type 1	1	10-08-2017	Online	96 Not_Canceled
INN00019	2	0	2	2 Meal Plan 1	Room_Type 1	99	30-10-2017	Online	65 Canceled
INN00020	2	0	1	0 Meal Plan 1	Room_Type 1	12	04-10-2017	Offline	72 Not_Canceled
INN00021	2	0	2	2 Meal Plan 1	Room_Type 1	99	30-10-2017	Online	65 Canceled

Activate Windows



QUE-1-What is the total number of reservations in the dataset?

This query counts all rows in the reservations table and returns the total number of reservations. The result will be displayed under the total_reservations.



The screenshot shows a SQL Server Management Studio interface. The top bar has various icons for file operations, zoom, and help. Below it is a toolbar with icons for new query, save, and execute. The main area is divided into two panes. The left pane is titled 'sql 1' and contains the following SQL code:

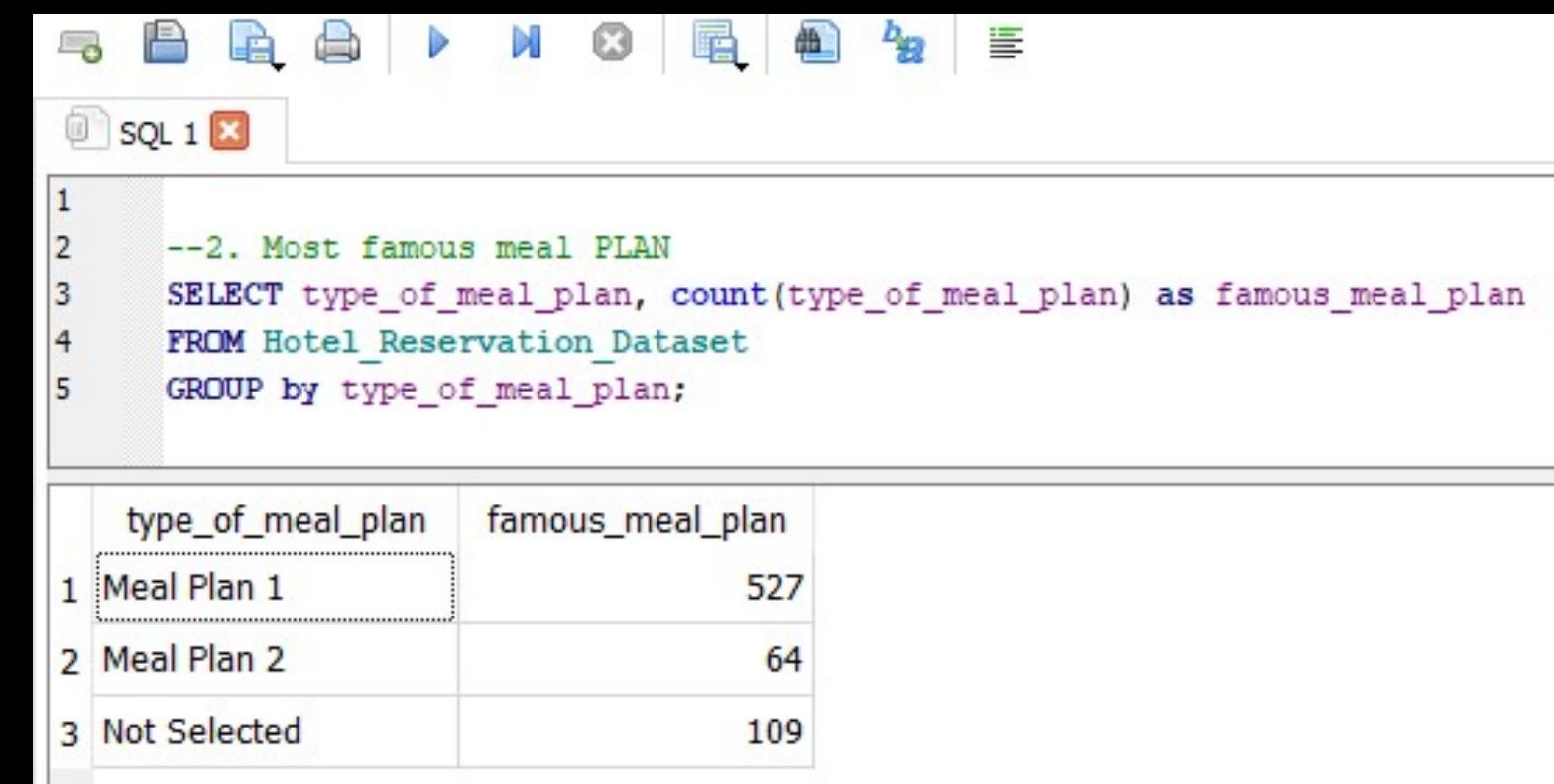
```
1 --1. Total number of reservations
2 SELECT count(Booking_ID) as total_reservations
3 FROM Hotel_Reservation_Dataset;
4
```

The right pane displays the results of the query in a table format:

total_reservations
1 700

QUE-2.-Which meal plan is the most popular among guests?

This query groups the reservations by meal_plan, counts the number of reservations for each meal plan, and orders the result in descending order of the total reservations.



The screenshot shows a SQL query window titled "SQL 1". The query is:

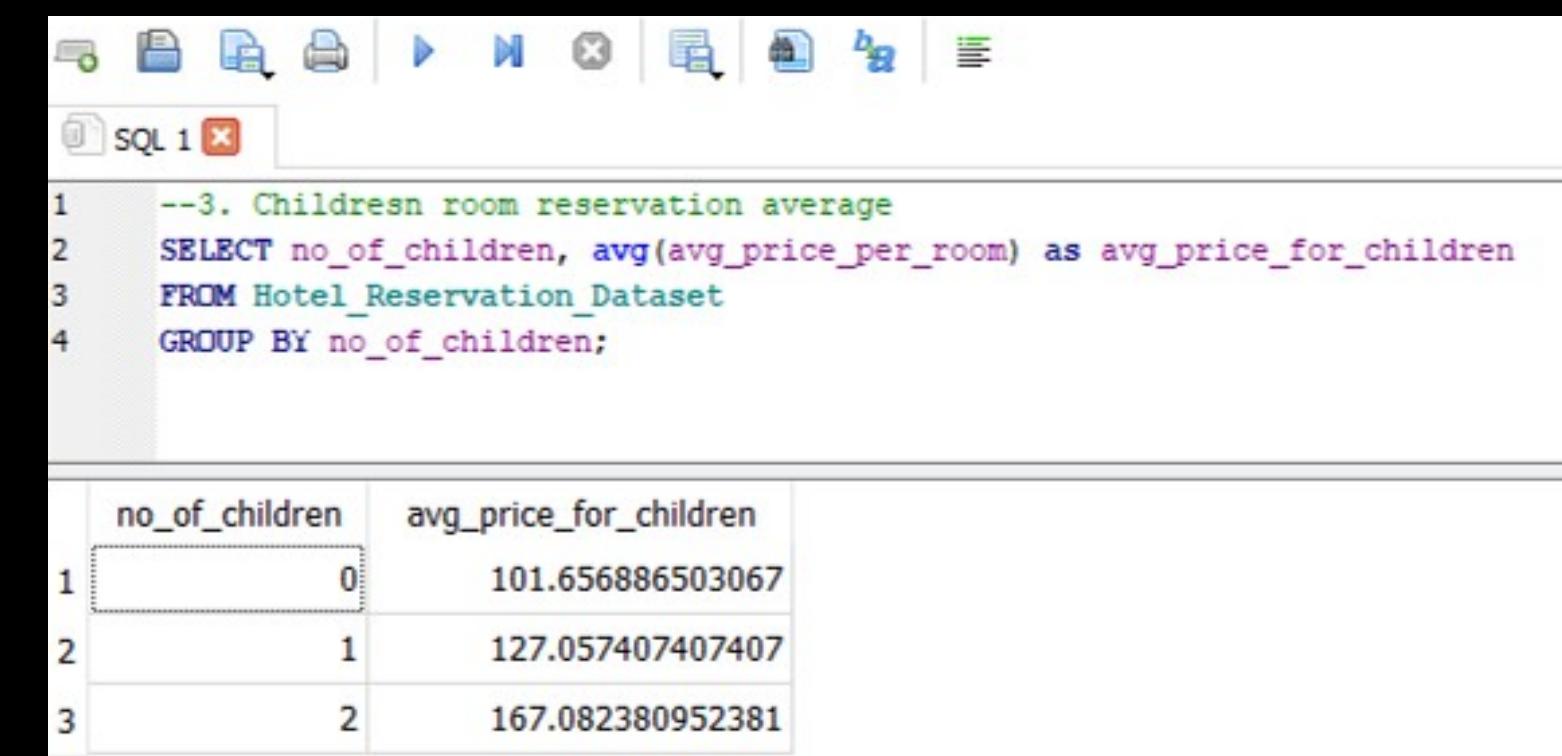
```
1
2 --2. Most famous meal PLAN
3 SELECT type_of_meal_plan, count(type_of_meal_plan) as famous_meal_plan
4 FROM Hotel_Reservation_Dataset
5 GROUP by type_of_meal_plan;
```

The results are displayed in a table:

	type_of_meal_plan	famous_meal_plan
1	Meal Plan 1	527
2	Meal Plan 2	64
3	Not Selected	109

QUE-3- What is the average price per room for reservations involving children?

This query calculates the average of the room_price column for all reservations where the children column has a value greater than zero, indicating that the reservation includes children. The result will be displayed under the average_price_per_room.



The screenshot shows a SQL IDE interface with a toolbar at the top and a results grid below. The code in the query window is:

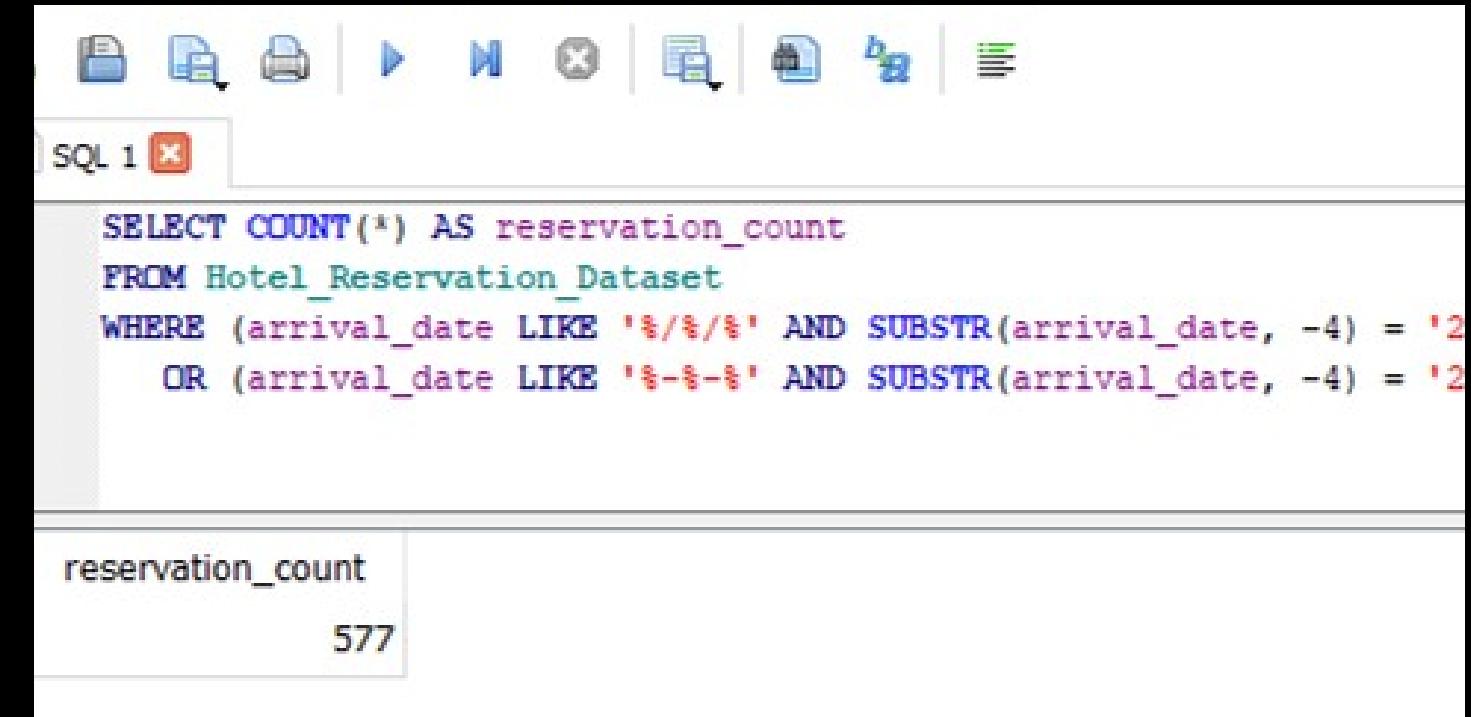
```
--3. Children room reservation average
SELECT no_of_children, avg(avg_price_per_room) as avg_price_for_children
FROM Hotel_Reservation_Dataset
GROUP BY no_of_children;
```

The results grid displays the following data:

no_of_children	avg_price_for_children
0	101.656886503067
1	127.057407407407
2	167.082380952381

QUE-.4-How many reservations were made for the year 20XX (replace XX with the desired year)?

This query extracts the year from the reservation_date column and counts the number of reservations where the year matches. The result will be displayed under the alias reservations_count



The screenshot shows a SQL query window titled "SQL 1". The query is:

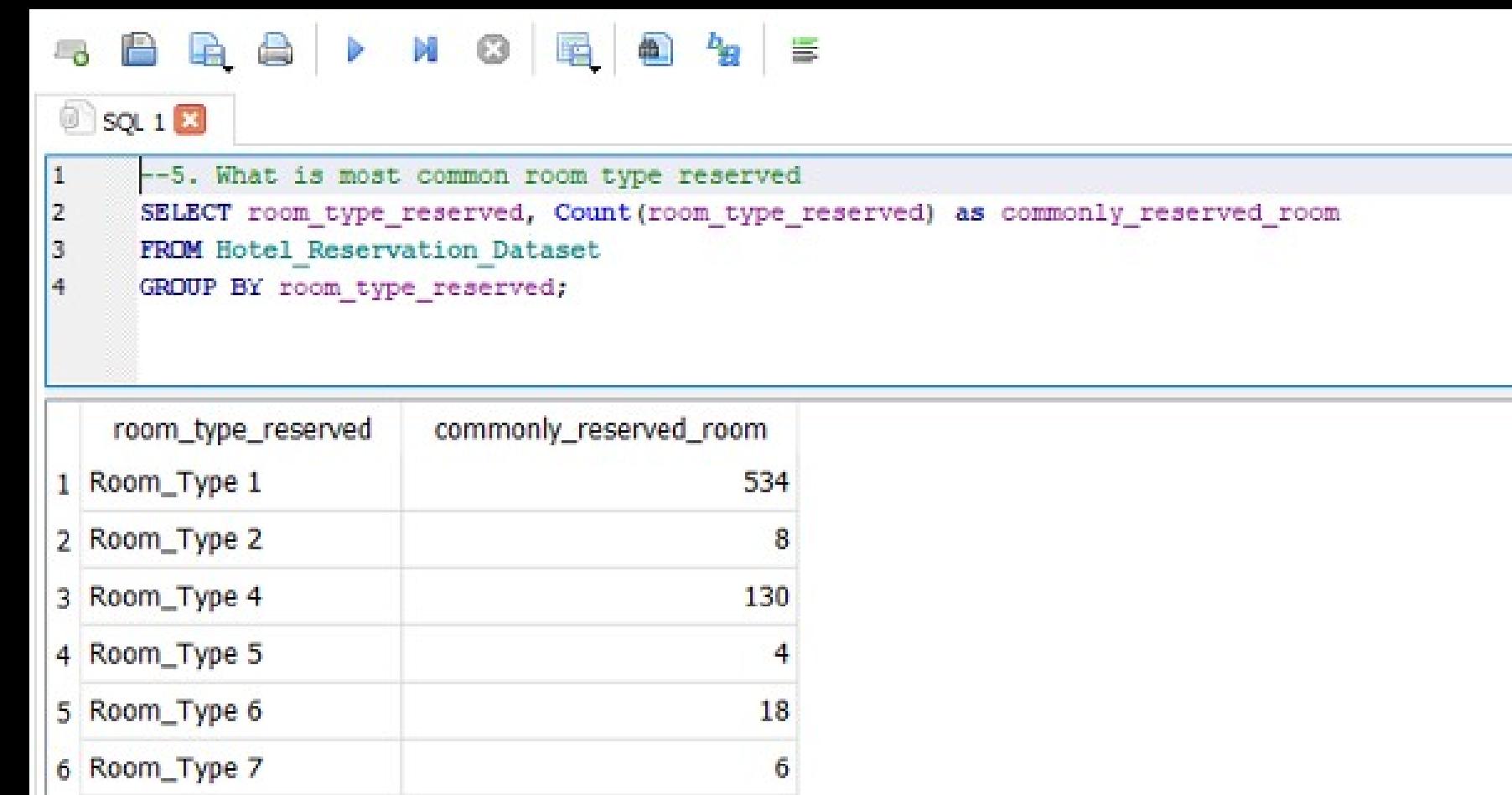
```
SELECT COUNT(*) AS reservation_count
FROM Hotel_Reservation_Dataset
WHERE (arrival_date LIKE '%/%/%' AND SUBSTR(arrival_date, -4) = '20XX')
    OR (arrival_date LIKE '%-%-%' AND SUBSTR(arrival_date, -4) = '20XX')
```

The result set contains one row:

reservation_count
577

QUE-5-What is the most commonly booked room type?

This query groups the reservations by room_type, counts the number of reservations for each room type, and orders the result in order of the total reservations.



The screenshot shows a SQL query window titled "SQL 1". The query is:

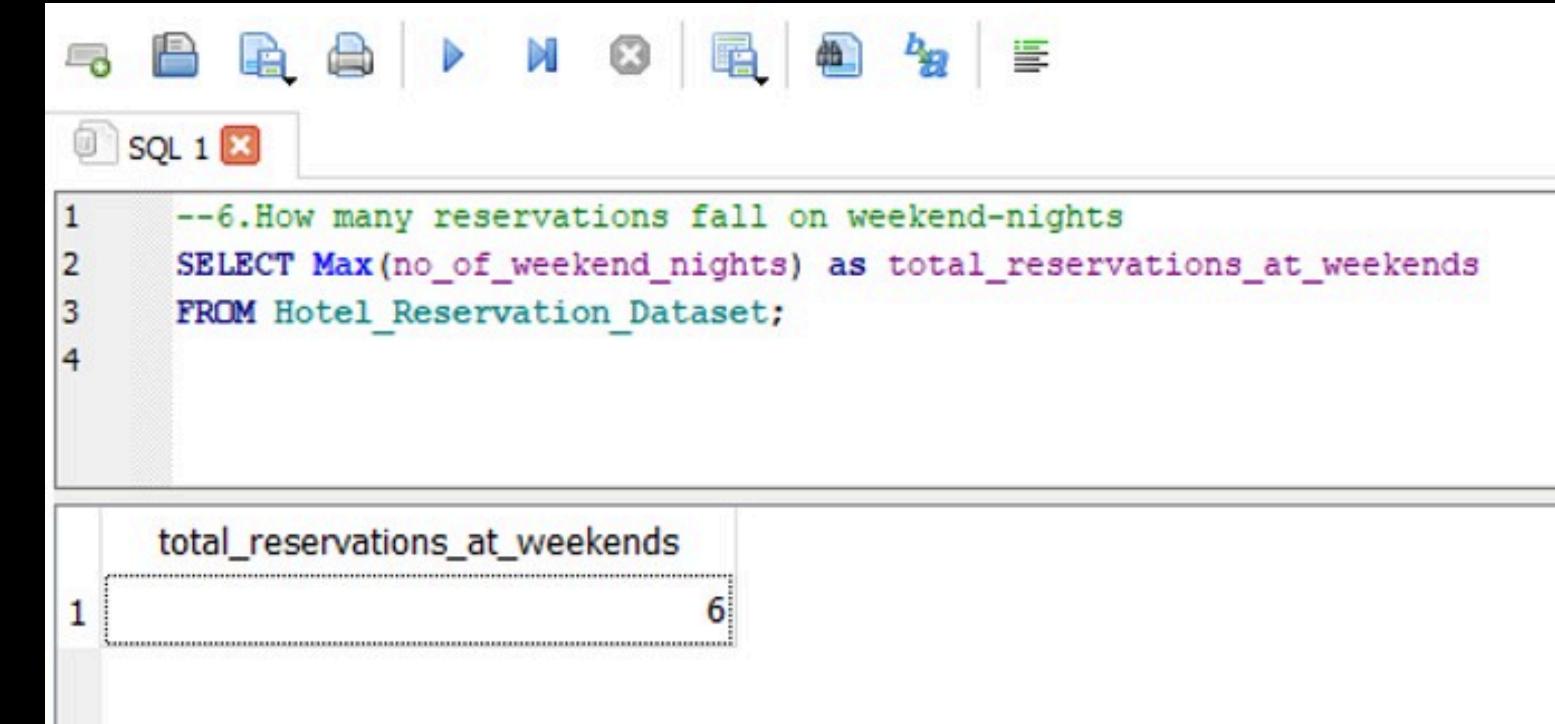
```
--5. What is most common room type reserved
SELECT room_type_reserved, Count(room_type_reserved) as commonly_reserved_room
FROM Hotel_Reservation_Dataset
GROUP BY room_type_reserved;
```

The results are displayed in a table:

room_type_reserved	commonly_reserved_room
1 Room_Type 1	534
2 Room_Type 2	8
3 Room_Type 4	130
4 Room_Type 5	4
5 Room_Type 6	18
6 Room_Type 7	6

QUE-6-How many reservations fall on a weekend (no_of_weekend_nights > 0)?

This query counts all rows in the reservations table where the no_of_weekend_nights column is greater than zero, indicating that the reservation includes at least one weekend night. The result will be displayed under the alias total_reservations_at_weekends



The screenshot shows a SQL query window titled "SQL 1". The query is:

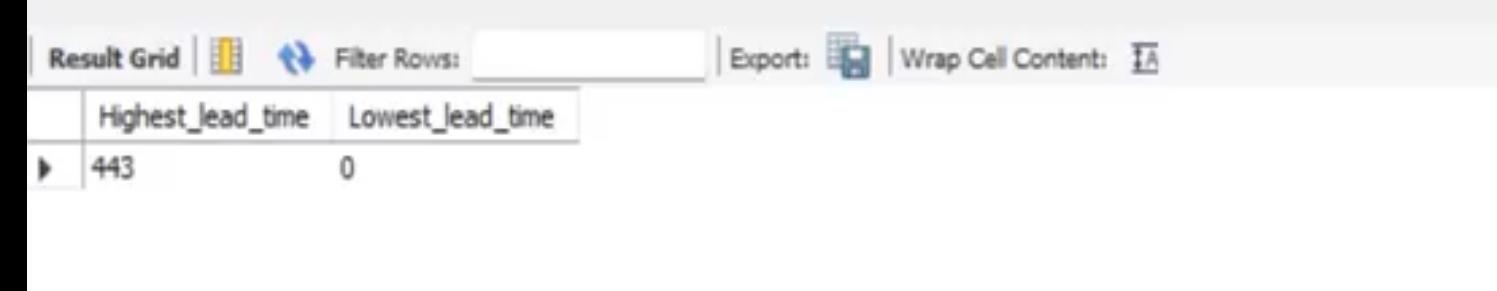
```
--6.How many reservations fall on weekend-nights
SELECT Max(no_of_weekend_nights) as total_reservations_at_weekends
FROM Hotel_Reservation_Dataset;
```

The results pane shows a single row with the alias "total_reservations_at_weekends" and the value "6".

QUE-7.-What is the highest and lowest lead time for reservations?

This query calculates the maximum and minimum values of the lead_time column **and returns them as highest_lead_time and lowest_lead_time, respectively.**

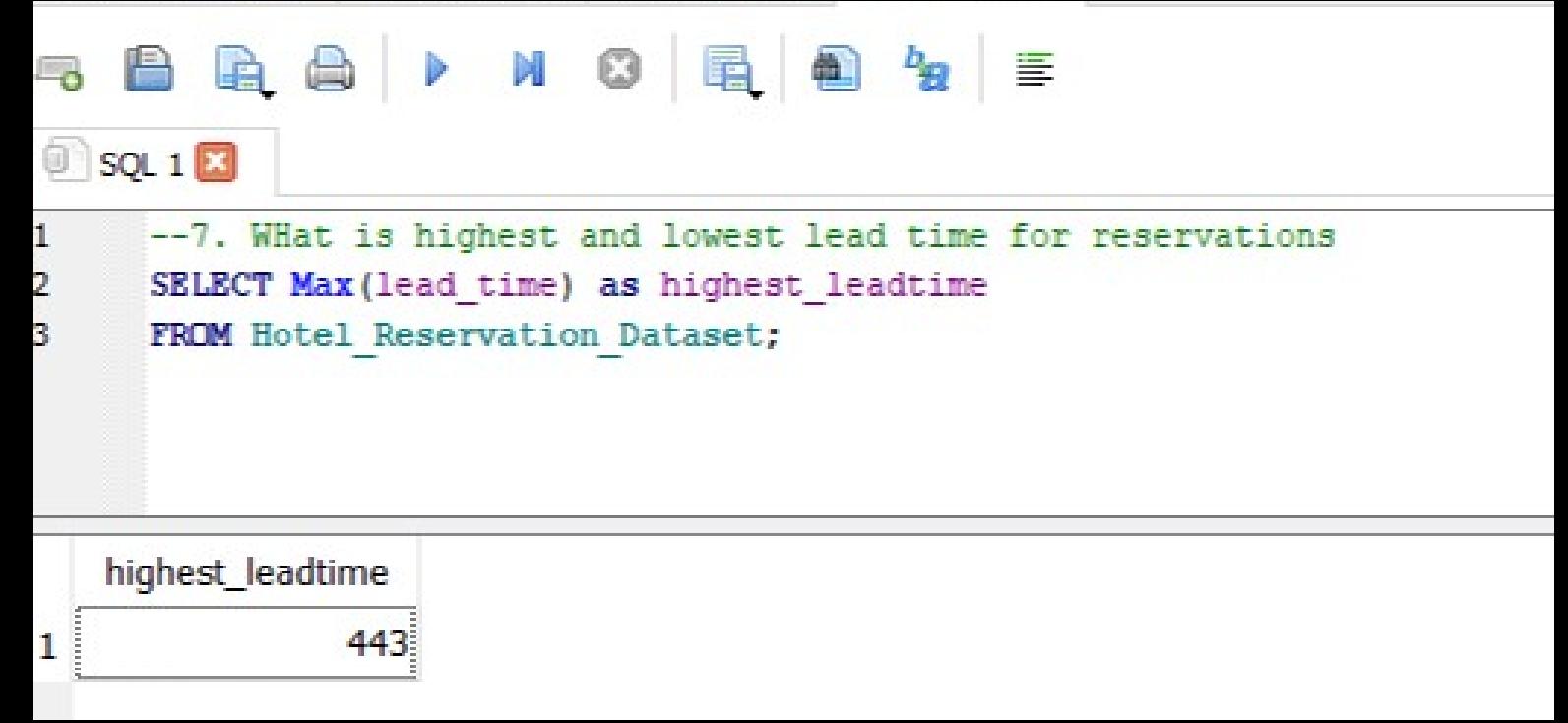
```
1 •  SELECT max(lead_time) AS Highest_lead_time, MIN(lead_time) AS Lowest_lead_time
2   FROM hotelreservation.`hotel reservation dataset`;
3
4
```



Highest_lead_time	Lowest_lead_time
443	0

QUE-8.-What is the most common market segment type for reservations?

This query groups the reservations by market_segment, counts the number of reservations for each market segment type, and orders the result in descending order of the total reservations.



The screenshot shows a SQL editor window titled "SQL 1". The query is:

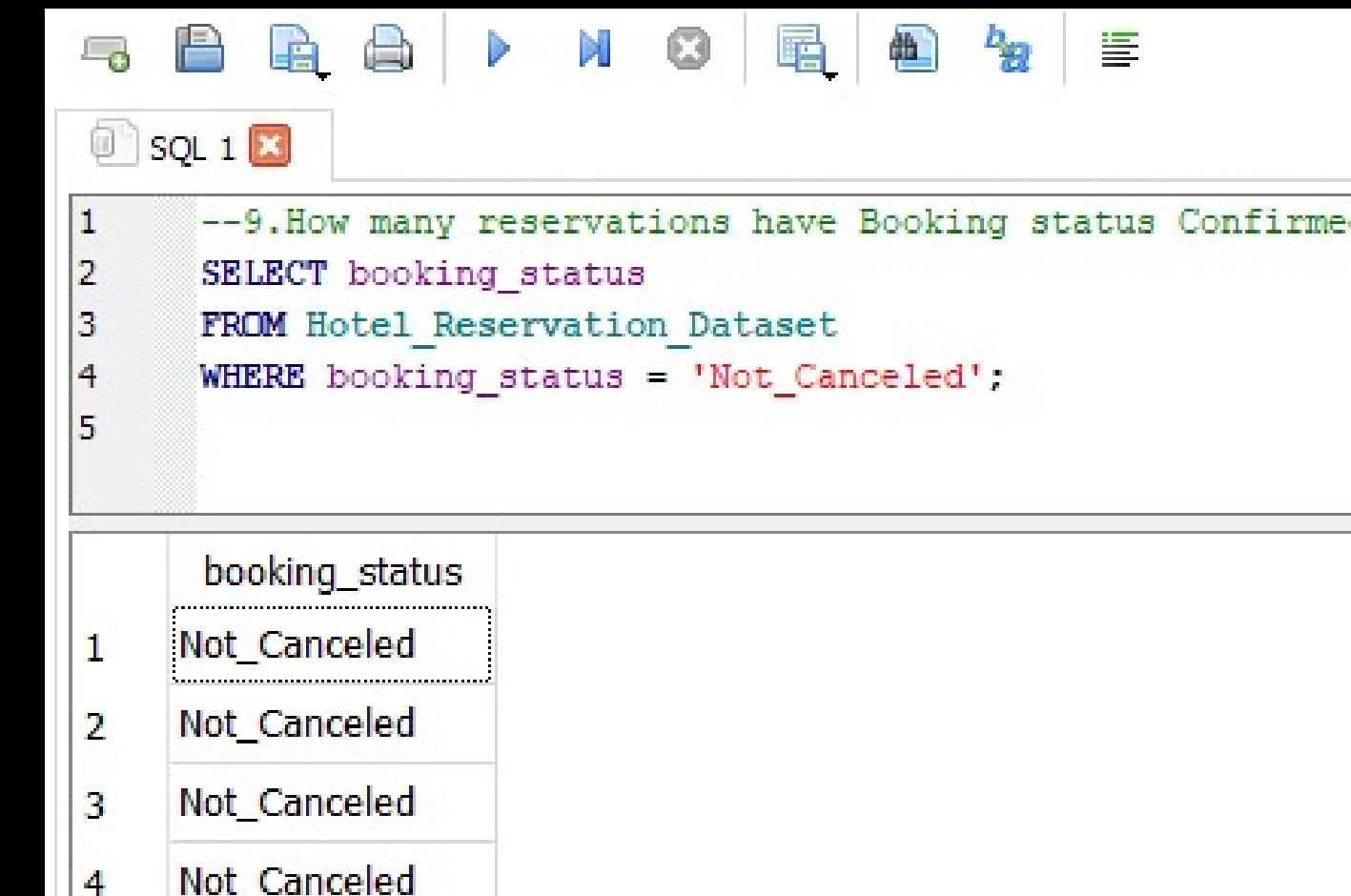
```
--7. What is highest and lowest lead time for reservations
SELECT Max(lead_time) as highest_leadtime
FROM Hotel_Reservation_Dataset;
```

The results table has one row with the value 443.

highest_leadtime
443

QUE-9-How many reservations have a booking status of "Confirmed"?

This query counts all rows in the reservations table where the booking_status column is equal to "Confirmed". The result will be displayed under the alias booking_status



The screenshot shows a SQL query window titled "SQL 1" with the following code:

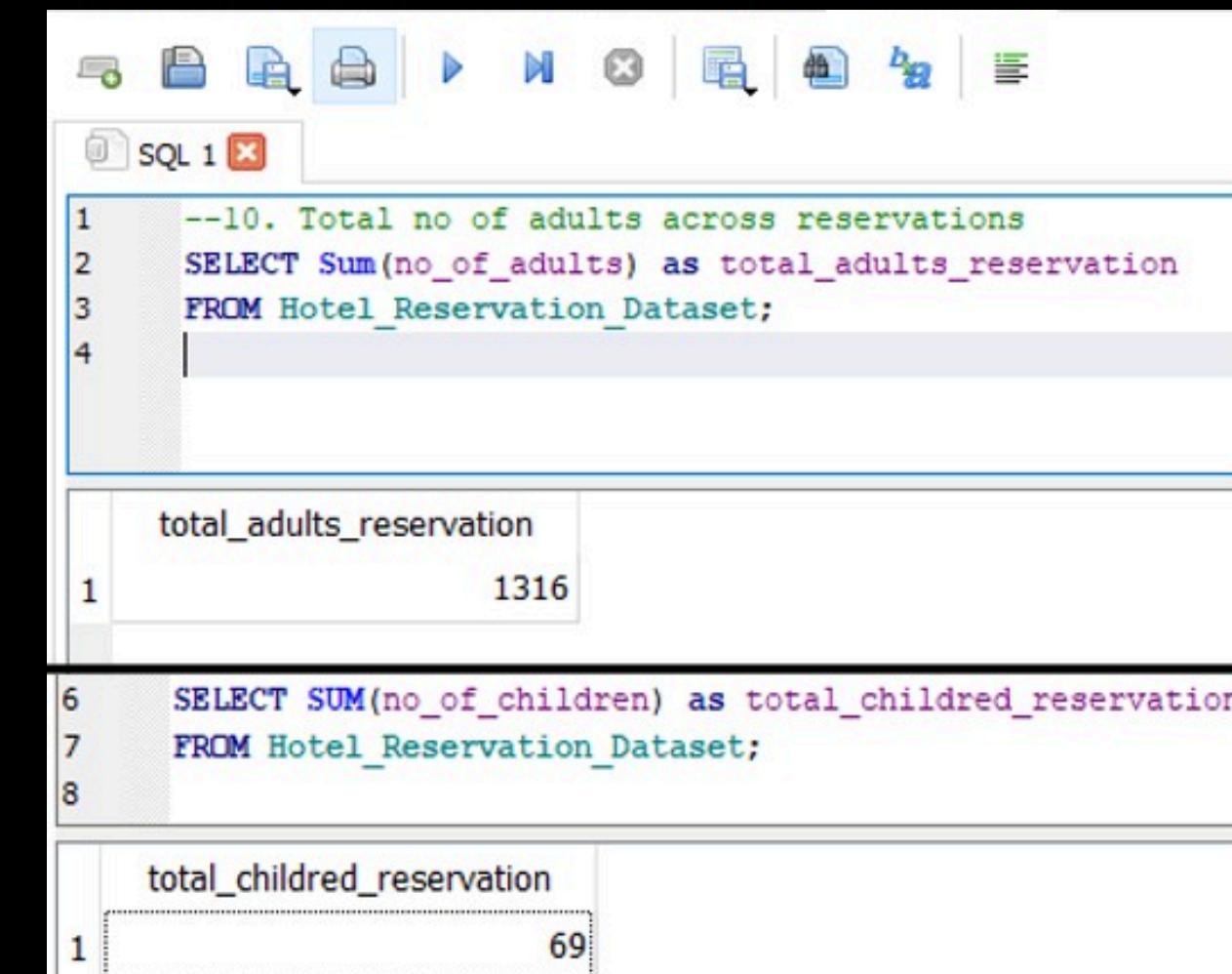
```
--9.How many reservations have Booking status Confirmed
SELECT booking_status
FROM Hotel_Reservation_Dataset
WHERE booking_status = 'Not_Canceled';
```

The results grid displays the following data:

	booking_status
1	Not_Canceled
2	Not_Canceled
3	Not_Canceled
4	Not Canceled

QUE-10. What is the total number of adults and children across all reservations?

This query calculates the sum of the adults column to get the total number of adults across all reservations, and similarly calculates the sum of the children column to get the total number of children across all reservations.



The screenshot shows a SQL Server Management Studio window with two queries and their results.

Query 1:

```
--10. Total no of adults across reservations
SELECT Sum(no_of_adults) as total_adults_reservation
FROM Hotel_Reservation_Dataset;
```

Result 1:

total_adults_reservation
1316

Query 2:

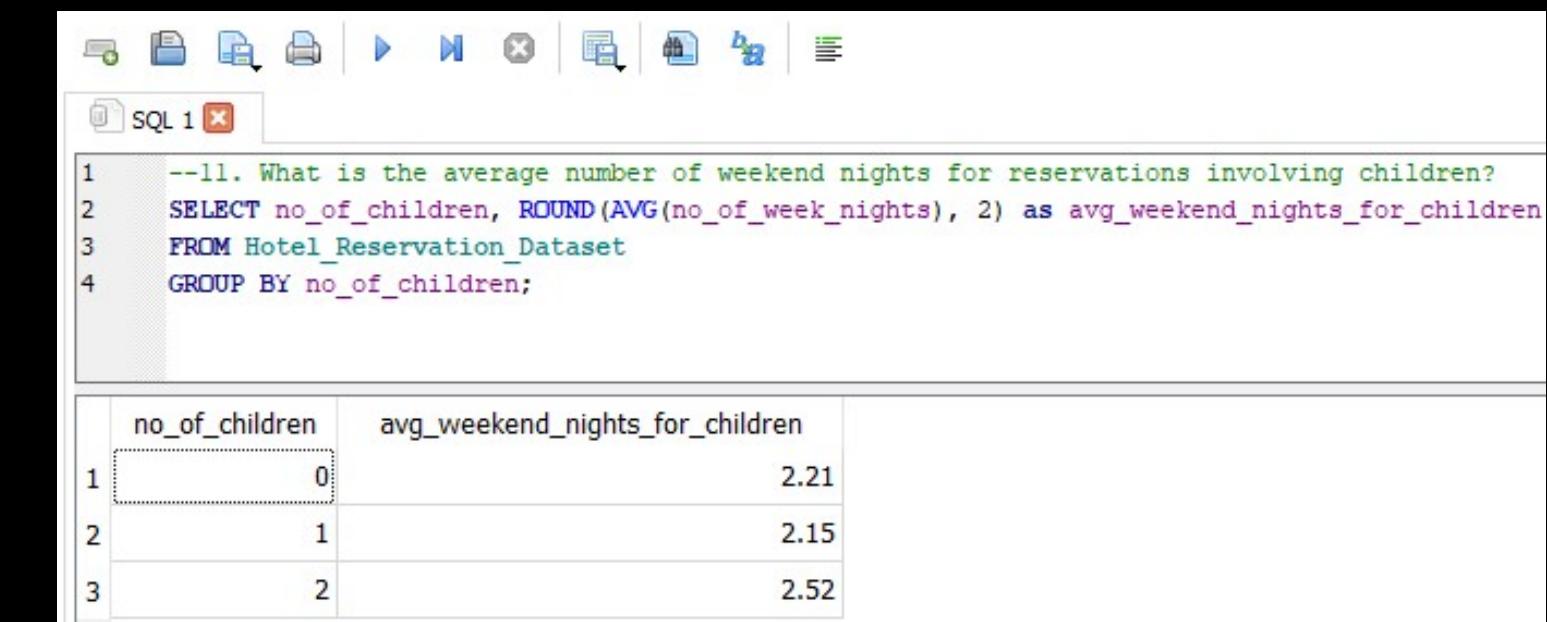
```
6   SELECT SUM(no_of_children) as total_childred_reservation
7   FROM Hotel_Reservation_Dataset;
8
```

Result 2:

total_childred_reservation
69

QUE-11.-What is the average number of weekend nights for reservations involving children?

This query calculates the average of the no_of_weekend_nights column for reservations where children is greater than zero. It provides the average number of weekend nights for reservations that involve children.



The screenshot shows a SQL IDE interface with a toolbar at the top and a results grid below. The code in the query window is:

```
--11. What is the average number of weekend nights for reservations involving children?  
SELECT no_of_children, ROUND(AVG(no_of_week_nights), 2) as avg_weekend_nights_for_children  
FROM Hotel_Reservation_Dataset  
GROUP BY no_of_children;
```

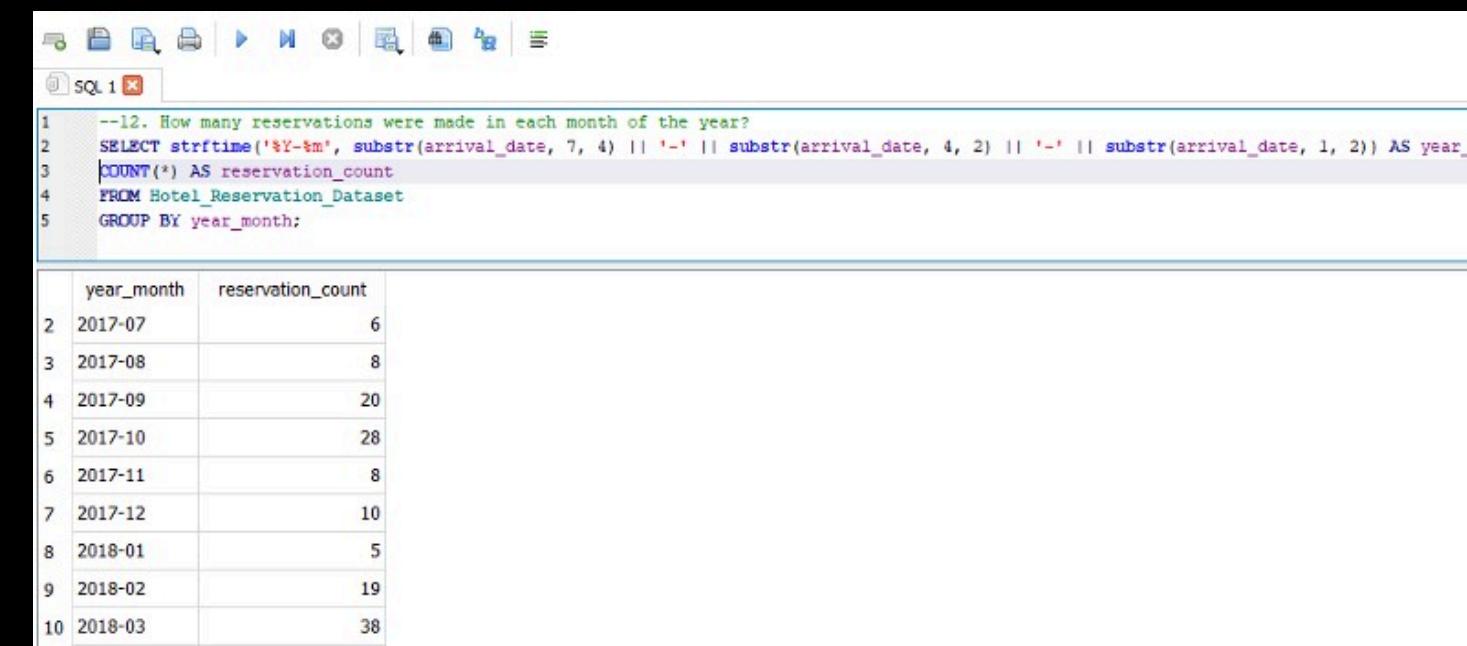
The results grid displays the following data:

no_of_children	avg_weekend_nights_for_children
1	0
2	1
3	2

The values in the results grid are rounded to two decimal places: 0, 1, and 2 respectively.

QUE-12- How many reservations were made in each month of the year?

This query will give you the number of reservations made in each month of the year. The reservation_month column will contain the month number and total_reservations will show how many reservations were made in each respective month.



The screenshot shows a SQL IDE window titled "SQL 1". The query is:

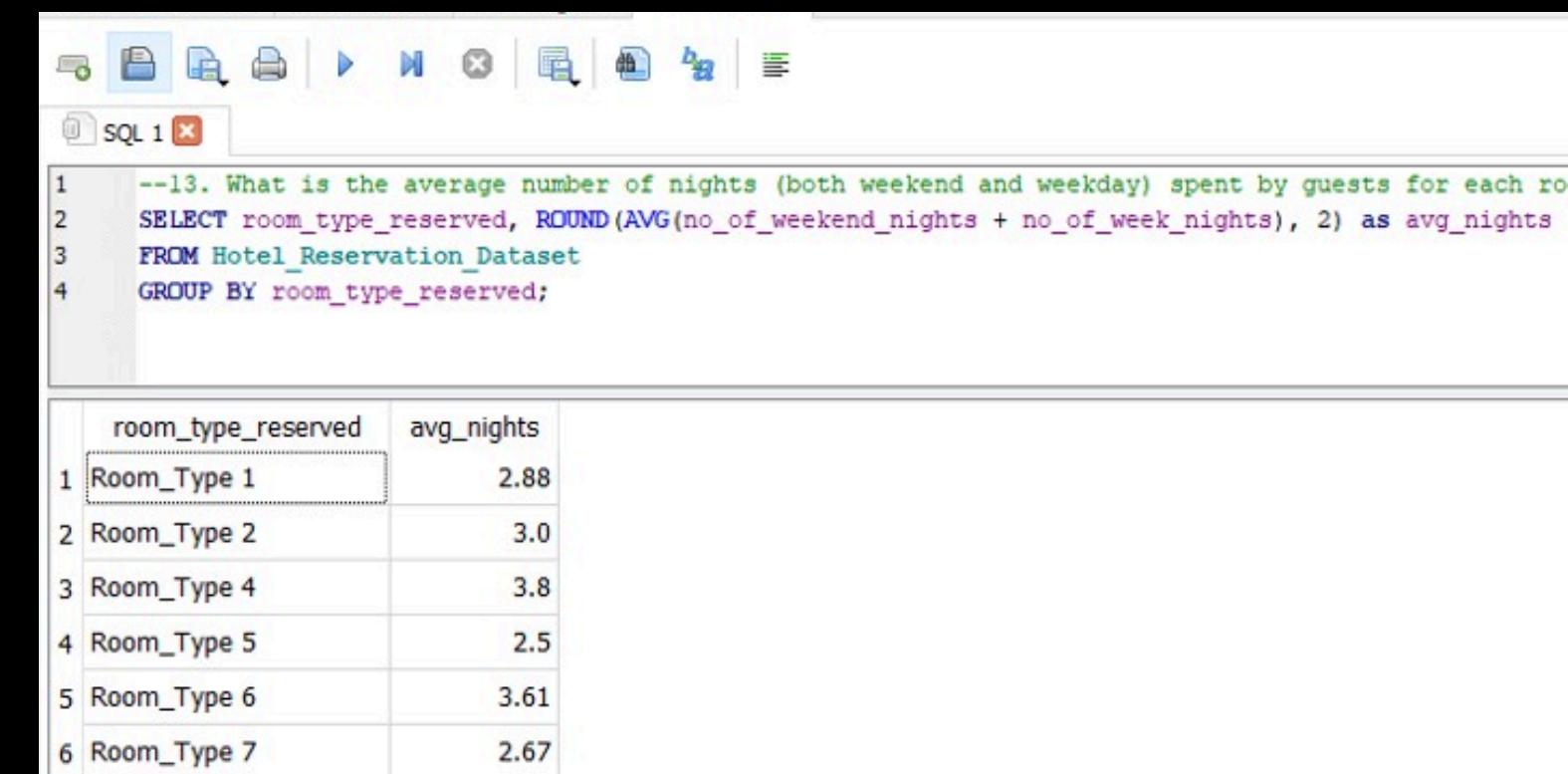
```
--12. How many reservations were made in each month of the year?  
SELECT strftime('%Y-%m', substr(arrival_date, 7, 4) || '-' || substr(arrival_date, 4, 2) || '-' || substr(arrival_date, 1, 2)) AS year_month,  
COUNT(*) AS reservation_count  
FROM Hotel_Reservation_Dataset  
GROUP BY year_month;
```

The results table has two columns: "year_month" and "reservation_count". The data is:

year_month	reservation_count
2017-07	6
2017-08	8
2017-09	20
2017-10	28
2017-11	8
2017-12	10
2018-01	5
2018-02	19
2018-03	38

QUE-13-What is the average number of nights (both weekend and weekday) spent by guests for each room type?

In the first query (total_nights), we calculate the total number of nights (no_of_weekend_nights + no_of_weekday_nights) for each reservation. Then, in the second query (average_nights), we calculate the average of these total nights grouped by room_type_reserved



The screenshot shows a SQL query window titled "SQL 1" in the SSMS interface. The query is:

```
--13. What is the average number of nights (both weekend and weekday) spent by guests for each room type?  
SELECT room_type_reserved, ROUND(AVG(no_of_weekend_nights + no_of_week_nights), 2) as avg_nights  
FROM Hotel_Reservation_Dataset  
GROUP BY room_type_reserved;
```

The results are displayed in a table:

room_type_reserved	avg_nights
Room_Type 1	2.88
Room_Type 2	3.0
Room_Type 4	3.8
Room_Type 5	2.5
Room_Type 6	3.61
Room_Type 7	2.67

QUE-14-For reservations involving children, what is the most common room type, and what is the average price for that room type?

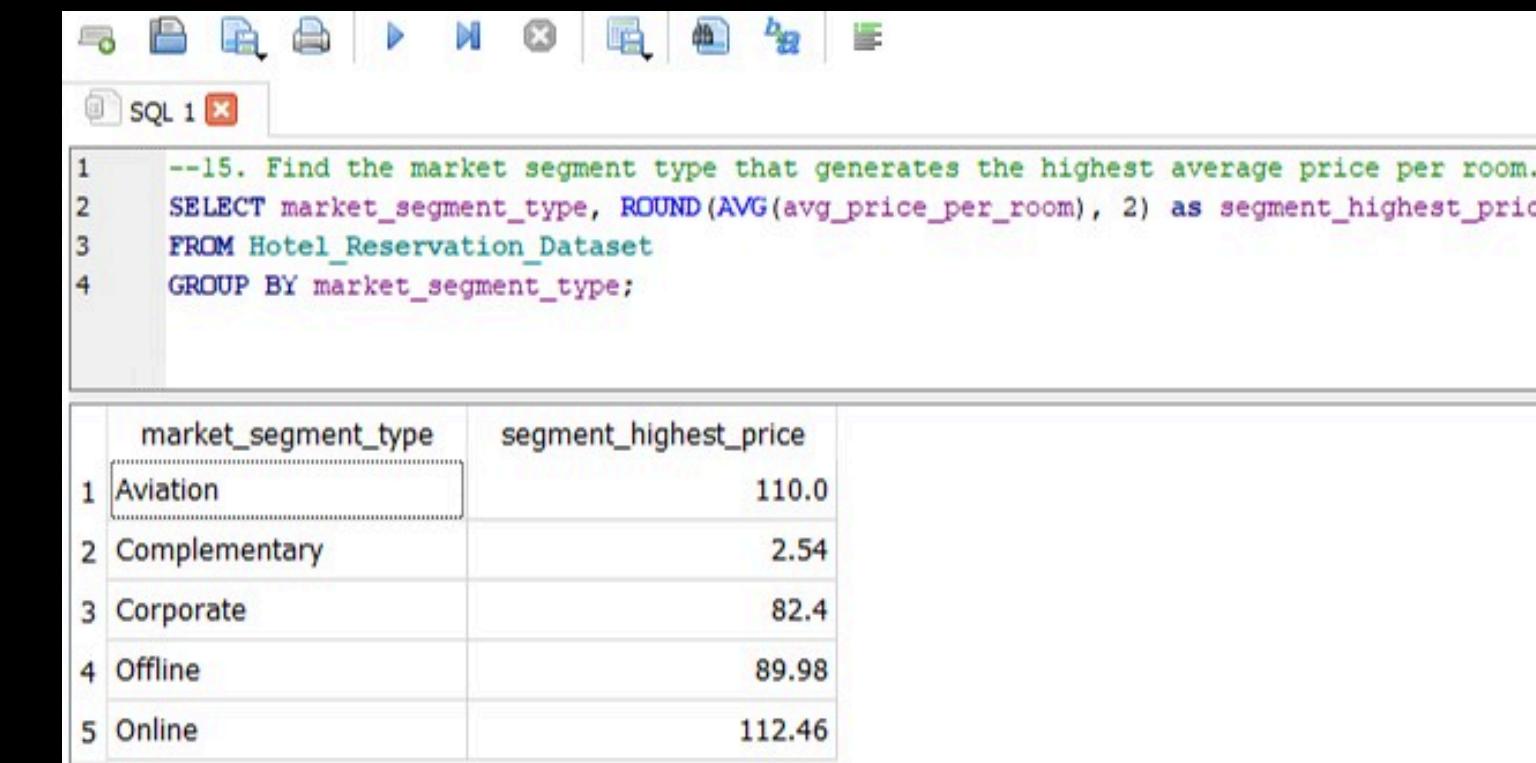
This query will give you the number of reservations made in each month of the year.
This will show you room type reserved and average prices of those rooms

```
SQL 1
1 --14. How many reservations were made in each month of the year?
2 SELECT room_type_reserved, MAX(avg_price_per_room) as avg_price
3 FROM Hotel_Reservation_Dataset
4 WHERE no_of_children > 0
5 GROUP BY room_type_reserved;
```

room_type_reserved	avg_price
1 Room_Type 1	195.5
2 Room_Type 2	184.24
3 Room_Type 4	86.32
4 Room_Type 6	258
5 Room_Type 7	187.04

QUE-15-Find the market segment type that generates the highest average price per room.

This query will give you the market segment type that generates the highest average price per room in your dataset. Adjust the column names (market_segment_type and segment_highest_price



The screenshot shows a SQL IDE interface with a toolbar at the top and a window titled "SQL 1". Inside the window, there is a code editor containing the following SQL query:

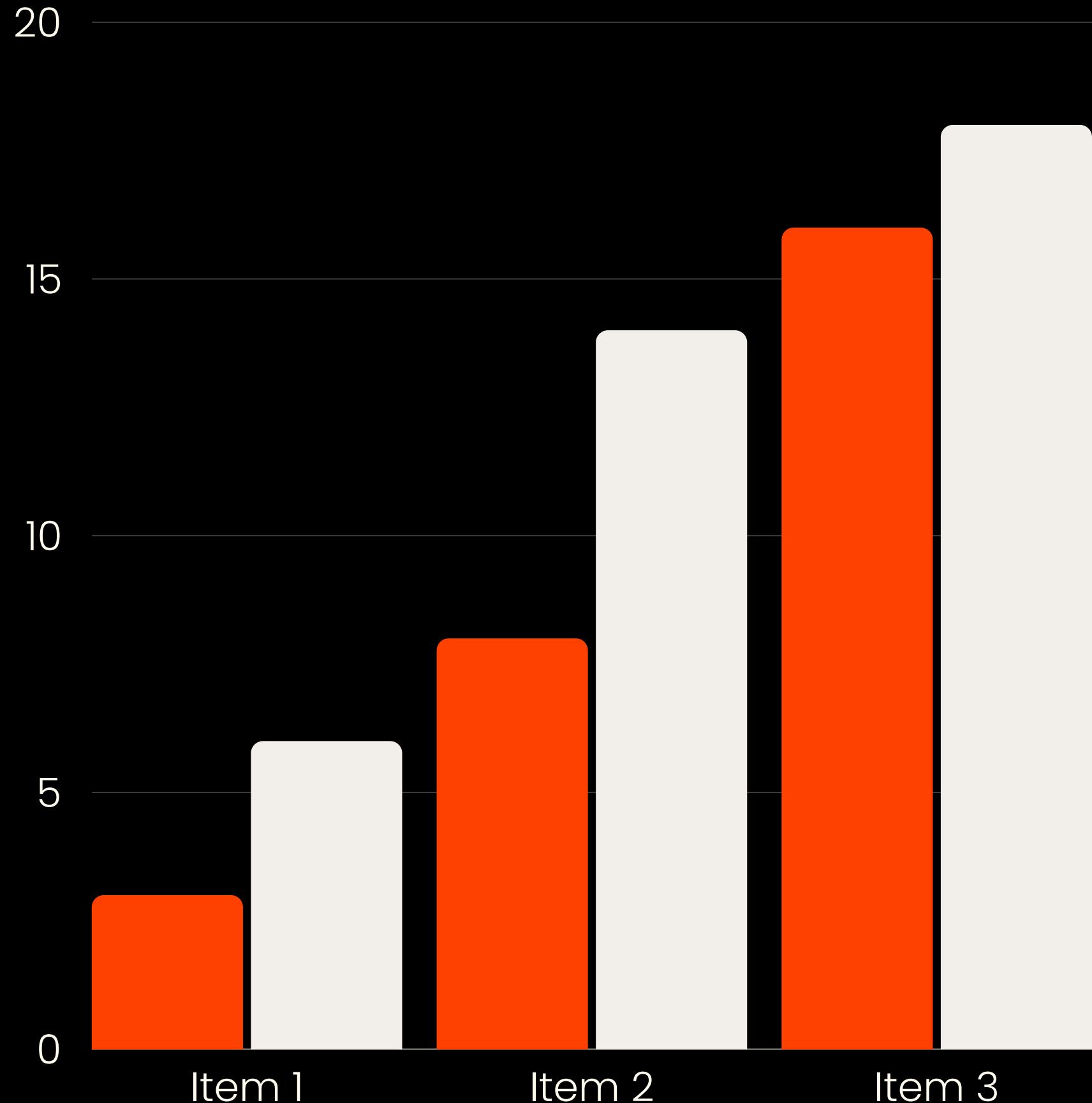
```
1 --15. Find the market segment type that generates the highest average price per room.
2 SELECT market_segment_type, ROUND(AVG(avg_price_per_room), 2) as segment_highest_price
3 FROM Hotel_Reservation_Dataset
4 GROUP BY market_segment_type;
```

Below the code editor is a results grid displaying the output of the query. The grid has two columns: "market_segment_type" and "segment_highest_price". The data is as follows:

	market_segment_type	segment_highest_price
1	Aviation	110.0
2	Complementary	2.54
3	Corporate	82.4
4	Offline	89.98
5	Online	112.46

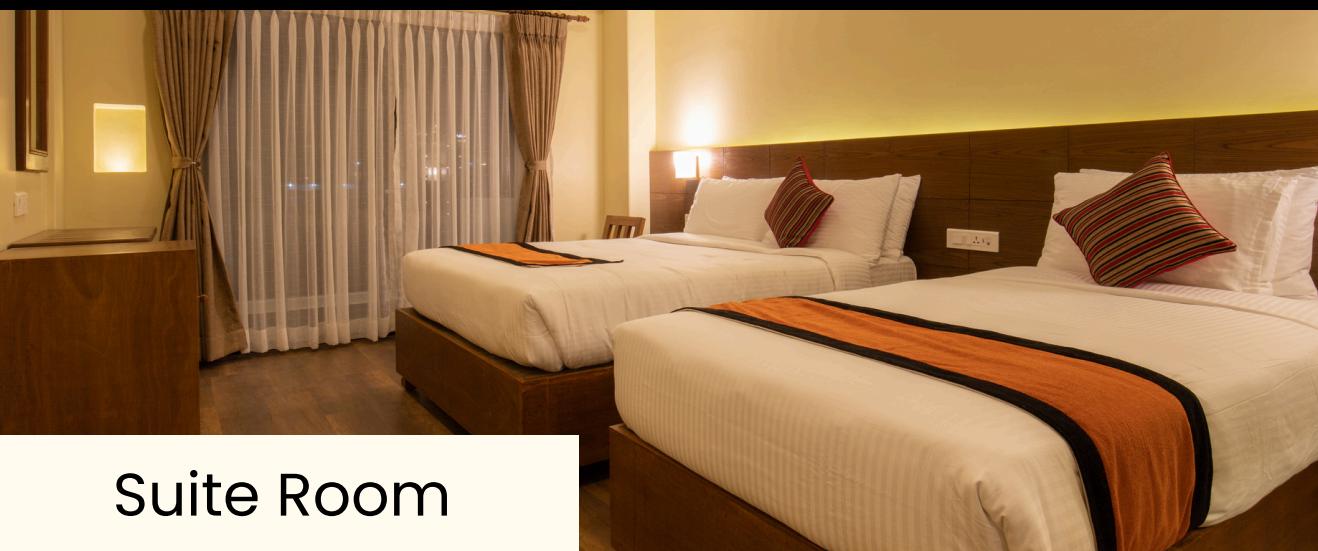
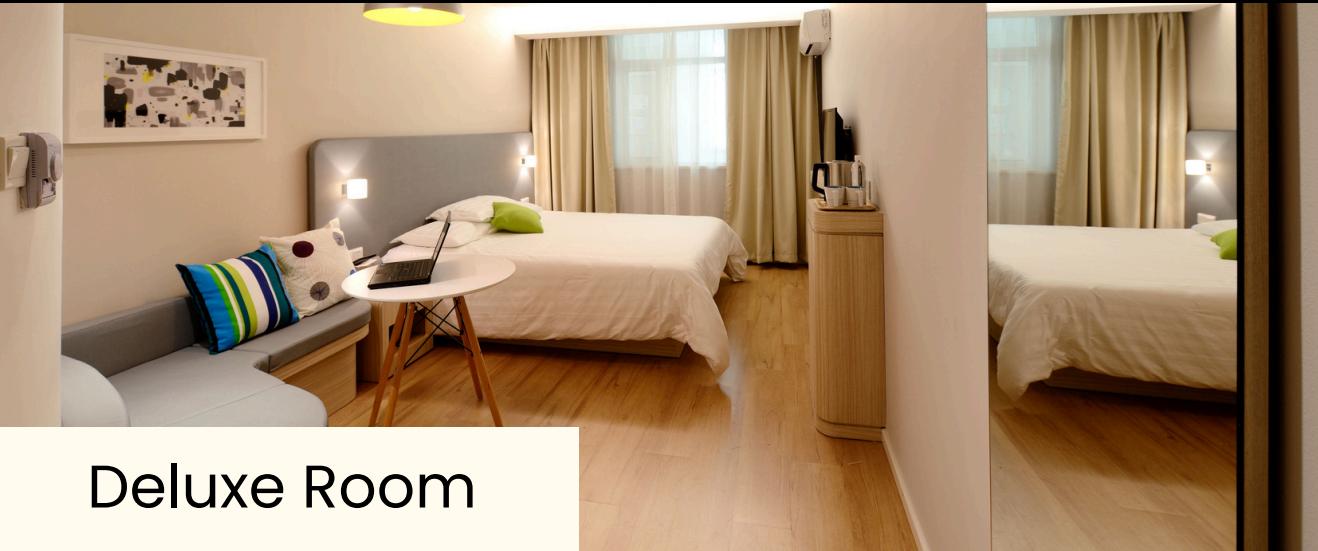
OVERVIEW OF THE DATASET

The hotel industry relies on data to make informed decisions and provide a better guest experience. In this internship, you will work with a hotel reservation dataset to gain insights into guest preferences, booking trends, and other key factors that impact the hotel's operations. You will use SQL to query and analyze the data, as well as answer specific questions about the dataset.



INSIGHTS & SUMMARY

These SQL queries provide a structured approach to extracting key insights from the hotel reservation dataset, focusing on room types, average prices, booking IDs, number of weekend nights, and number of guests. Adjust the column names (room_type, room_price, no_of_weekend_nights, adults, children, etc.) to match your specific database schema. These insights can help hotel managers understand booking patterns, pricing strategies, and guest preferences to optimize operations and enhance guest satisfaction



THANK YOU

BY-MANI SHARMA

HOTEL RESERVATION ANALYSIS

DATA PROVIDED BY-

MENTORNESS

