Hotel Reservation Analysis using SQL

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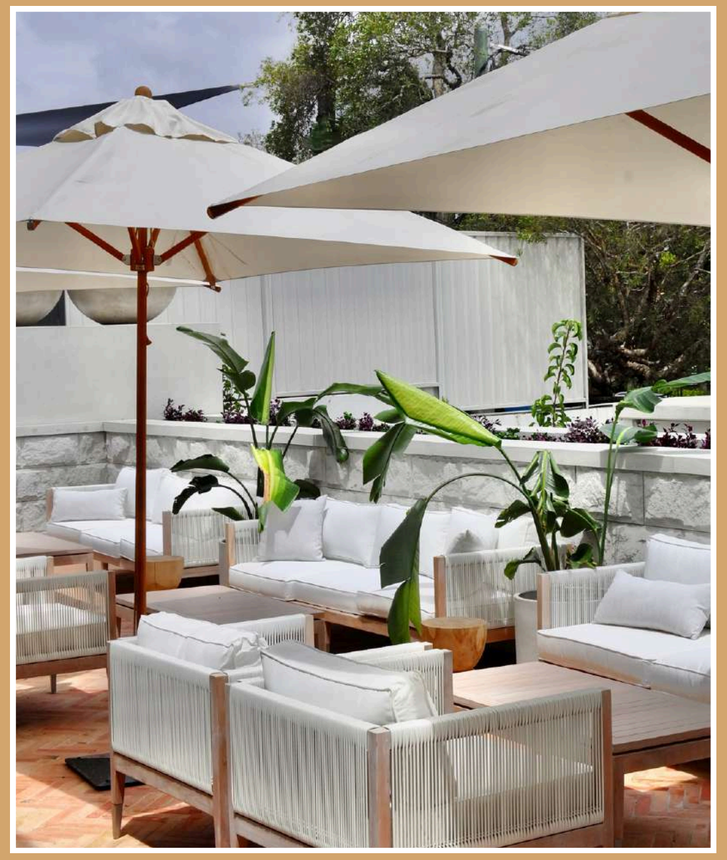
Batch Name: MIP-DA-10

Overview

The hotel industry relies on data to make informed decisions and provide a better guest experience. In this project, we 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. We will use SQL to query and analyze the data, as well as answer specific questions about the dataset.



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

	A	B	C	D	E	F	G	H	I	J	K	L
1	Booking_ID	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	type_of_meal_plan	room_type_reserved	lead_time	arrival_date	market_segment_type	avg_price_	booking_status
2	INN00001	2	0	1	2	Meal Plan 1	Room_Type 1	224	02-10-2017	Offline	65	Not_Canceled
3	INN00002	2	0	2	3	Not Selected	Room_Type 1	5	06-11-2018	Online	106.68	Not_Canceled
4	INN00003	1	0	2	1	Meal Plan 1	Room_Type 1	1	28-02-2018	Online	60	Canceled
5	INN00004	2	0	0	2	Meal Plan 1	Room_Type 1	211	20-05-2018	Online	100	Canceled
6	INN00005	2	0	1	1	Not Selected	Room_Type 1	48	11-04-2018	Online	94.5	Canceled
7	INN00006	2	0	0	2	Meal Plan 2	Room_Type 1	346	13-09-2018	Online	115	Canceled
8	INN00007	2	0	1	3	Meal Plan 1	Room_Type 1	34	15-10-2017	Online	107.55	Not_Canceled
9	INN00008	2	0	1	3	Meal Plan 1	Room_Type 4	83	26-12-2018	Online	105.61	Not_Canceled
10	INN00009	3	0	0	4	Meal Plan 1	Room_Type 1	121	06-07-2018	Offline	96.9	Not_Canceled
11	INN00010	2	0	0	5	Meal Plan 1	Room_Type 4	44	18-10-2018	Online	133.44	Not_Canceled
12	INN00011	1	0	1	0	Not Selected	Room_Type 1	0	11-09-2018	Online	85.03	Not_Canceled
13	INN00012	1	0	2	1	Meal Plan 1	Room_Type 4	35	30-04-2018	Online	140.4	Not_Canceled
14	INN00013	2	0	2	1	Not Selected	Room_Type 1	30	26-11-2018	Online	88	Canceled
15	INN00014	1	0	2	0	Meal Plan 1	Room_Type 1	95	20-11-2018	Online	90	Canceled
16	INN00015	2	0	0	2	Meal Plan 1	Room_Type 1	47	20-10-2017	Online	94.5	Not_Canceled
17	INN00016	2	0	0	2	Meal Plan 2	Room_Type 1	256	15-06-2018	Online	115	Canceled
18	INN00017	1	0	1	0	Meal Plan 1	Room_Type 1	0	05-10-2017	Offline	96	Not_Canceled
19	INN00018	2	0	1	3	Not Selected	Room_Type 1	1	10-08-2017	Online	96	Not_Canceled
20	INN00019	2	0	2	2	Meal Plan 1	Room_Type 1	99	30-10-2017	Online	65	Canceled
21	INN00020	2	0	1	0	Meal Plan 1	Room_Type 1	12	04-10-2017	Offline	72	Not_Canceled
22	INN00021	2	0	2	2	Meal Plan 1	Room_Type 1	99	30-10-2017	Online	65	Canceled
23	INN00022	1	0	0	1	Meal Plan 1	Room_Type 1	122	25-11-2018	Corporate	67	Not_Canceled

SQL QUERIES

1. **What is the total number of reservations in the dataset?**

```
SELECT COUNT(*) as total_reservations
FROM hotel_reservations;
```

total_reservations
700

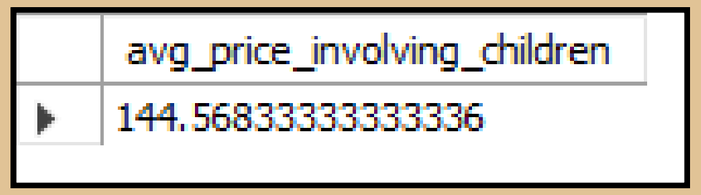
2. Which meal plan is the most popular among guests?

```
SELECT type_of_meal_plan, COUNT(type_of_meal_plan) as count
FROM hotel_reservations
GROUP BY type_of_meal_plan
ORDER BY count DESC;
```

type_of_meal_plan	count
Meal Plan 1	527
Not Selected	109
Meal Plan 2	64

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

```
SELECT AVG(avg_price_per_room) as avg_price_involving_children
FROM hotel_reservations
WHERE no_of_children > 0;
```



avg_price_involving_children
144.56833333333336

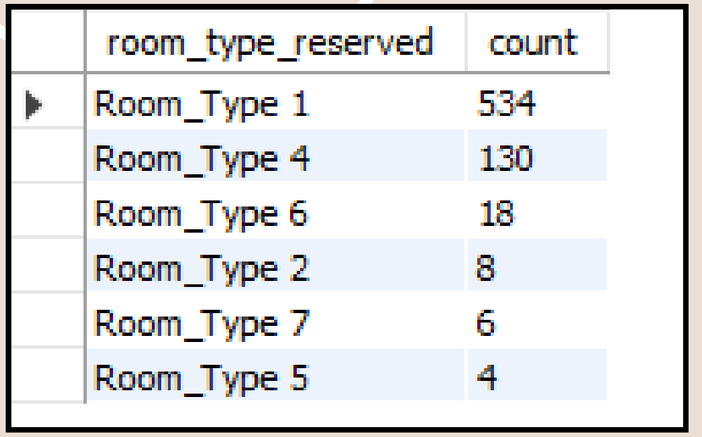
4. How many reservations were made for the year 2018?

```
SELECT COUNT(*) as total_reservations_2018
FROM hotel_reservations
WHERE arrival_date LIKE "_%_%2018";
```

total_reservations_2018
577

5. What is the most commonly booked room type?

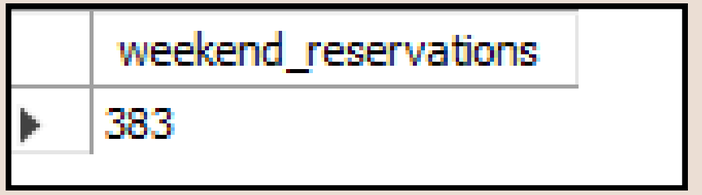
```
SELECT room_type_reserved, COUNT(*) as count
FROM hotel_reservations
GROUP BY room_type_reserved
ORDER BY count DESC;
```



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

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

```
SELECT COUNT(*) as weekend_reservations
FROM hotel_reservations
WHERE no_of_weekend_nights > 0;
```



weekend_reservations
383

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

```
SELECT MAX(lead_time) as highest_lead_time,
       MIN(lead_time) as lowest_lead_time
FROM hotel_reservations;
```

highest_lead_time	lowest_lead_time
443	0

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

```
SELECT market_segment_type, COUNT(*) as count
FROM hotel_reservations
GROUP BY market_segment_type
ORDER BY count DESC;
```

market_segment_type	count
Online	518
Offline	140
Corporate	27
Complementary	14
Aviation	1

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

```
SELECT booking_status, COUNT(*) as confirmed_reservations
FROM hotel_reservations
WHERE booking_status = "Not_Canceled";
```

	booking_status	confirmed_reservations
▶	Not_Canceled	493

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

```
SELECT SUM(no_of_adults) as total_adults,
       SUM(no_of_children) as total_children
FROM hotel_reservations;
```

	total_adults	total_children
▶	1316	69

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

```
SELECT AVG(no_of_weekend_nights) as avg_weekend_nights
FROM hotel_reservations
WHERE no_of_children > 0;
```

avg_weekend_nights
1.0000

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

```
SELECT month(STR_TO_DATE(arrival_date, "%d-%m-%Y")) as `Month`,
COUNT(*) as reservations
FROM hotel_reservations
GROUP BY month(STR_TO_DATE(arrival_date, "%d-%m-%Y"))
ORDER BY `Month`;
```

Month	reservations
1	11
2	28
3	52
4	67
5	55
6	84
7	44
8	70
9	80
10	103
11	54
12	52

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

```
SELECT room_type_reserved, Avg(no_of_weekend_nights) as avg_weekend_nights,
Avg(no_of_week_nights) as avg_week_nights,
Avg(no_of_weekend_nights + no_of_week_nights) as avg_total_nights
FROM hotel_reservations
GROUP BY room_type_reserved
ORDER BY room_type_reserved ASC;
```

room_type_reserved	avg_weekend_nights	avg_week_nights	avg_total_nights
Room_Type 1	0.7884	2.0899	2.8783
Room_Type 2	1.0000	2.0000	3.0000
Room_Type 4	1.0923	2.7077	3.8000
Room_Type 5	0.0000	2.5000	2.5000
Room_Type 6	1.0556	2.5556	3.6111
Room_Type 7	1.0000	1.6667	2.6667

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

```
SELECT room_type_reserved, COUNT(*) as reservations, AVG(avg_price_per_room)
as average_price
FROM hotel_reservations
WHERE no_of_children > 0
GROUP BY room_type_reserved
ORDER BY reservations DESC;
```

room_type_reserved	reservations	average_price
Room_Type 1	24	123.12291666666665
Room_Type 6	17	185.32823529411766
Room_Type 2	5	112.07800000000002
Room_Type 4	1	86.32
Room_Type 7	1	187.04

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

```
SELECT market_segment_type, AVG(avg_price_per_room) as avg_price_per_room
FROM hotel_reservations
GROUP BY market_segment_type
ORDER BY avg_price_per_room DESC;
```

market_segment_type	avg_price_per_room
Online	112.45521235521232
Aviation	110
Offline	89.98171428571426
Corporate	82.4011111111111
Complementary	2.5357142857142856

Overall Insights

- There are total 700 reservations in the dataset.
- Meal Plan 1 stands out as the most popular meal plan among guests.
- Reservations involving children have an average room price of 144.56.
- In 2018, there were 577 reservations made.
- Room Type 1 is the popular choice among the guests.
- There are 383 reservations that fall on a weekend.
- The lead time ranges from 0 to 443; 0 being the lowest while 443 being the highest lead time.
- Online market segment is the most common choice for reservations among guests.
- Out of 700, 493 reservations are confirmed.
- The total no of adults and children are 1316 and 69 respectively.
- For the reservations involving children, the average no of weekend nights is 1.000.
- October records as the peak reservation month with 103 reservations, while January records as the lowest with only 11 reservations.
- Room Type 4 guests spent the most nights with an average of 3.8.
- For the reservations involving children, Room Type 1 is the most common choice with an average price of 123.129.
- Online market segment generates the highest average price per room which is 112.455.

Thank you