HOTEL RESEVATION ANALYSIS WITH SQL

Yousef Khaled Shawkyy

يوسف خالد شوقى عباس حلمى عبدالرحمن
Yousefshawkyy10@gmail.com

Hotel Reservation Analysis with SQL

Dataset Details:

- **The dataset includes the following columns:**
- **· 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.**

The 15 Question for which you will write SQL queries to gain insights:

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

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

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

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

5. What is the most commonly booked room type?

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

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

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

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

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

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

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

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

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

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

FIRST QUESTION

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

Using sql we wrote this code to see our total number of reservations

```
--TASK 1
SELECT COUNT(room_type_reserved) AS 'total number of reservations'
FROM Mness
```

OUR OUTPUT:

	total number of reservations
1	700

Then the total number of reservations is 700

SECOND QUESTION

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

Using this code in sql we will display every meal plan with its count

```
SELECT type_of_meal_plan, COUNT(type_of_meal_plan) AS 'Number of meal plan'
FROM Mness
GROUP BY type_of_meal_plan
ORDER BY COUNT(type_of_meal_plan) DESC
```

The output:

	type_of_meal_plan	Number of meal plan
1	Meal Plan 1	527
2	Not Selected	109
3	Meal Plan 2	64

the most popular and most chosen plan is meal plan 1.

THIRD QUESTION

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

In this code we used a condition that the number of children is not equal to 0 like the question room must involve children.

```
SELECT no_of_children, AVG(avg_price_per_room) AS 'Average price'
FROM Mness
WHERE no_of_children <> 0
GROUP BY no_of_children
ORDER BY AVG(avg_price_per_room) DESC
```

The output

	no_of_children	Average price
1	2	167.08238074893
2	1	127.057407520435

Then the average for room that involves 2 children in room is 167.08

And the average for room that involves 1 children in room is 127.06

FOURTH QUESTION

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

we used 2018 an example in this code, we solved this question with 2 solutions

```
SELECT COUNT(*) AS 'Number of reservation per year'
FROM Mness
WHERE arrival_date BETWEEN '2018-01-01' AND '2018-12-31'
```

```
SELECT COUNT(*) AS 'Number of reservation per year'
FROM Mness
WHERE YEAR(arrival_date) = 2018
```

The output:

	Number of reservation per year
1	577

We used if first solution where statement and we used the first day in the year and the last day in the year,

Second solution we used a function called year it is way better, the number of reservation per year for 2018 is 577

FIFTH QUESTION

What is the most commonly booked room type?

We used this code to see every room type and its count and we ordered it descending

```
SELECT room_type_reserved, COUNT(room_type_reserved) AS 'Number of room type reserved'
FROM Mness
GROUP BY room_type_reserved
ORDER BY COUNT(room_type_reserved)DESC
```

The output:

	room_type_reserved	Number of room type reserved
1	Room_Type 1	534
2	Room_Type 4	130
3	Room_Type 6	18
4	Room_Type 2	8
5	Room_Type 7	6
6	Room_Type 5	4

Room type 1 is the most commonly booked room type.

SIXTH QUESTION

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

We selected from our database the count of weekend nights and we excepted the 0 value

```
--TASK 6
SELECT COUNT(no_of_weekend_nights) AS 'Number reservations fall on a weekend'
FROM Mness
WHERE no_of_weekend_nights > 0
```

OUTPUT:

	Number reservations fall on a weekend
1	383

The number of reservation is 383

SEVENTH QUESTION

What is the highest and lowest lead time for reservations?

We selected from lead time the maximum value and the minimum value.

```
SELECT MAX(lead_time) AS 'Highest lead time',MIN(lead_time) AS 'Lowest lead Time'
FROM Mness
```

OUTPUT:

	Highest lead time	Lowest lead Time
1	443	0

Then the highest lead time is 443 and the lowest lead time is 0

8TH QUESTION

What is the most common market segment type for reservations?

We select the segment type and its count and we ordered it descending to see the most common market segment.

```
SELECT market_segment_type, COUNT(market_segment_type) AS 'Number of segment'
FROM Mness
GROUP BY market_segment_type
ORDER BY COUNT(market_segment_type) DESC
```

OUTPUT

	market_segment_type	Number of segment
1	Online	518
2	Offline	140
3	Corporate	27
4	Complementary	14
5	Aviation	1

The most common market segment is online

9TH QUESTION

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

In our dataset there is canceled and not canceled

,Not canceled == to confirmed then we selected not canceled and its count in dataset

```
SELECT COUNT(booking_status) AS
'Number reservations have a booking status of Confirmed'
FROM Mness
WHERE booking_status = 'Not_Canceled'
```

OUTPUT

	Number reservations have a booking status of Confirmed
1	493

The number of confirmed status is 493

10TH QUESTION

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

We selected the sum of the children and the sum of the adults from our data set and we added them to each other

```
SELECT SUM(no_of_adults) AS 'Number of Adults',
SUM(no_of_children) AS 'Number of Children'
FROM Mness
SELECT SUM(no_of_adults) + SUM(no_of_children) AS 'number of people in hotel'
FROM Mness
```

OUTPUT

	Number of Adults	Number of Children
1	1316	69

	number of people in hotel
1	1385

The number of people in our hotel is 1385

11TH QUESTION

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

We selected from our dataset the average number of weekend nights and we made a condition that the number of children is not equal to 0

```
SELECT AVG(no_of_weekend_nights) AS 'Number of weekend night involving children'
FROM Mness
WHERE no_of_children <> 0
```

OUTPUT

	Number of weekend night involving children
1	1

The number of weekend involving children is 1

12TH QUESTION

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

We used a function called month it to display every month with its count

```sql
SELECT MONTH(arrival_date) AS Month, COUNT(*) AS 'NumberOfReservations'
FROM Mness
GROUP BY MONTH(arrival_date)
ORDER BY Month
```

OUTPUT

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

13TH QUESTION

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

We selected each room type with its average number of nights

```
SELECT room_type_reserved,AVG(no_of_weekend_nights+no_of_week_nights) as
'Average of nights'
FROM Mness
GROUP BY room_type_reserved
```

OUTPUT

	room_type_reserved	Average of nights
1	Room_Type 1	2
2	Room_Type 2	3
3	Room_Type 4	3
4	Room_Type 5	2
5	Room_Type 6	3
6	Room_Type 7	2

14TH QUESTION

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

I made it with two ways the first one:

```sql
SELECT room_type_reserved, COUNT(room_type_reserved) AS 'Room Type'
,AVG(avg_price_per_room) AS 'Avergae price per room'
FROM Mness
WHERE no_of_children <> 0
GROUP BY room_type_reserved
ORDER BY COUNT(room_type_reserved) DESC
```

OUTPUT

	room_type_reserved	Room Type	Avergae price per room
1	Room_Type 1	24	123.12291653951
2	Room_Type 6	17	185.328235401827
3	Room_Type 2	5	112.078001403809
4	Room_Type 4	1	86.3199996948242
5	Room_Type 7	1	187.039993286133

SECOND WAY

```sql
WITH RankedRoomTypes AS (
    SELECT room_type_reserved,
           COUNT(*) AS NumberOfReservations,
           ROW_NUMBER() OVER (ORDER BY COUNT(*) DESC) AS RoomTypeRank
    FROM Mness
    WHERE no_of_children <> 0
    GROUP BY room_type_reserved
)
SELECT room_type_reserved AS 'Room Type',
       AVG(avg_price_per_room) AS 'Average price per room'
FROM Mness
WHERE room_type_reserved = (
    SELECT room_type_reserved
    FROM RankedRoomTypes
    WHERE RoomTypeRank = 1 -- Selects the most common room type
)
AND no_of_children <> 0
GROUP BY room_type_reserved;
```

OUTPUT

	Room Type	Average price per room
1	Room_Type 1	123.12291653951

15TH QUESTION

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

```
SELECT market_segment_type, AVG(avg_price_per_room) AS 'Average price per room'
FROM Mness
GROUP BY market_segment_type
ORDER BY AVG(avg_price_per_room) DESC
```

OUTPUT

	market_segment_type	Average price per room
1	Online	112.455212331647
2	Aviation	110
3	Offline	89.9817142759051
4	Corporate	82.4011111789279
5	Complementary	2.53571428571429

Online is the market segment that generates the highest price per room.