HOTEL RESERVATIONS DATA ANALYSIS USING SQL

MENTORNESS INTERNSHIP PROJECT

Overview

This analysis of the hotel reservation dataset uncovers key insights into guest preferences, booking trends, and other key factors that impact the hotel's operations and makes recommendations for improving business performance.

Data Sources and Data

SQL data analysis was conducted on the Hotel Reservation Dataset.csv from Mentorness Internship.

Data cleaning and Database creation

For the data cleaning process:

•I used Microsoft Excel to remove all empty cells and duplicates

•I created new columns to separate the Date column, by creating new columns for Day, Month, Year, and Time.

Database creation on Mysql:

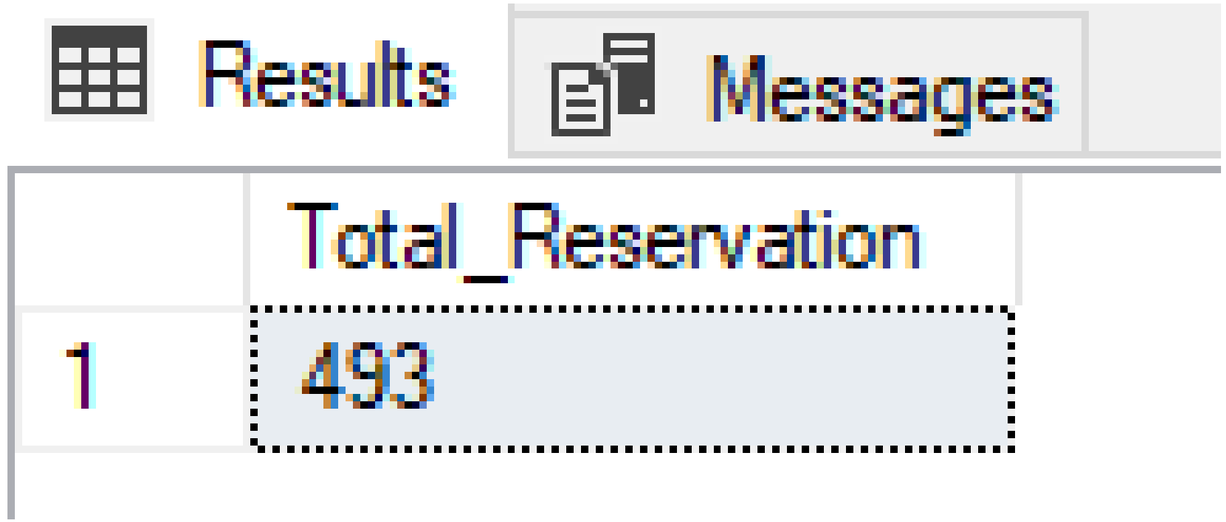
I used the Sql server 2019 import and export Data option to import the Dataset (CSV file) into Mysql.

15 questions for which SQL queries are written 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

Total Hotel Reservations

```
Select count(Booking_ID) Total_Reservation
from ['Hotel Reservation$']
    where booking_status = 'not_canceled'
```



Most popular meal among guests

```
 WITH CTE_Popular AS (
Select
    max(meal_plans) popular_meal,
    type_of_meal_plan
from (
Select type_of_meal_plan,
    count(type_of_meal_plan) as meal_plans
    from ['Hotel Reservation$']
    group by type_of_meal_plan
    ) popular_Meal
    group by type_of_meal_plan
    )
    Select Top 1
        type_of_meal_plan,
        max(popular_meal) as most_popular_meal
    from CTE_Popular
    group by type_of_meal_plan
    order by most_popular_meal desc
```

Results | Messages

	type_of_meal_plan	most_popular_meal
1	Meal Plan 1	527

Average price per room for reservation involving children

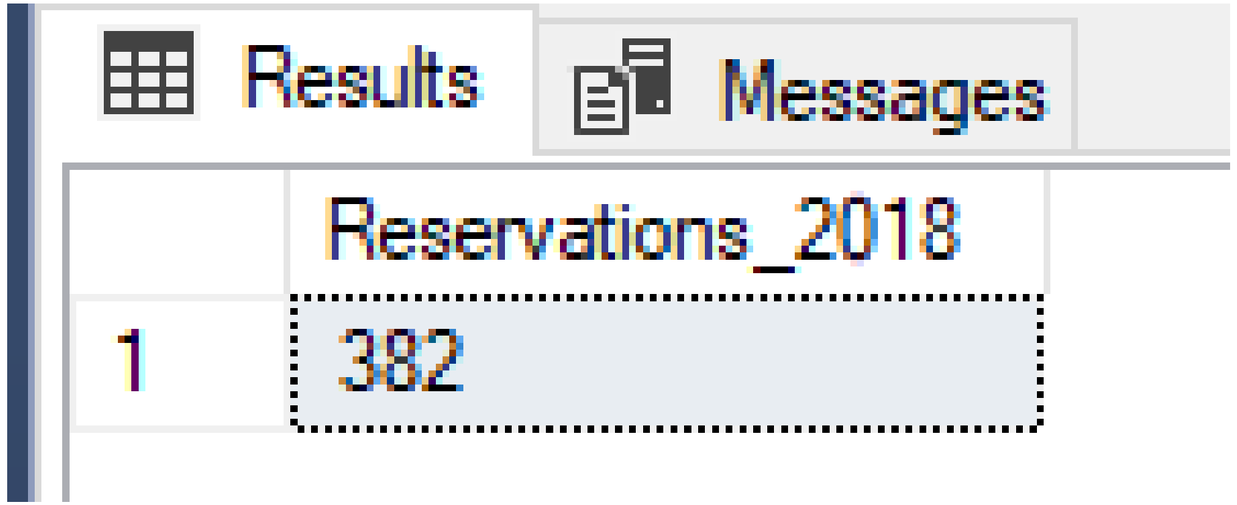
```
select no_of_children,
avg(avg_price_per_room) avg_price from ['Hotel Reservation$']
where no_of_children > 0
group by no_of_children
```

Results | Messages

	no_of_children	avg_price
1	1	127.057407407407
2	2	167.082380952381

Reservations made for year 2018

```
    select count(booking_status) as Reservations_2018
from ['Hotel Reservation$']
where booking_status = 'not_canceled'
      and arrival_date >= '2018-01-01'
      and arrival_date <= '2018-12-31'
```



Most commonly booked room type

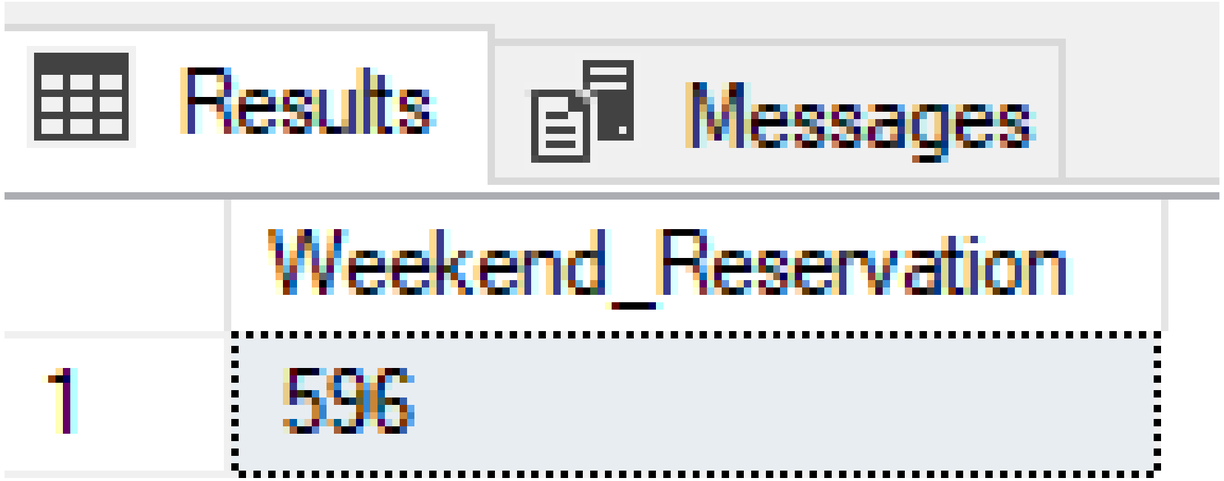
```
Select room_type_reserved,
    max(room_count) Commonly_Booked_room
from (
Select
    room_type_reserved,
    count(room_type_reserved) as room_count
    from ['Hotel Reservation$']
    group by room_type_reserved
    ) room
    group by room_type_reserved
    )
    Select top 1
    max(Commonly_Booked_room) as most_booked_room,
    room_type_reserved
    from Book_Room
    group by room_type_reserved
    order by most booked room desc
```

Results | Messages

most_booked_room	room_type_reserved
534	Room_Type 1

Reservation that falls on weekend night

```
Select sum(no_of_weekend_nights) as Weekend_Reservation
    from ['Hotel Reservation$']
    where no_of_weekend_nights > 0
```



	Weekend_Reservation
1	596

Highest and Lowest Lead time for reservation

```
Select max(Lead_time_2) max_lead_time,
    min(Lead_time_2) min_lead_time
from ['Hotel Reservation$']
```

Results | Messages

	max_lead_time	min_lead_time
1	1899-12-30 04:43:00.000	1899-12-30 00:00:00.000

Most common market segment type for reservations

```
Select market_segment_type,
    count(market_segment_type) as Most_common_market
from ['Hotel Reservation$']
group by market_segment_type
order by Most_common_market desc
```

Results | Messages

	market_segment_type	Most_common_market
1	Online	518
2	Offline	140
3	Corporate	27
4	Complementary	14
5	Aviation	1

Reservations that have a booking status of Confirmed

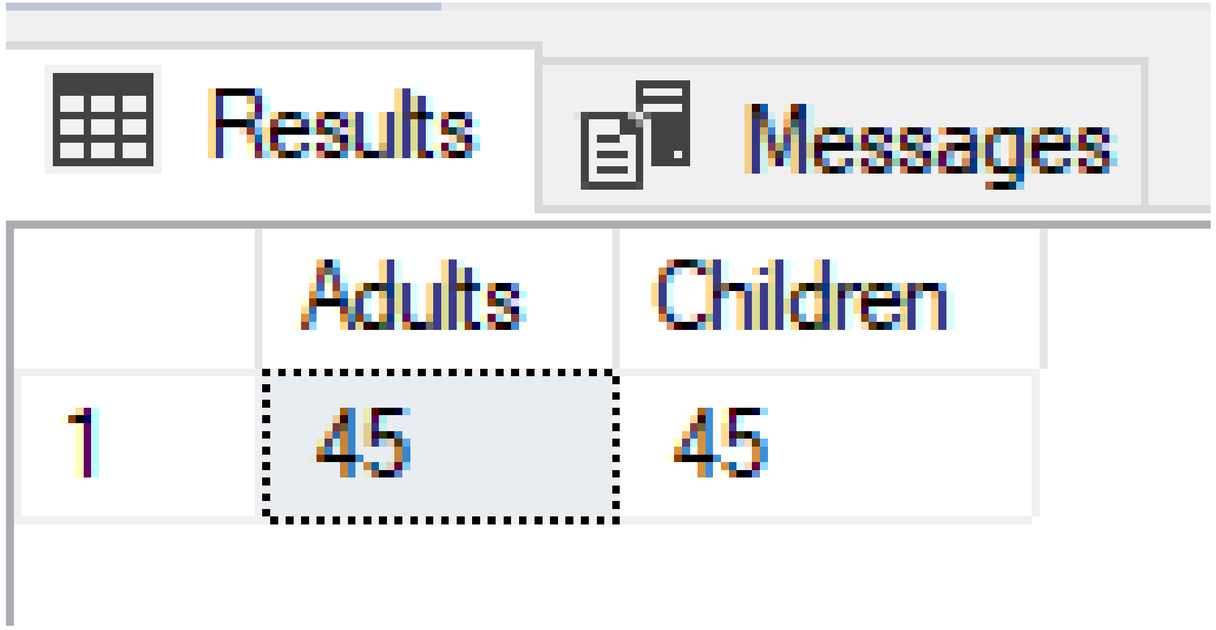
```
Select Booking_status,
    count(Booking_status) confirmed
from ['Hotel Reservation$']
    where booking_status = 'Not_canceled'
    group by Booking_status
```

Results | Messages

	Booking_status	confirmed
1	Not_Canceled	493

Total number of adults and children across all reservations

```
Select count(no_of_adults) Adults,
    count(no_of_children) Children
from ['Hotel Reservation$']
    where no_of_children > 0 and no_of_adults > 0
```



	Adults	Children
1	45	45

The average number of weekend nights for reservations involving children

```
Select Avg(no_of_weekend_nights) as no_wknd_night_children
    from ['Hotel Reservation$']
    where no_of_children > 0
```

Results | Messages

	no_wknd_night_children
1	1

Reservations made in each month of the year

```
SELECT
    Year AS reservation_year,
    Months AS reservation_month,
    COUNT(booking_status) AS reservations_count
    from ['Hotel Reservation$']
    where booking_status = 'not_canceled'
GROUP BY
    Year,
    Months
ORDER BY
    Year
   Months;
```

Results | Messages

	reservation_year	reservation_month	reservations_count
1	2017	Apr	2
2	2017	Aug	13
3	2017	Dec	11
4	2017	Feb	7
5	2017	Jan	2
6	2017	Jul	4
7	2017	Jun	2
8	2017	Mar	1
9	2017	May	4
10	2017	Nov	9
11	2017	Oct	29

Results | Messages

	reservation_year	reservation_month	reservations_count
12	2017	Sep	27
13	2018	Apr	32
14	2018	Aug	41
15	2018	Dec	21
16	2018	Feb	28
17	2018	Jan	19
18	2018	Jul	20
19	2018	Jun	49
20	2018	Mar	42
21	2018	May	41
22	2018	Nov	28

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) avg_weekend_night,
        Avg(no_of_week_nights) avg_weekdays_night
from ['Hotel Reservation$']
        Where no_of_weekend_nights > 0 and no_of_week_nights > 0
        group by room_type_reserved
```

Results | Messages

	room_type_reserved	avg_weekend_night	avg_weekdays_night
1	Room_Type 1	1.53781512605042	2.43697478991597
2	Room_Type 2	1.6	2.2
3	Room_Type 4	1.6547619047619	2.78571428571429
4	Room_Type 6	1.9	2.9
5	Room_Type 7	1.66666666666667	1.66666666666667

The most common room type, and the average price for that room type,for reservations involving children

```sql
WITH CommonRoom AS (
    SELECT Top 1 room_type_reserved,
           COUNT(*) AS reservation_count
    FROM ['Hotel Reservation$'] r
    WHERE no_of_children > 0
    GROUP BY room_type_reserved
    ORDER BY reservation_count DESC

)
SELECT
    r.room_type_reserved,
    AVG(r.avg_price_per_room) AS average_price
FROM
    ['Hotel Reservation$'] r
JOIN
    CommonRoom cr ON r.room_type_reserved = cr.room_type_reserve
WHERE
    r.no_of_children > 0
GROUP BY
    r.room_type_reserved;
```

Results | Messages

	room_type_reserved	average_price
1	Room_Type 1	123.122916666667

The market segment type that generates the highest average price per room

```
Select Top 1 market_segment_type,
    max(avg_price_per_room) Highest_Price
from ['Hotel Reservation$']
Group by market_segment_type
Order by Highest_Price desc
```

Results | Messages

	market_segment_type	Highest_Price
1	Online	258

Recommendations

Based on the data analysis, the following key recommendations are made:

- Enhance Popular Meal Plans: Invest in improving the most popular meal plans to further enhance guest satisfaction.
- Focus on Family Packages: Offer special packages for families with children to leverage the average price per room.
- Optimize Room Types: Promote the most commonly booked room types and analyze why other types are less popular.
- Lead Time Strategy: Develop strategies to manage reservations with high lead times effectively.
- Market Segment Targeting: Focus marketing efforts on the most common and high-value market segments.

Summary: The analysis of hotel reservation data provides valuable insights into guest preferences and behavior.

Thank you

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