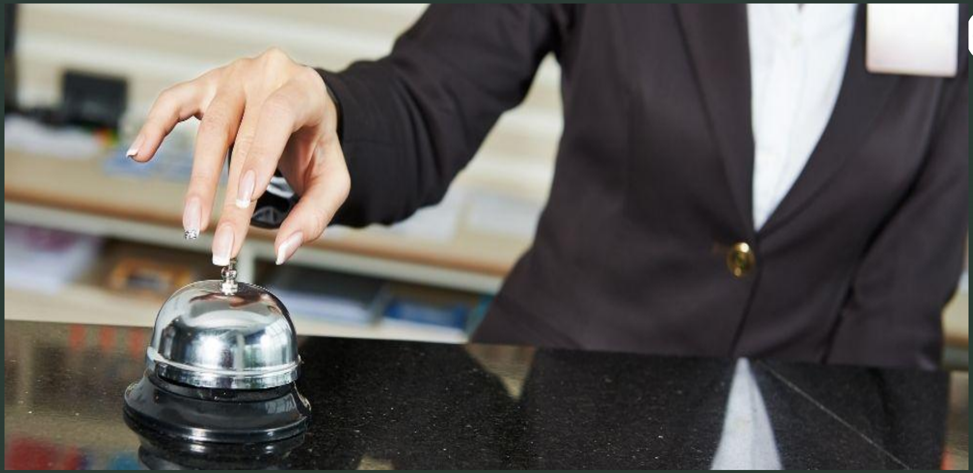
Hospitality Analytics

Introduction

- The hospitality industry depends on data-driven decisions to enhance customer satisfaction and profitability.

- Our goal is to build an analytical solution for Atliq Hospitality to integrate booking and performance data, track KPIs, and visualize business performance.



Objective

- • Integrate multiple datasets (bookings, hotels, rooms)
- • Perform data cleaning, modeling, and transformation using SQL
- • Create interactive dashboards in Power BI, Tableau, and Excel
- • Improve customer satisfaction, revenue forecasting, and operational efficiency

Data Modeling ,Cleaning & Processing

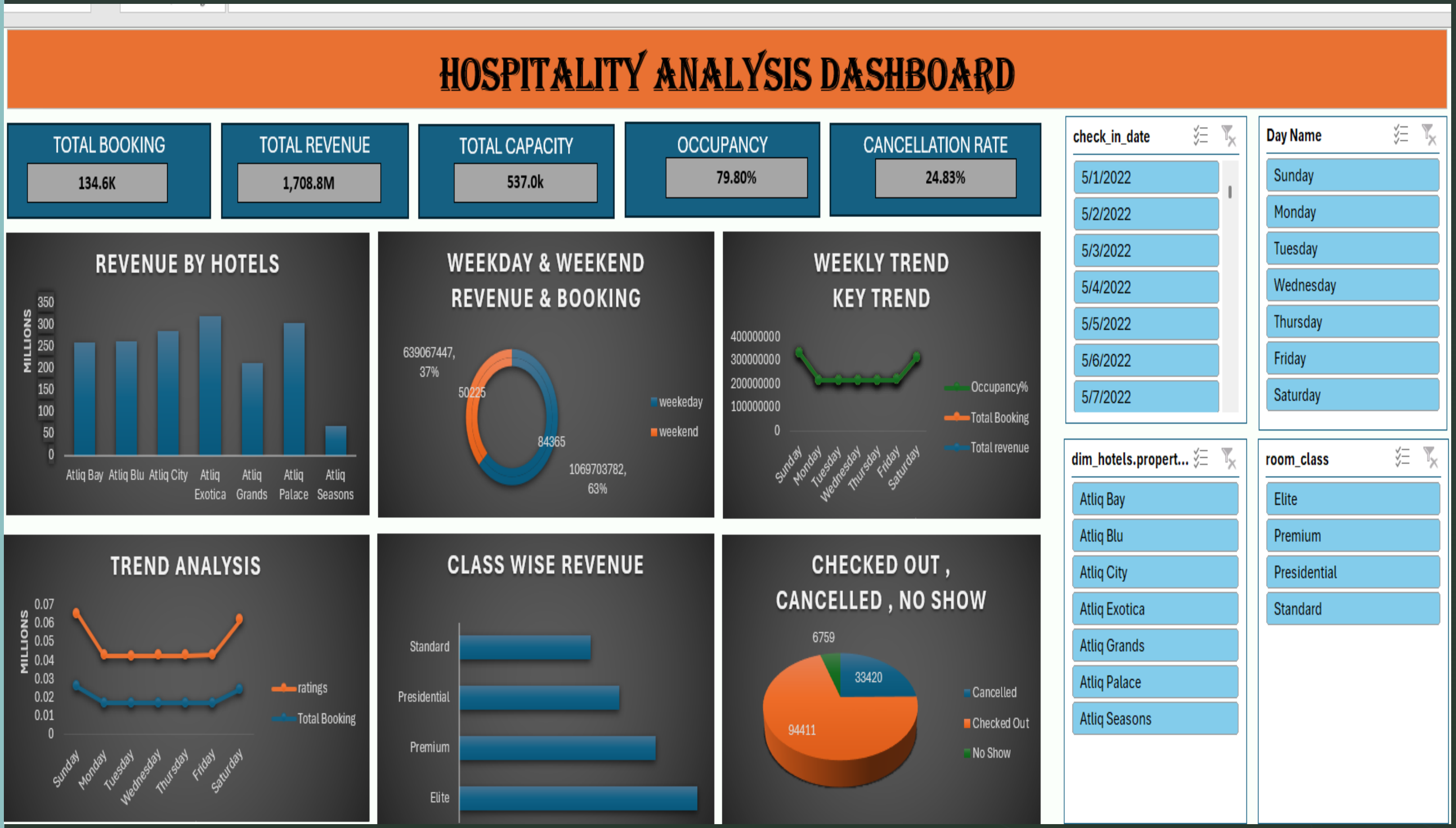
- • Created Entity Relationship (ER) Model connecting dimension and fact tables
- • Keys used: property_id, room_id, date
- • Relationships built to link bookings, hotels, and rooms for analysis
- • Removed missing values and duplicates
- • Converted date formats for uniformity
- • Created calculated columns such as Occupancy Rate and Revenue Realized
- • Merged datasets using SQL joins

Key Metrics (KPIs)

- **1. Total Bookings:** 134.6K
  2. Total Revenue: ₹1,708.8M
  3. Total Capacity: 537.0K
  4. Occupancy Rate: 79.80%
  5. Cancellation Rate: 24.83%
  6. Weekday vs. Weekend Revenue:
  • Weekday – 37% • Weekend – 63%
  7. Class-wise Revenue:
  • Standard – ₹39.09M
  • Elite – ₹56.02M
  • Premium – ₹46.21M
  • Presidential – ₹37.67M
  8. Outcome Summary:
  • Checked Out – 33,420 • Cancelled – 94,411 • No Show – 6,759

Excel Dashboard

Basic data visualization and pivot analysis.



HOSPITALITY ANALYSIS DASHBOARD

TOTAL BOOKING	TOTAL REVENUE	TOTAL CAPACITY	OCCUPANCY	CANCELLATION RATE
134.6K	1,708.8M	537.0k	79.80%	24.83%

check_in_date
- 5/1/2022
- 5/2/2022
- 5/3/2022
- 5/4/2022
- 5/5/2022
- 5/6/2022
- 5/7/2022

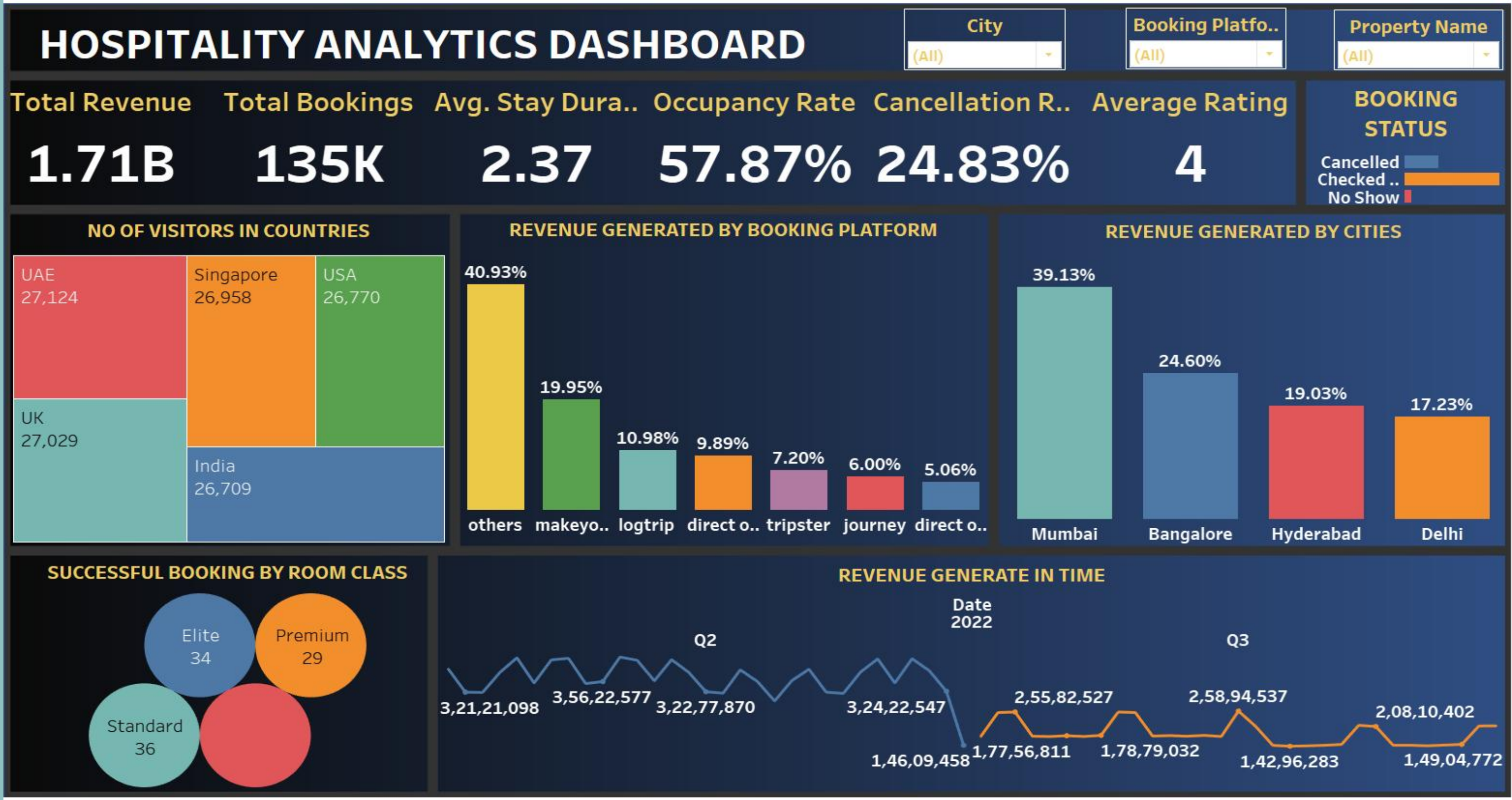
Day Name
- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

dim_hotels.propert...
- Atliq Bay
- Atliq Blu
- Atliq City
- Atliq Exotica
- Atliq Grands
- Atliq Palace
- Atliq Seasons

room_class
- Elite
- Premium
- Presidential
- Standard

Tableau Dashboard

Interactive dashboards and storyboards for trends.



HOSPITALITY ANALYTICS DASHBOARD

City: (All)

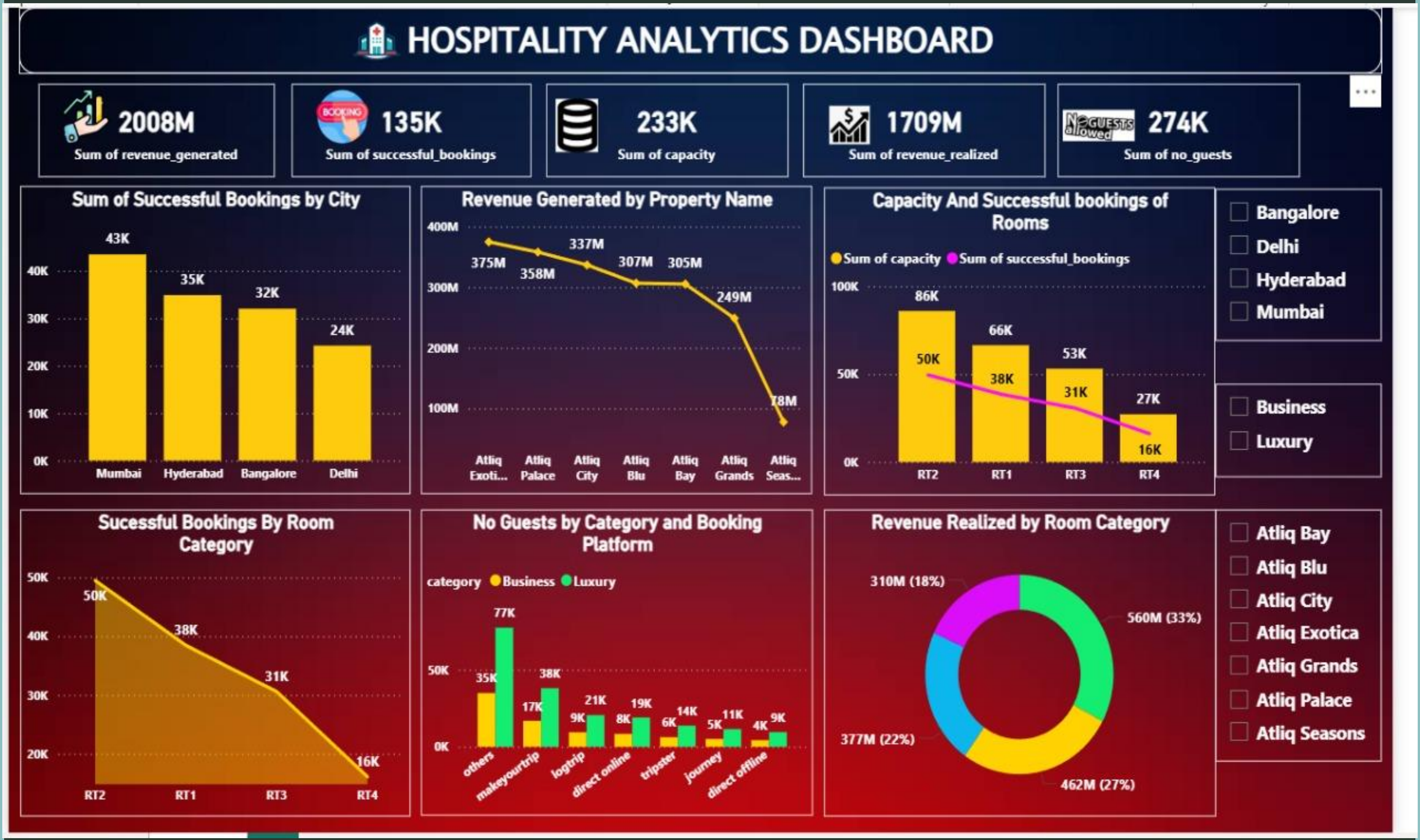
Booking Platfo..: (All)

Property Name: (All)

Total Revenue	Total Bookings	Avg. Stay Dura..	Occupancy Rate	Cancellation R..	Average Rating
1.71B	135K	2.37	57.87%	24.83%	4

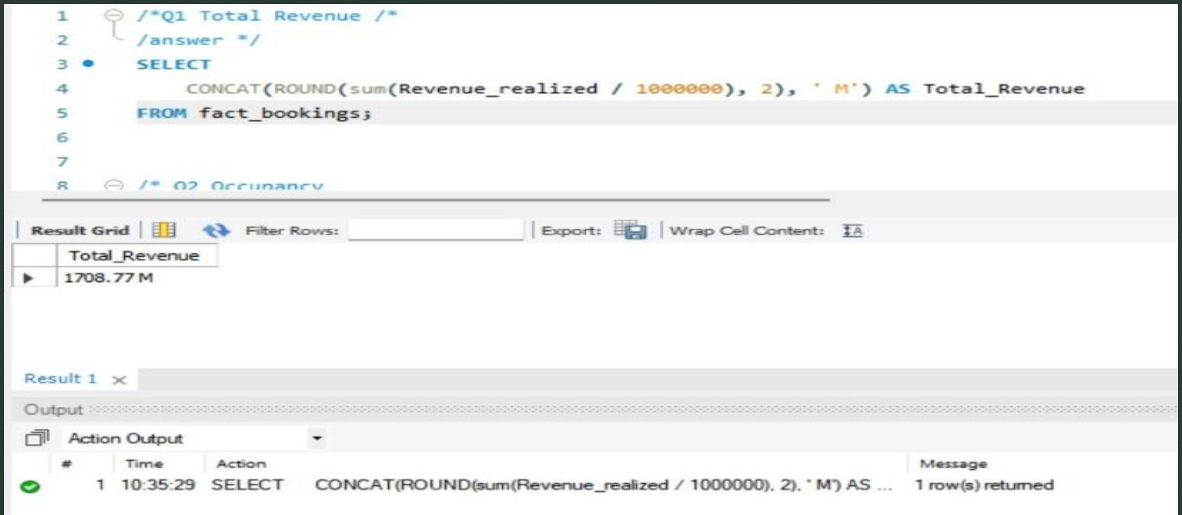
Power BI Dashboard

Advanced data modeling and KPI visualizations.



SQL Queries

Data cleaning, joining, and creating analytical queries.

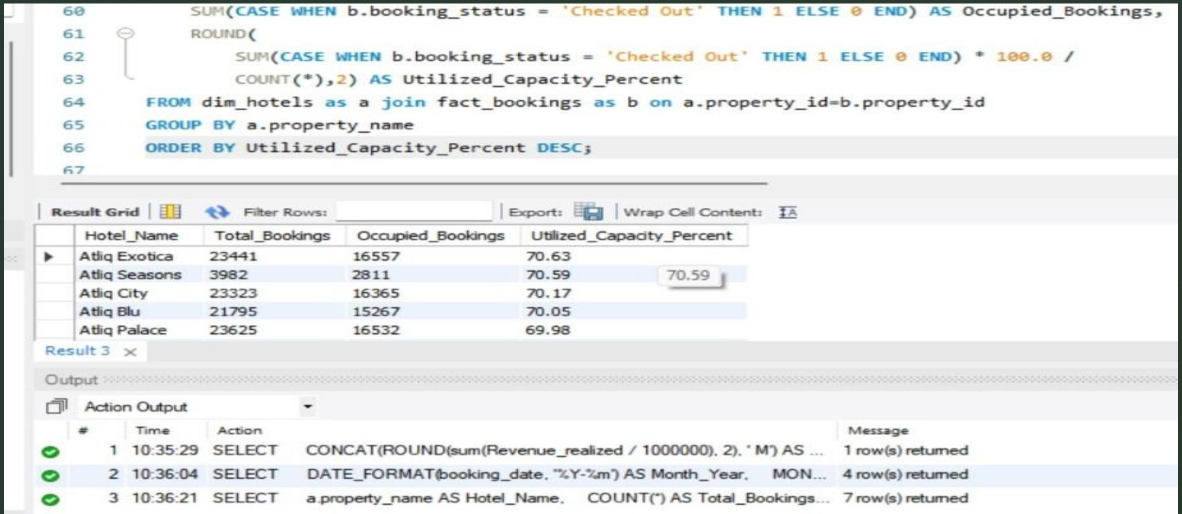


```
/*Q1 Total Revenue /*
/answer */
SELECT
    CONCAT(ROUND(sum(Revenue_realized / 1000000), 2), ' M') AS Total_Revenue
FROM fact_bookings;


/* Q2 Occupancy
```

	Total_Revenue
▶	1708.77 M

```
#  Time      Action                                                    Message
1  10:35:29  SELECT  CONCAT(ROUND(sum(Revenue_realized / 1000000), 2), ' M') AS ...  1 row(s) returned
```



```
        SUM(CASE WHEN b.booking_status = 'Checked Out' THEN 1 ELSE 0 END) AS Occupied_Bookings,
        ROUND(
            SUM(CASE WHEN b.booking_status = 'Checked Out' THEN 1 ELSE 0 END) * 100.0 /
            COUNT(*),2) AS Utilized_Capacity_Percent
    FROM dim_hotels as a join fact_bookings as b on a.property_id=b.property_id
    GROUP BY a.property_name
    ORDER BY Utilized_Capacity_Percent DESC;
```

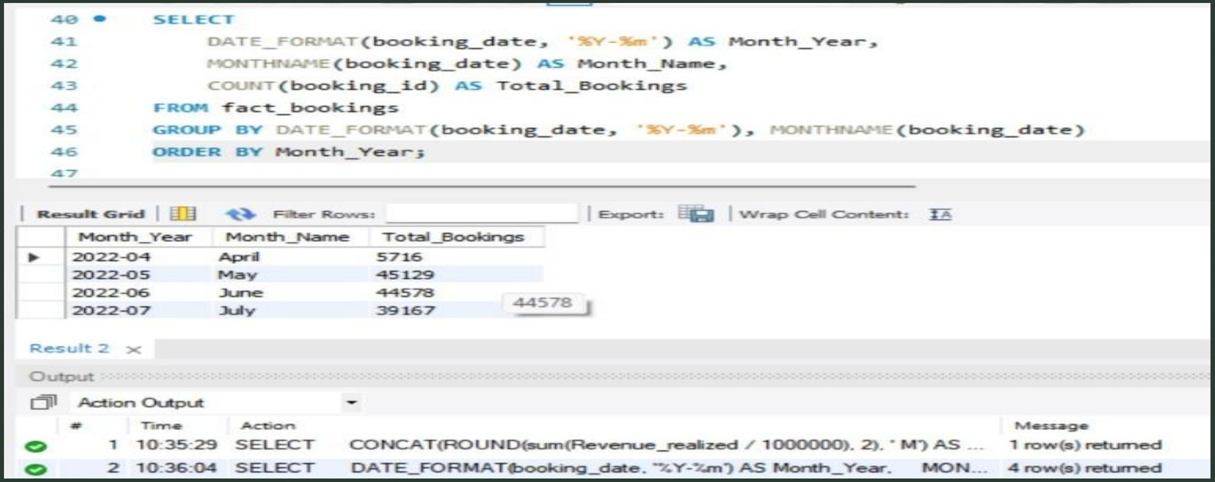
	Hotel_Name	Total_Bookings	Occupied_Bookings	Utilized_Capacity_Percent
▶	Atliq Exotica	23441	16557	70.63
	Atliq Seasons	3982	2811	70.59
	Atliq City	23323	16365	70.17
	Atliq Blu	21795	15267	70.05
	Atliq Palace	23625	16532	69.98

70.59

```
#  Time      Action                                                              Message
1  10:35:29  SELECT  CONCAT(ROUND(sum(Revenue_realized / 1000000), 2), ' M') AS ...  1 row(s) returned
2  10:36:04  SELECT  DATE_FORMAT(booking_date, '%Y-%m') AS Month_Year,    MON...     4 row(s) returned
3  10:36:21  SELECT  a.property_name AS Hotel_Name,    COUNT(*) AS Total_Bookings...  7 row(s) returned
```

SQL Queries

Data cleaning, joining, and creating analytical queries.



```sql
SELECT
    DATE_FORMAT(booking_date, '%Y-%m') AS Month_Year,
    MONTHNAME(booking_date) AS Month_Name,
    COUNT(booking_id) AS Total_Bookings
FROM fact_bookings
GROUP BY DATE_FORMAT(booking_date, '%Y-%m'), MONTHNAME(booking_date)
ORDER BY Month_Year;
```

Month_Year	Month_Name	Total_Bookings
2022-04	April	5716
2022-05	May	45129
2022-06	June	44578
2022-07	July	39167

```
#  Time      Action                                                                      Message
1  10:35:29  SELECT  CONCAT(ROUND(sum(Revenue_realized / 1000000), 2), ' M') AS ...        1 row(s) returned
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```
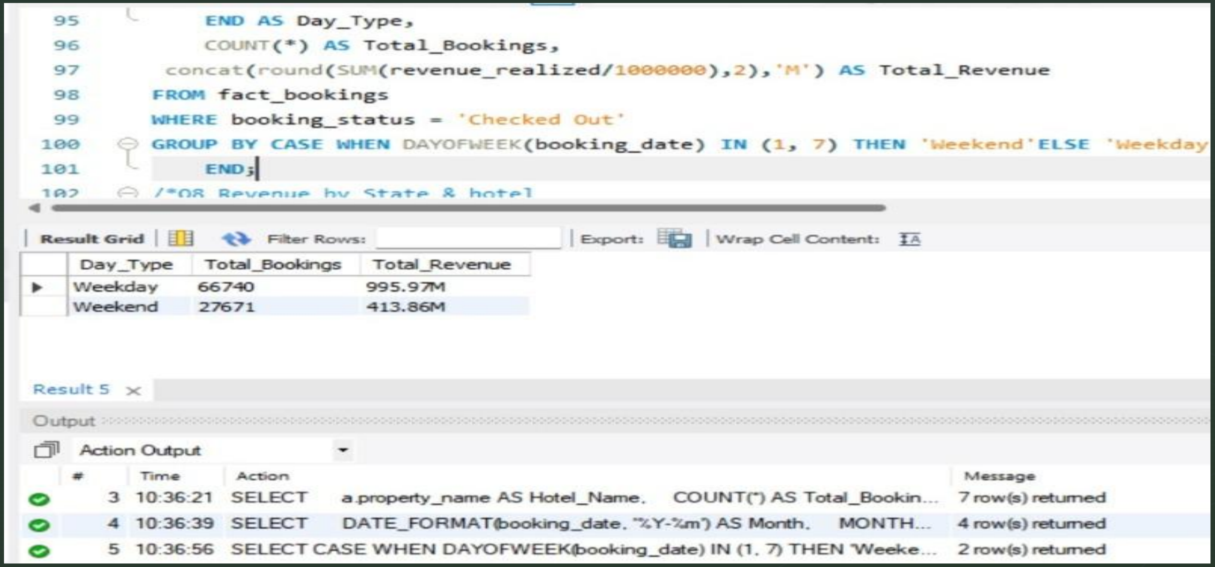



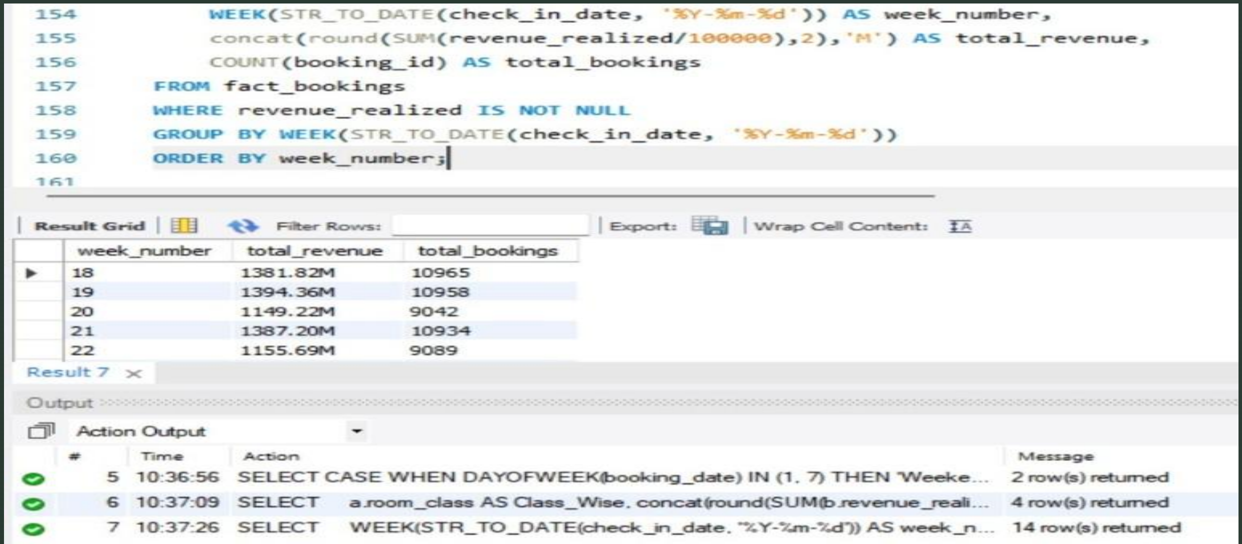
```sql
        END AS Day_Type,
        COUNT(*) AS Total_Bookings,
     concat(round(SUM(revenue_realized/1000000),2),'M') AS Total_Revenue
    FROM fact_bookings
    WHERE booking_status = 'Checked Out'
    GROUP BY CASE WHEN DAYOFWEEK(booking_date) IN (1, 7) THEN 'Weekend'ELSE 'Weekday
        END;
    /*Q8 Revenue by State & hotel
```

Day_Type	Total_Bookings	Total_Revenue
Weekday	66740	995.97M
Weekend	27671	413.86M

```
#  Time      Action                                                                      Message
3  10:36:21  SELECT  a.property_name AS Hotel_Name,    COUNT(*) AS Total_Bookin...          7 row(s) returned
4  10:36:39  SELECT  DATE_FORMAT(booking_date, '%Y-%m') AS Month,    MONTH...               4 row(s) returned
5  10:36:56  SELECT CASE WHEN DAYOFWEEK(booking_date) IN (1, 7) THEN 'Weeke...             2 row(s) returned
```

SQL Queries

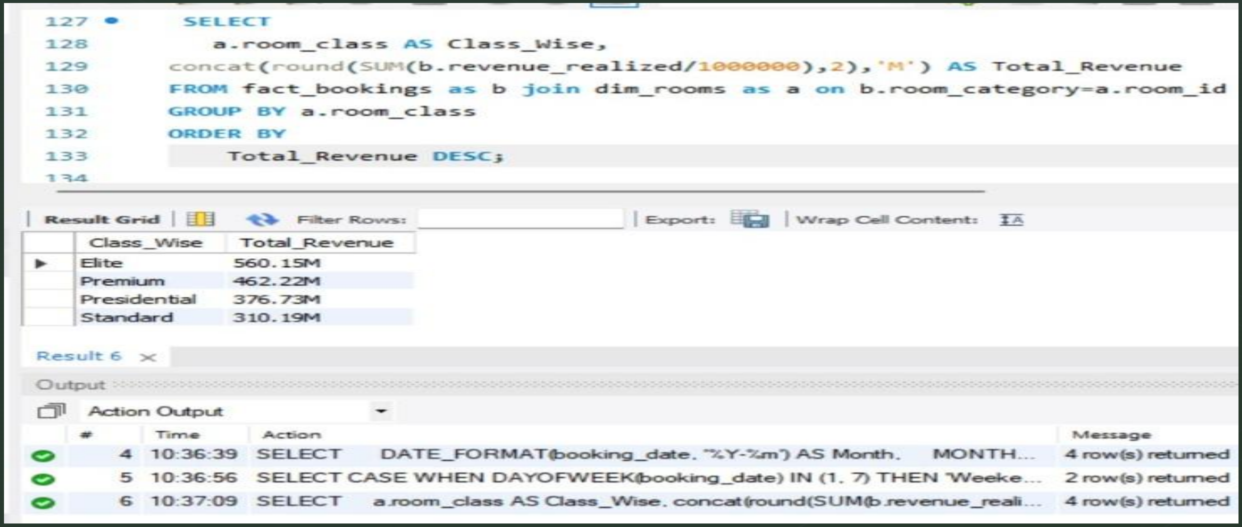
Data cleaning, joining, and creating analytical queries.



```
        WEEK(STR_TO_DATE(check_in_date, '%Y-%m-%d')) AS week_number,
        concat(round(SUM(revenue_realized/1000000),2),'M') AS total_revenue,
        COUNT(booking_id) AS total_bookings
    FROM fact_bookings
    WHERE revenue_realized IS NOT NULL
    GROUP BY WEEK(STR_TO_DATE(check_in_date, '%Y-%m-%d'))
    ORDER BY week_number;
```

week_number	total_revenue	total_bookings
18	1381.82M	10965
19	1394.36M	10958
20	1149.22M	9042
21	1387.20M	10934
22	1155.69M	9089

```
#  Time      Action                                                                      Message
5  10:36:56  SELECT CASE WHEN DAYOFWEEK(booking_date) IN (1, 7) THEN 'Weeke...             2 row(s) returned
6  10:37:09  SELECT     a.room_class AS Class_Wise, concat(round(SUM(b.revenue_reali...    4 row(s) returned
7  10:37:26  SELECT     WEEK(STR_TO_DATE(check_in_date, "%Y-%m-%d")) AS week_n...          14 row(s) returned
```



```
    SELECT
        a.room_class AS Class_Wise,
    concat(round(SUM(b.revenue_realized/1000000),2),'M') AS Total_Revenue
    FROM fact_bookings as b join dim_rooms as a on b.room_category=a.room_id
    GROUP BY a.room_class
    ORDER BY
        Total_Revenue DESC;
```

Class_Wise	Total_Revenue
Elite	560.15M
Premium	462.22M
Presidential	376.73M
Standard	310.19M

```
#  Time      Action                                                                      Message
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```

Insights & Findings

• Weekends show 25% higher occupancy	**• Luxury hotels generate more revenue; business hotels have better occupancy**
• Online platforms dominate bookings	• High-rated hotels have more repeat customers

Challenges Faced

- During This Project we encountered several Challenges which includes following :
- Transforming the data and building accurate relationships between tables.
- Issue with removing blank cells.
- While converting numbers into more readable units .
- When we added slicers in the dashboard it was difficult to connect the slicers to all visuals.
- In creating SQL script we were unable to load dataset in MYSQL Work bench.
- In power bi ,the issue was in calculation where I don’t understand the mistake done in applying formula. And while preparing calendar table we faced difficulties.

Business Impact

- • Identified underperforming hotels
- • Optimized pricing and marketing
- • Improved revenue forecasting accuracy
- • Supported data-driven decision-making

Conclusion

- Developed a unified Hospitality Analytics Dashboard integrating 5 data sources.
- Enabled management to monitor revenue, occupancy, and cancellations effectively.
- Showcased the power of data analytics in hospitality decision-making.

Future Scope

- • Real-time data integration
- • Machine learning-based demand prediction
- • AI-driven dynamic pricing recommendations
- • Expansion to competitor and market analysis

THANK YOU