Hotel Reservation Analysis Reports

Exploring Hotel Reservation Trends with SQL

By: Ibrahim Osman

Overview

Project Objective: To analyze hotel reservation data to uncover insights into guest preferences, booking trends, and operational efficiency.

Tools Used: **MySQL** for data querying, **Python** for data processing, and PowerPoint for presentation.

Introduction

The primary objective of this project is to analyze **hotel reservation data** to gain insights into guest preferences, booking trends, and operational efficiencies.

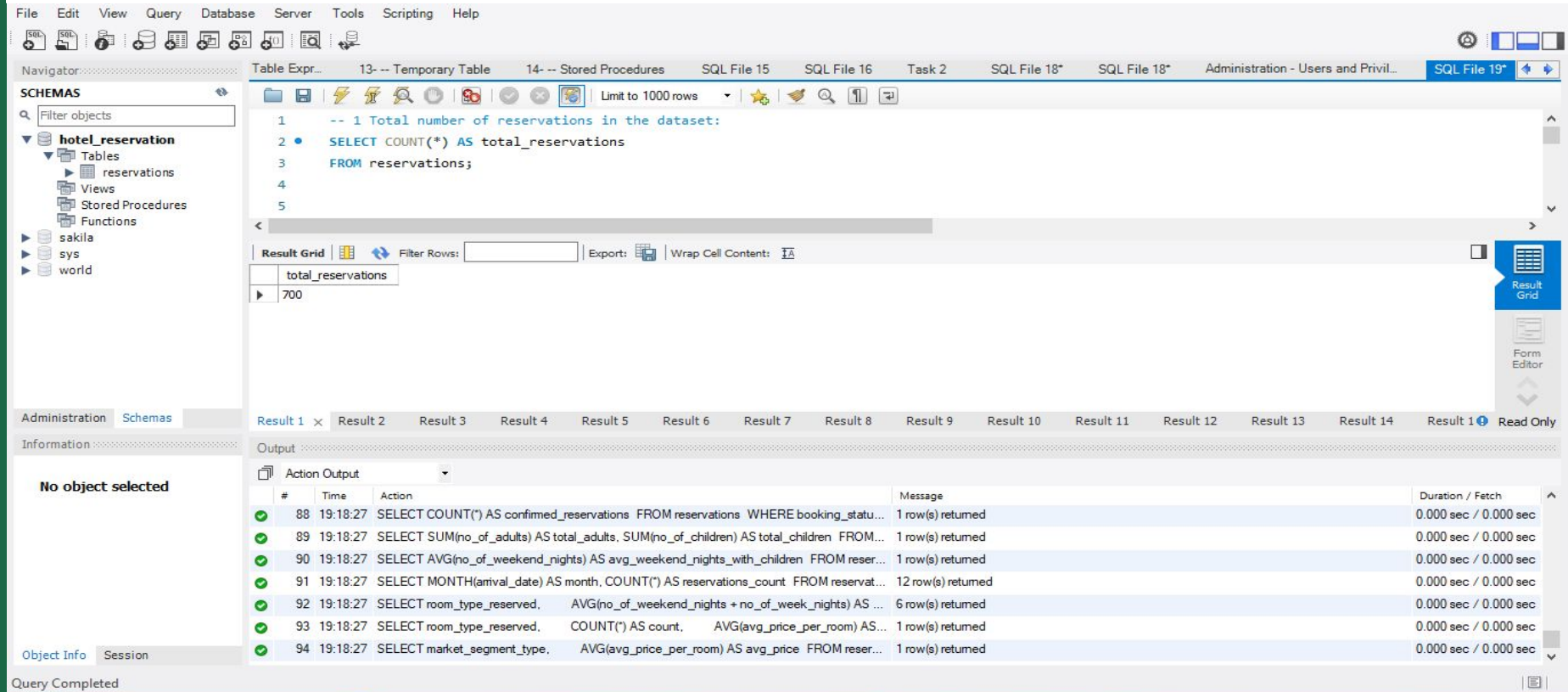
By understanding these aspects, hotels can make data-driven decisions to improve their services, optimize resource allocation, and enhance customer satisfaction..
Importance of data analysis in the hotel industry.
Objectives of the analysis:
Identify popular room types and meal plans.
Analyze booking patterns over time.
Assess booking duration and optimize room allocation.
Evaluate the impact of different market segments.
Examine average room prices and booking status.

Dataset Details

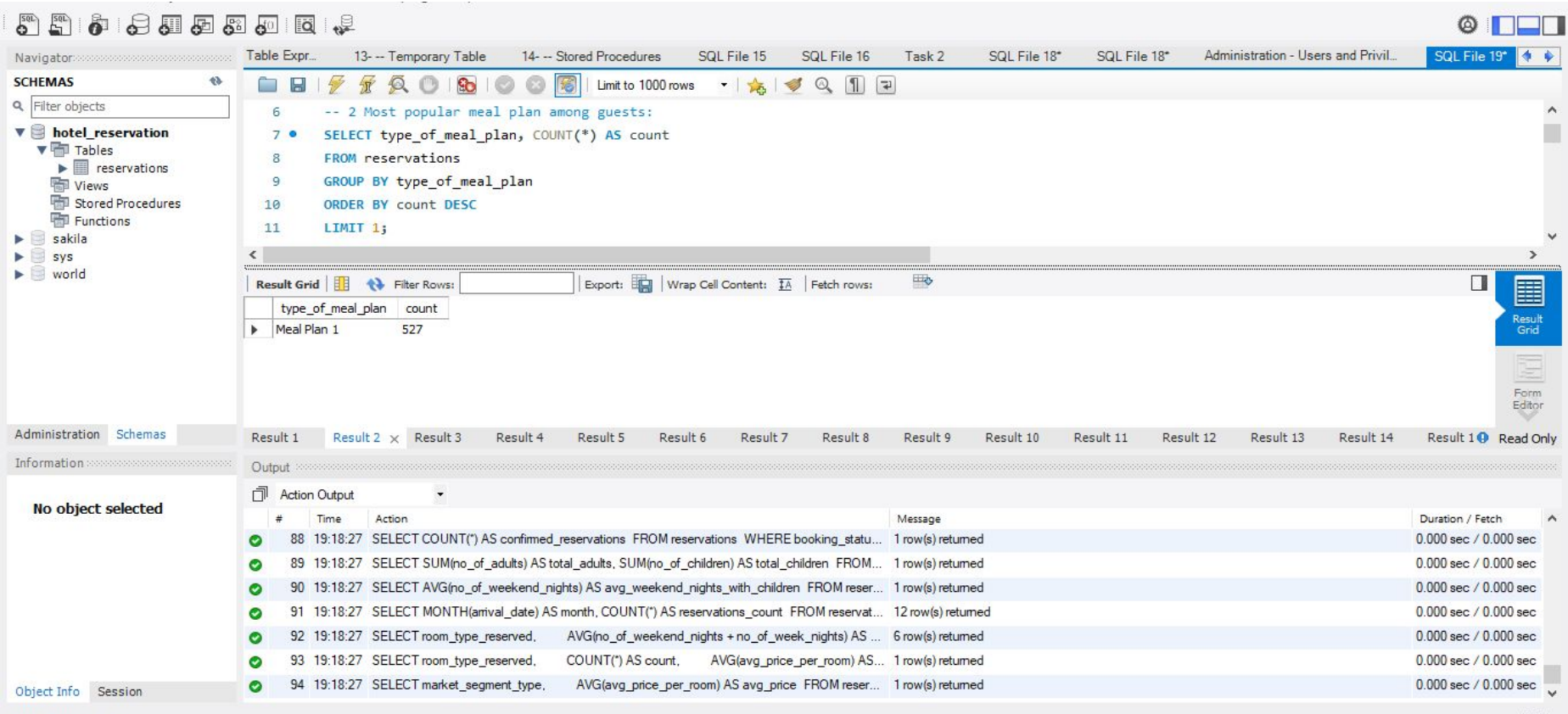
- The dataset includes the following attributes:
  - Booking_ID: Unique identifier for each reservation.
  - No_of_adults: Number of adults per reservation.
  - no_of_children: Number of children per reservation.
  - no_of_weekend_nights: Weekend nights in the reservation.
  - no_of_week_nights: Weekday nights in the reservation.
  - type_of_meal_plan: Chosen meal plan.
  - room_type_reserved: Type of room reserved.
  - lead_time: Days between booking and arrival.
  - arrival_date: Date of arrival.
  - market_segment_type: Market segment of the reservation.
  - avg_price_per_room: Average price per room.
  - **booking_status:** Status of the booking (e.g., confirmed, canceled).

SQL Query of Hotel Reservation Analysis

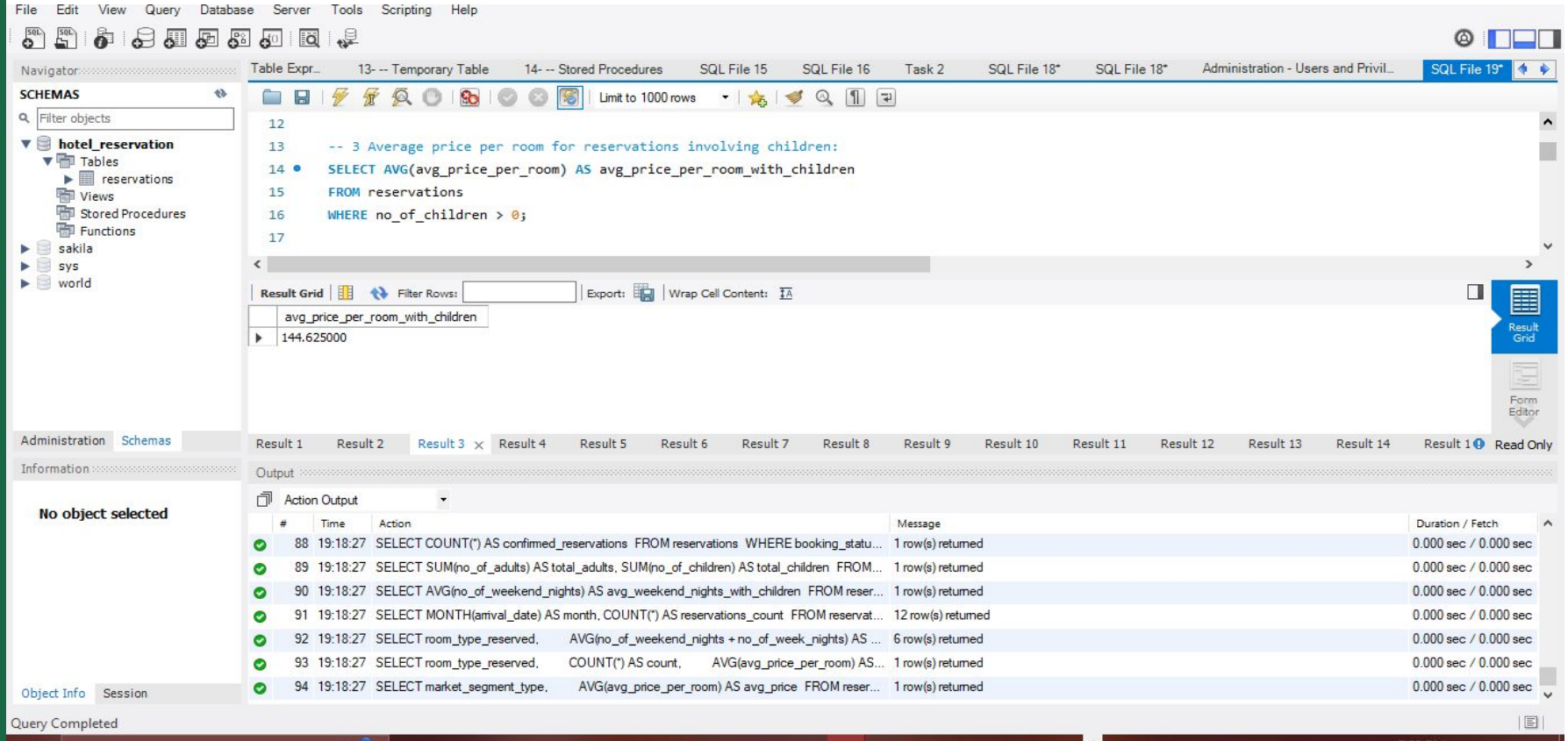
1. What is the total number of reservations in the dataset?



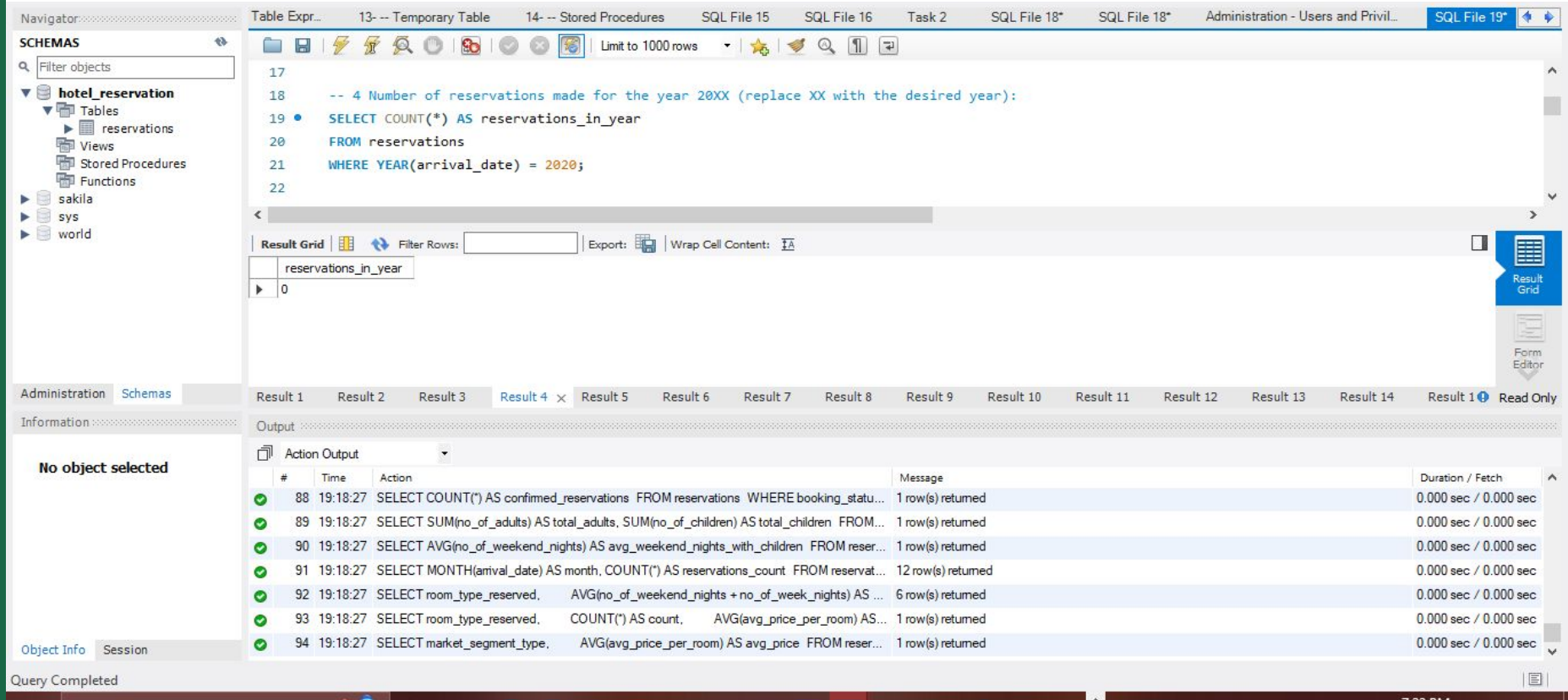
2. Which meal plan is the most popular among guests?



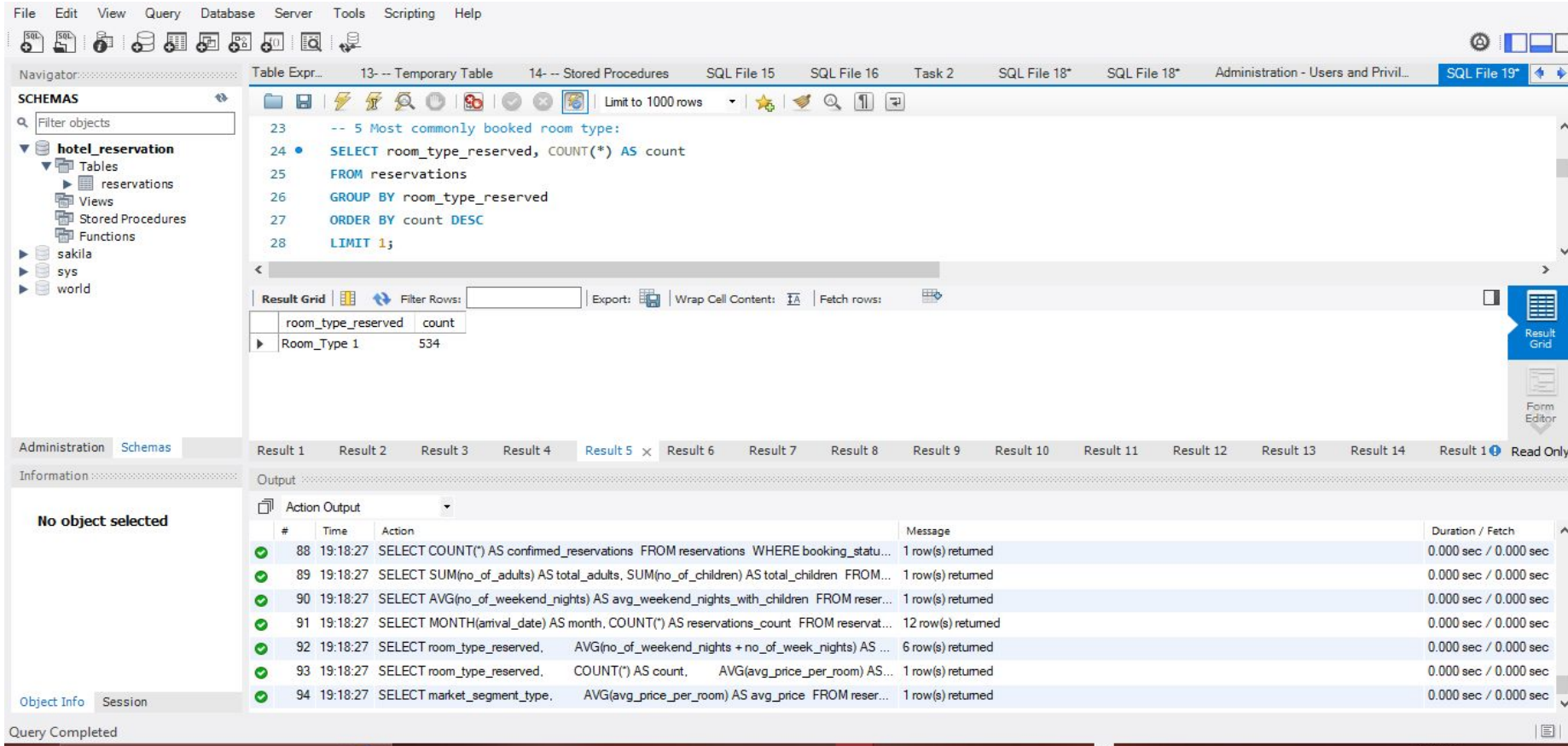
3. What is the average price per room for reservations involving children?



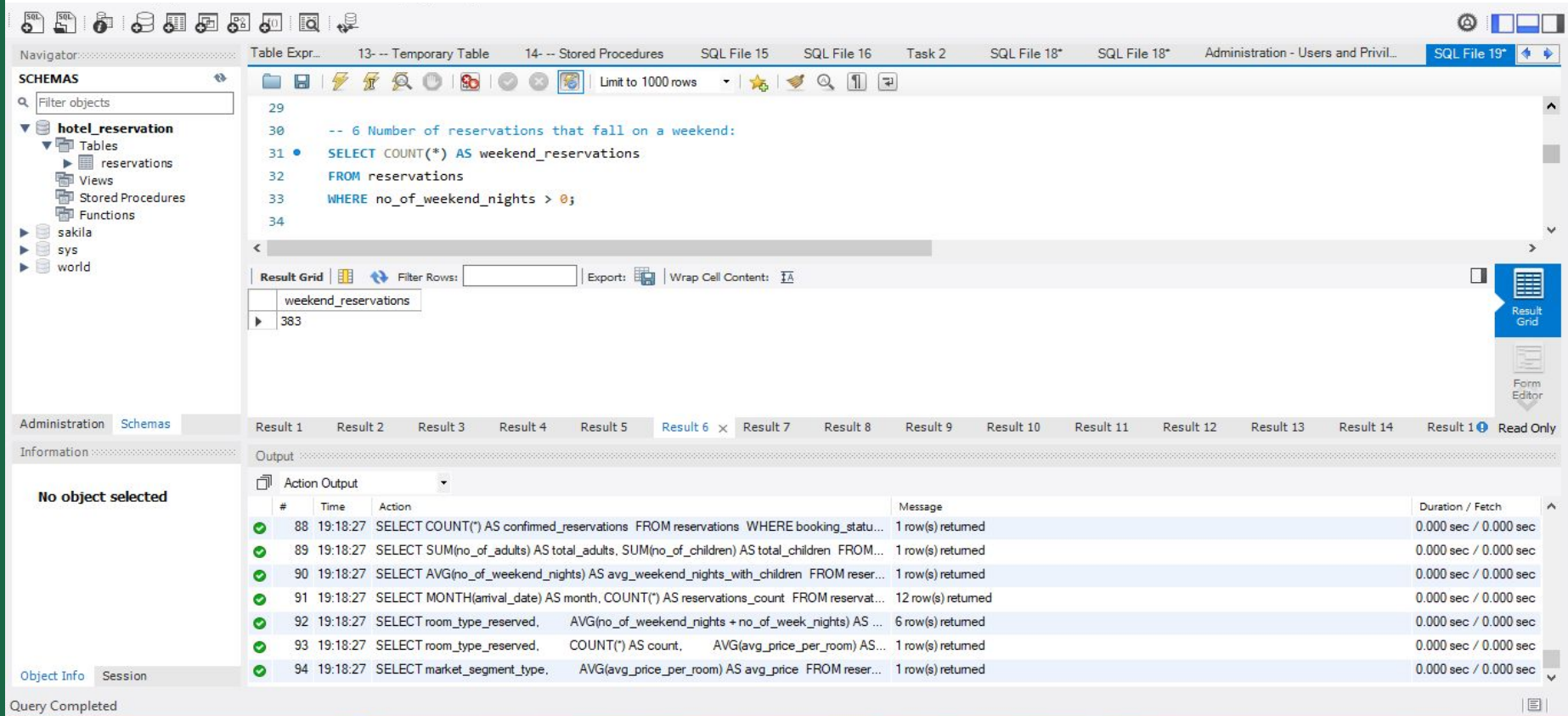
4. How many reservations were made for the year 20XX (replace XX with the desired year)?



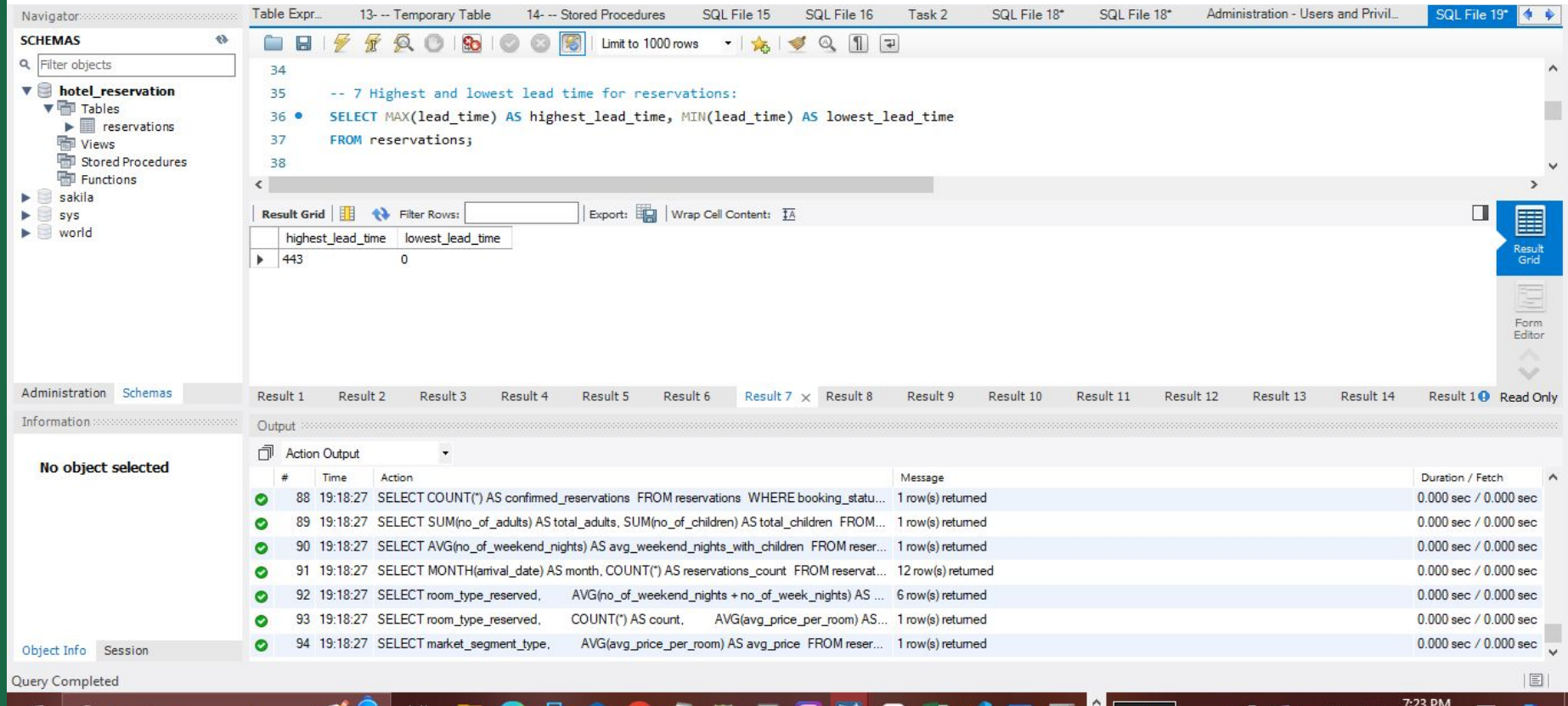
5. What is the most commonly booked room type?



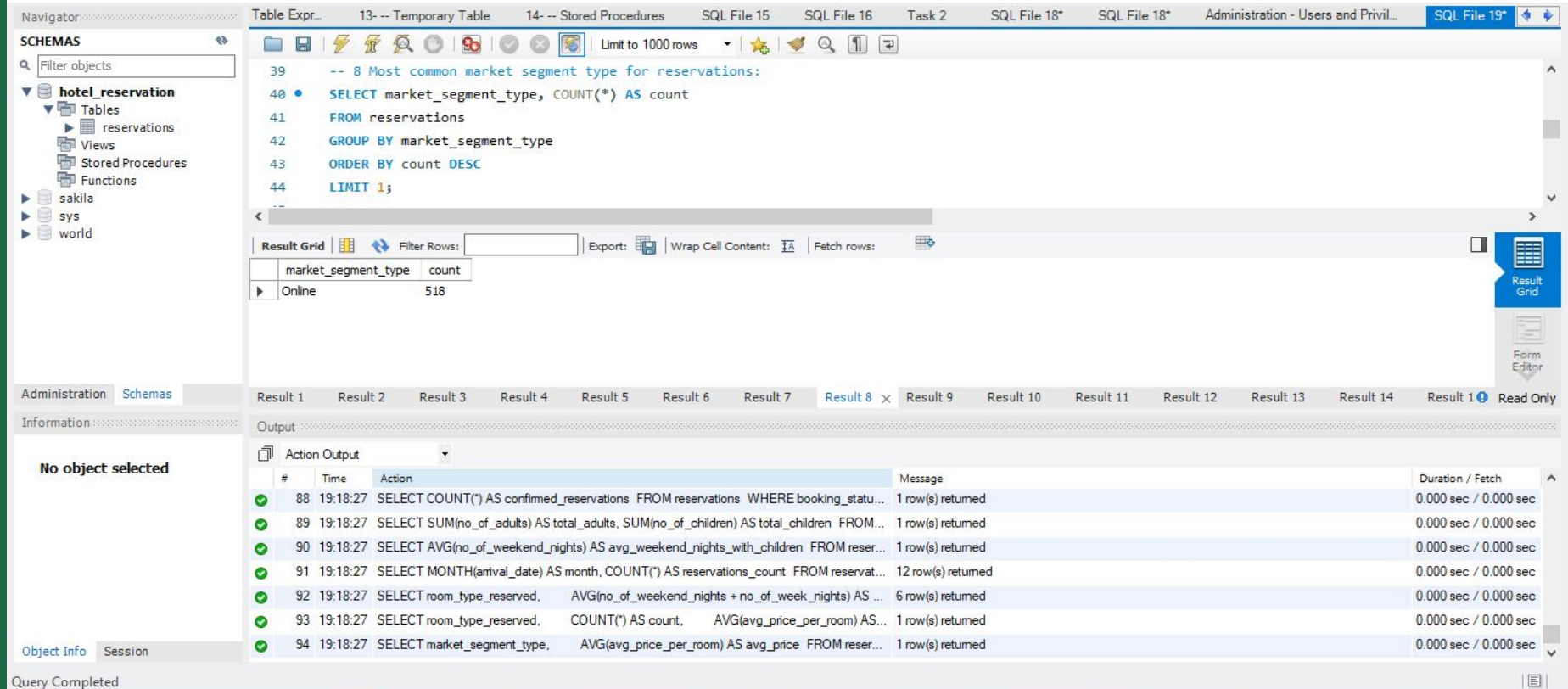
6. How many reservations fall on a weekend (no_of_weekend_nights > 0)?



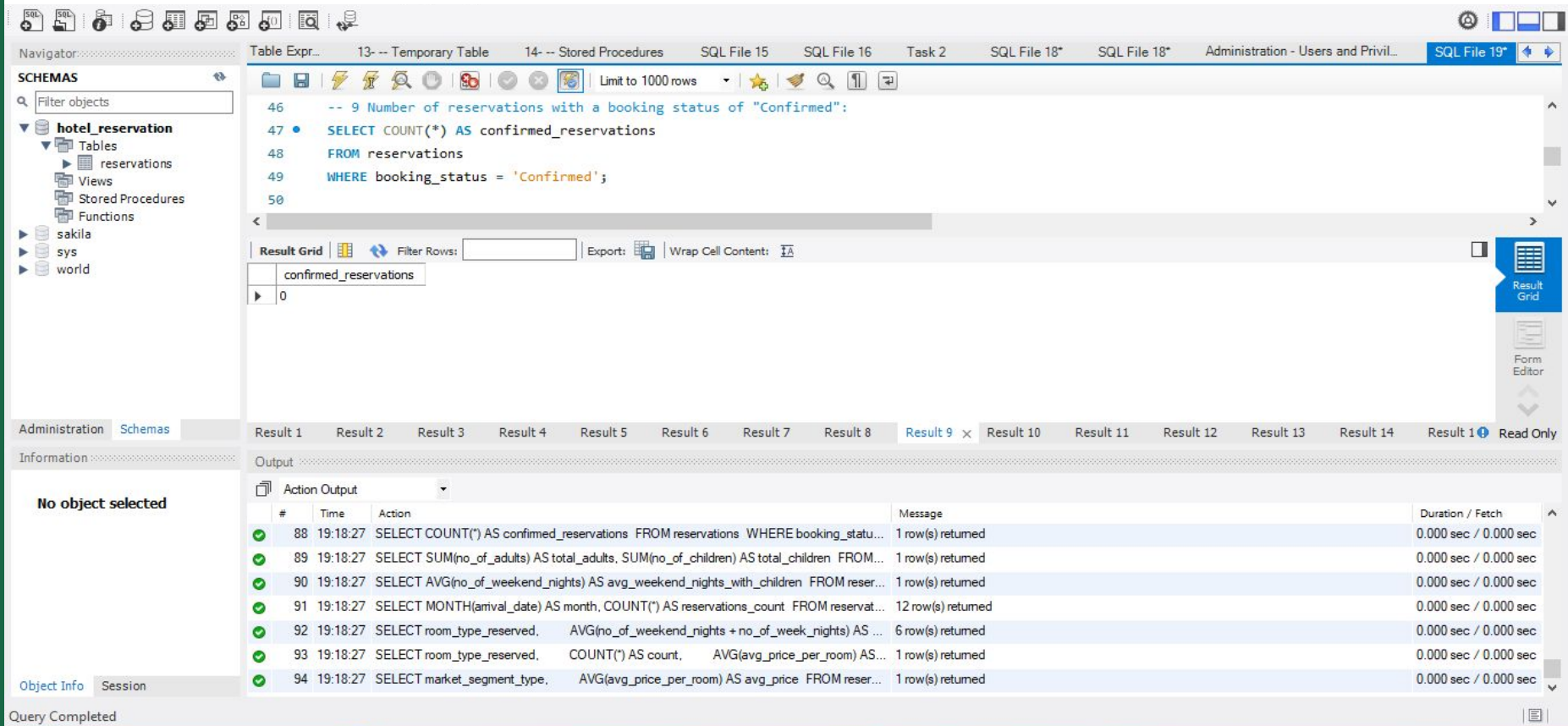
7. What is the highest and lowest lead time for reservations?



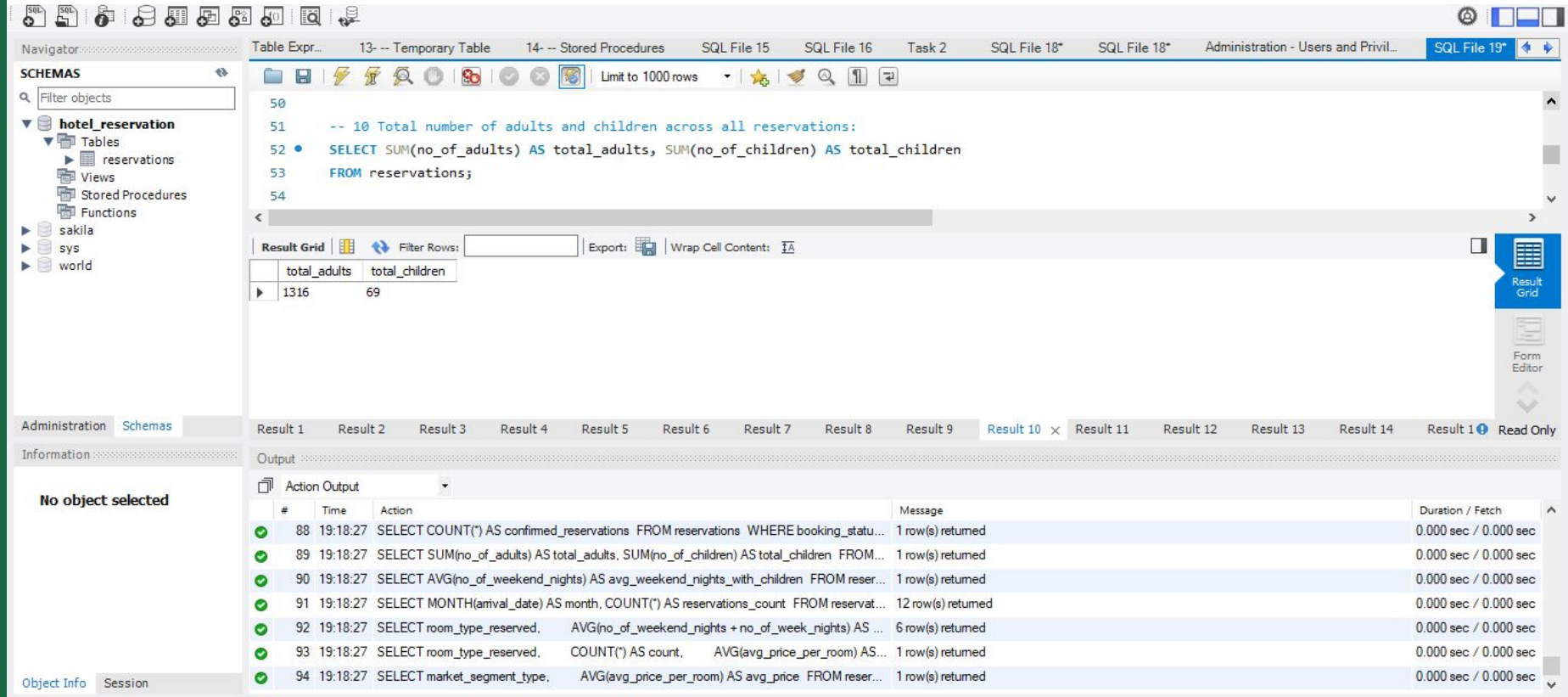
8. What is the most common market segment type for reservations?



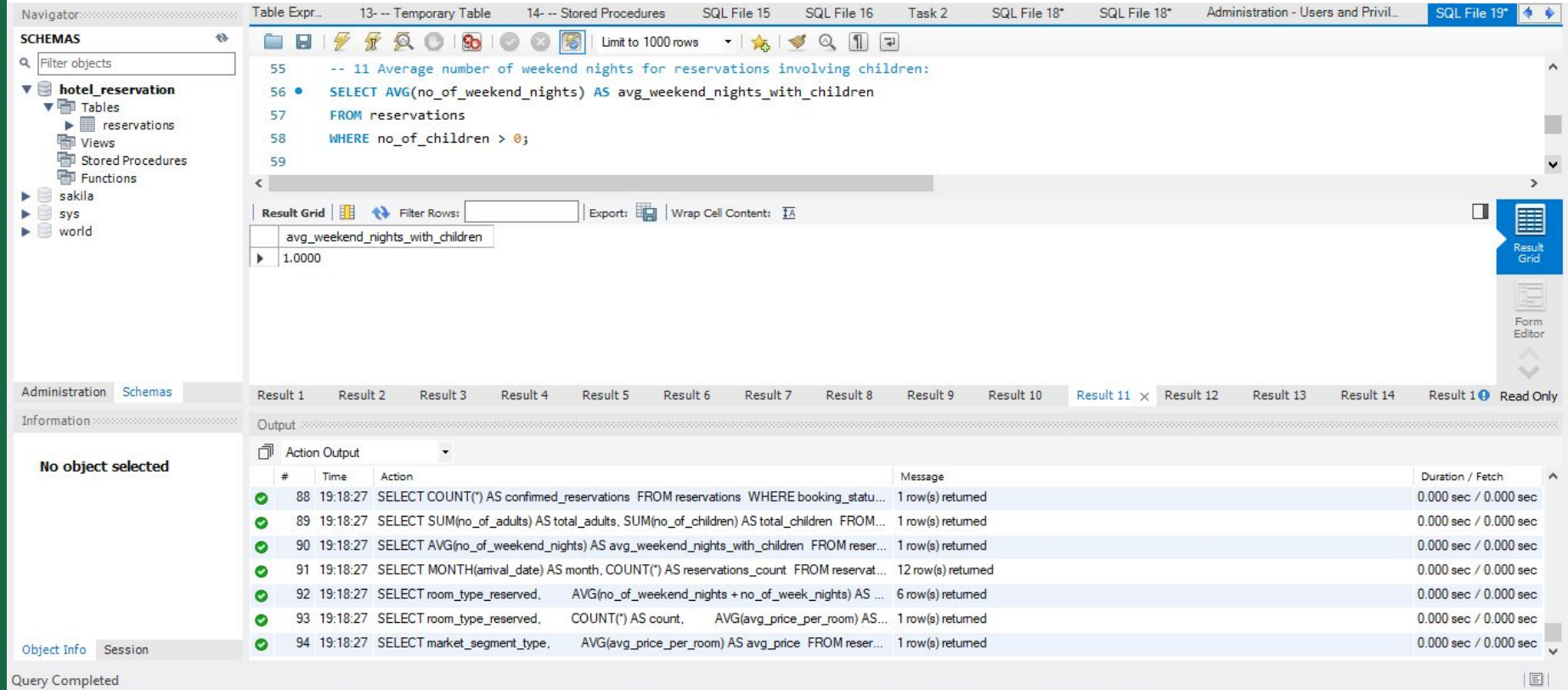
9. How many reservations have a booking status of "Confirmed"?



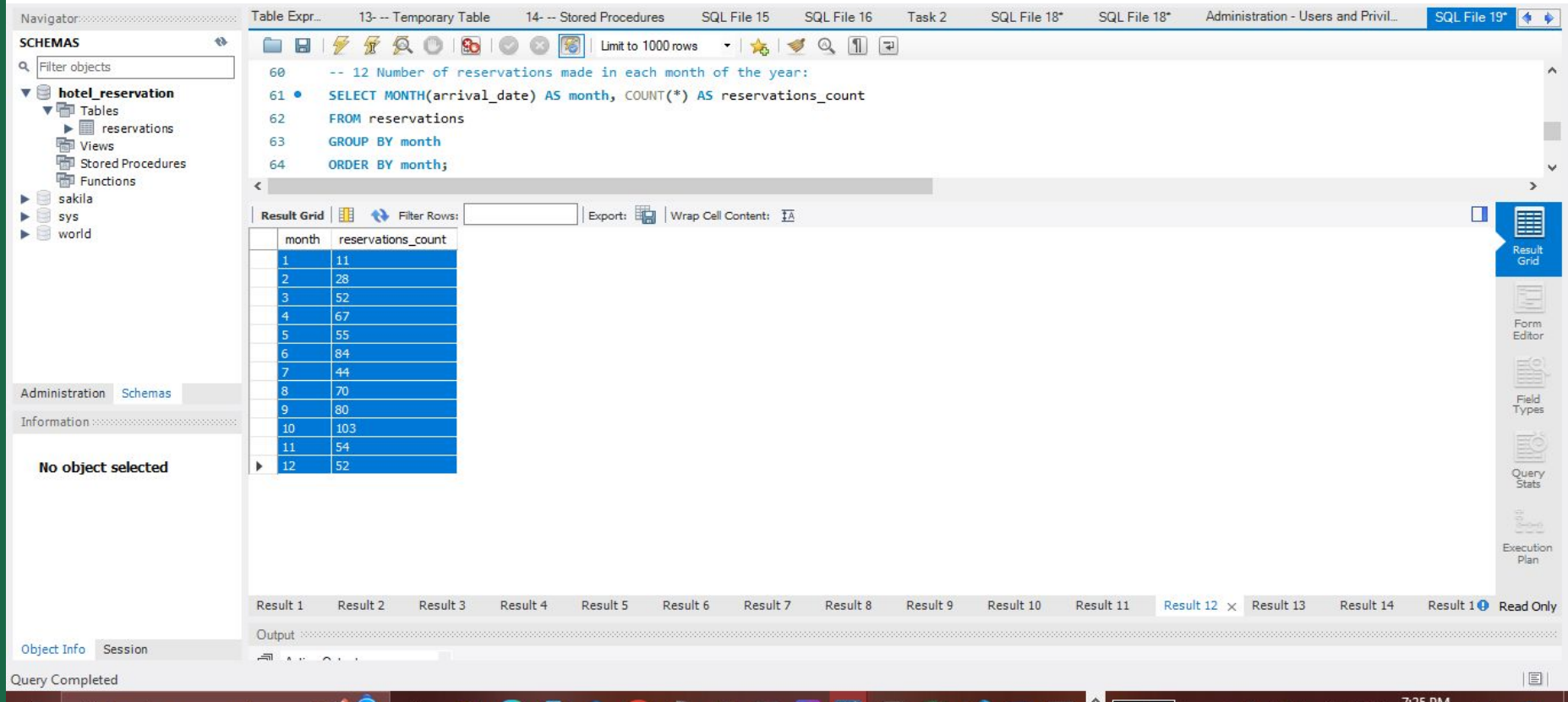
10. What is the total number of adults and children across all reservations?



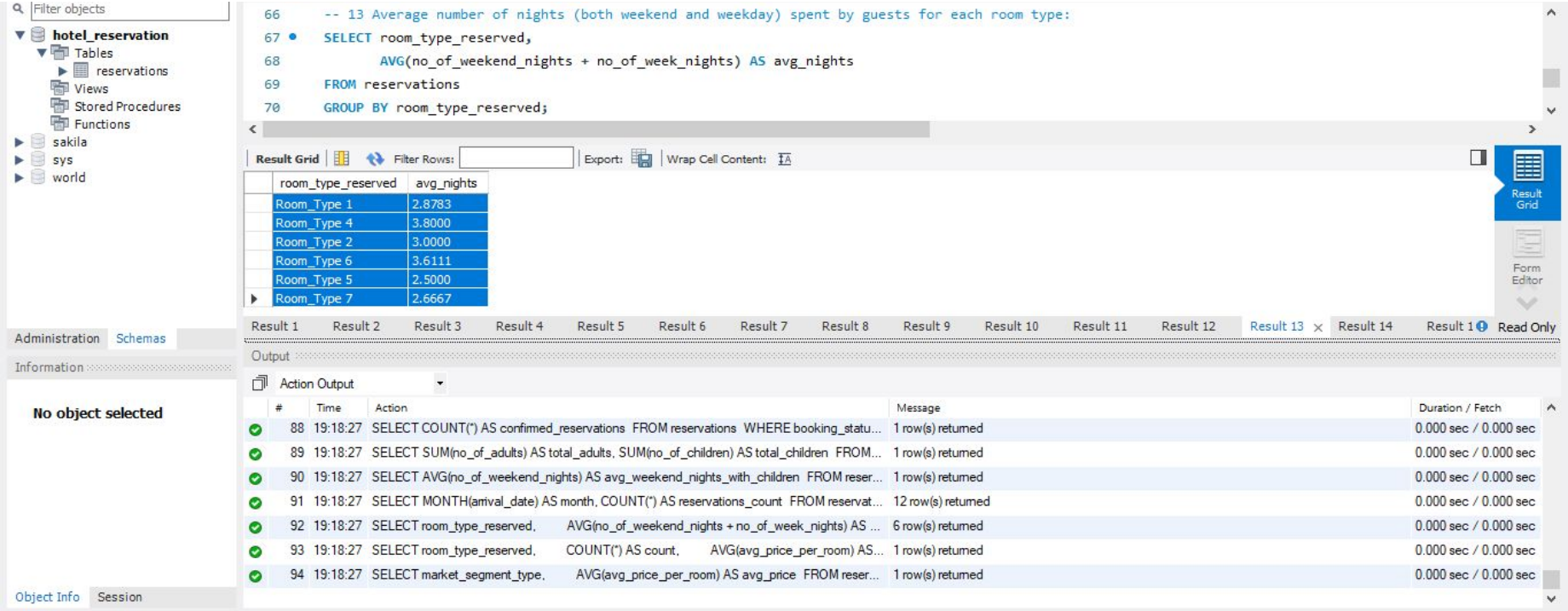
11. What is the average number of weekend nights for reservations involving children?



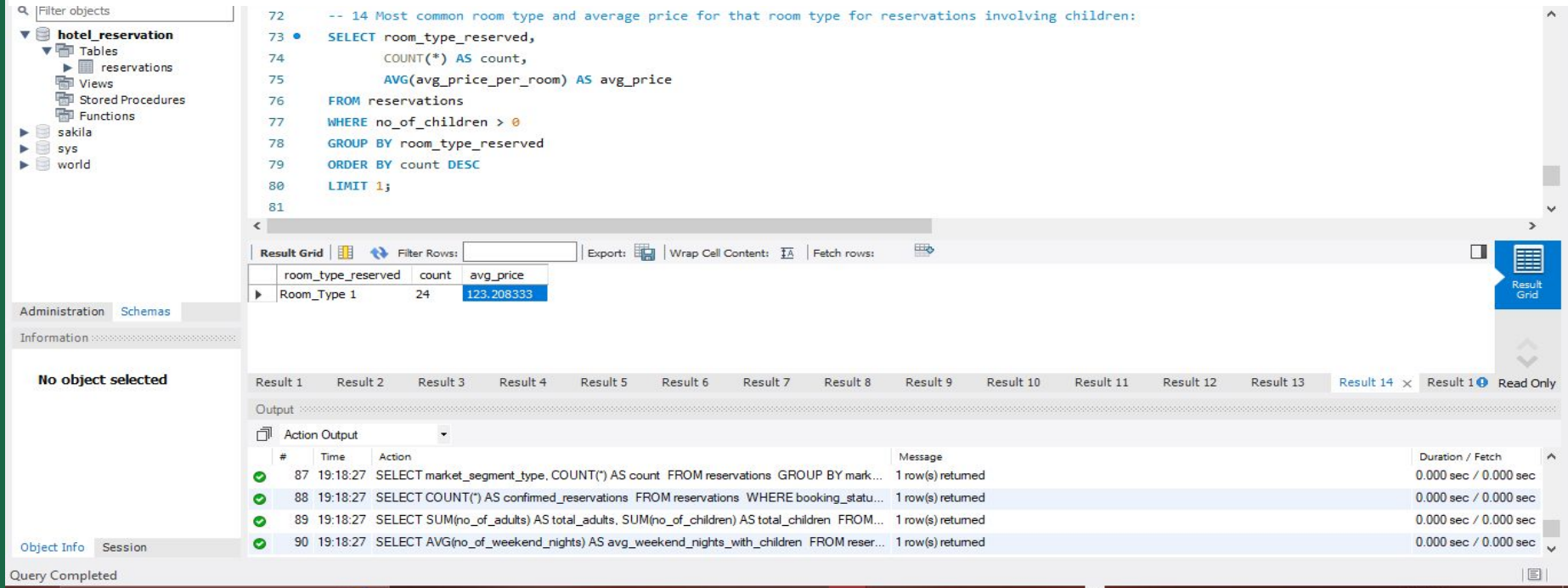
12. How many reservations were made in each month of the year?



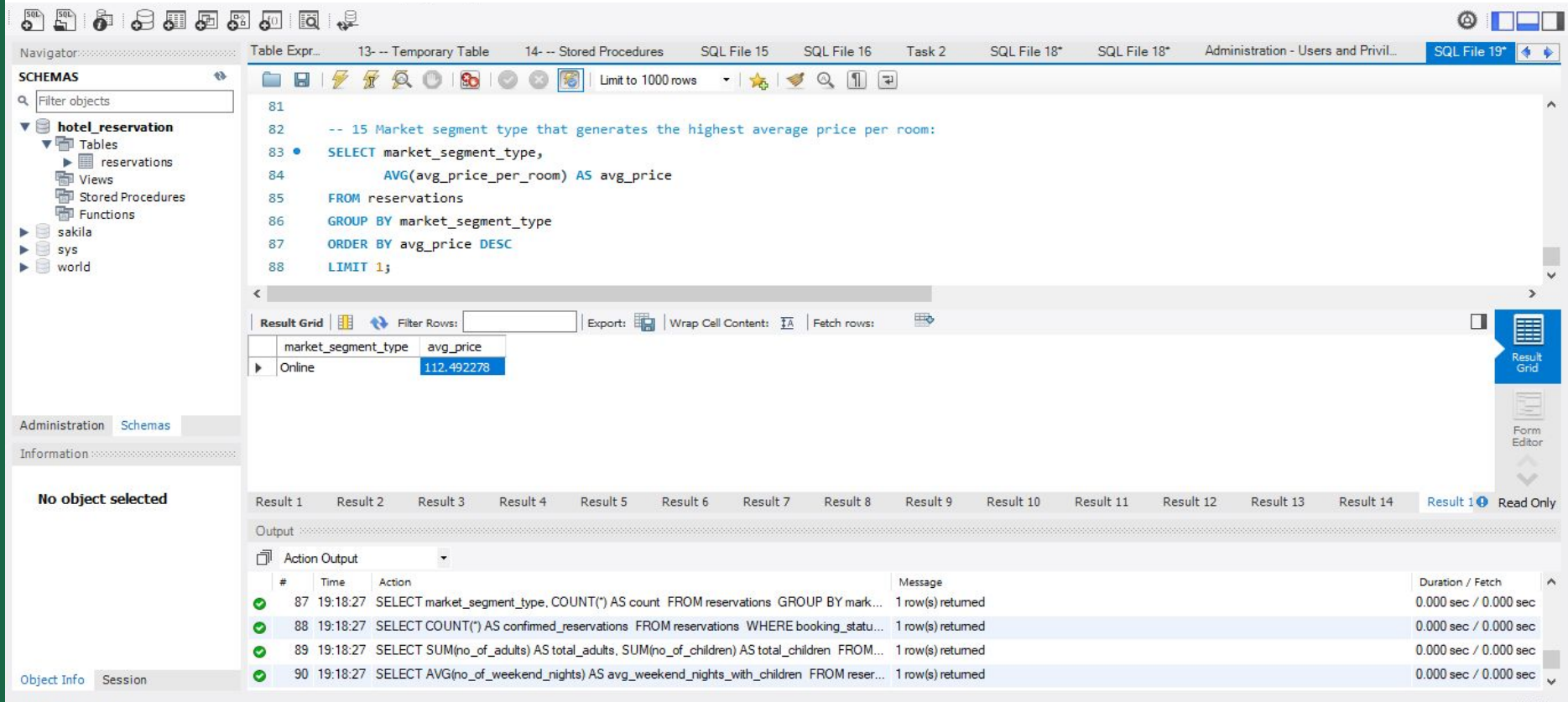
13. What is the average number of nights (both weekend and weekday) spent by guests for each room type?

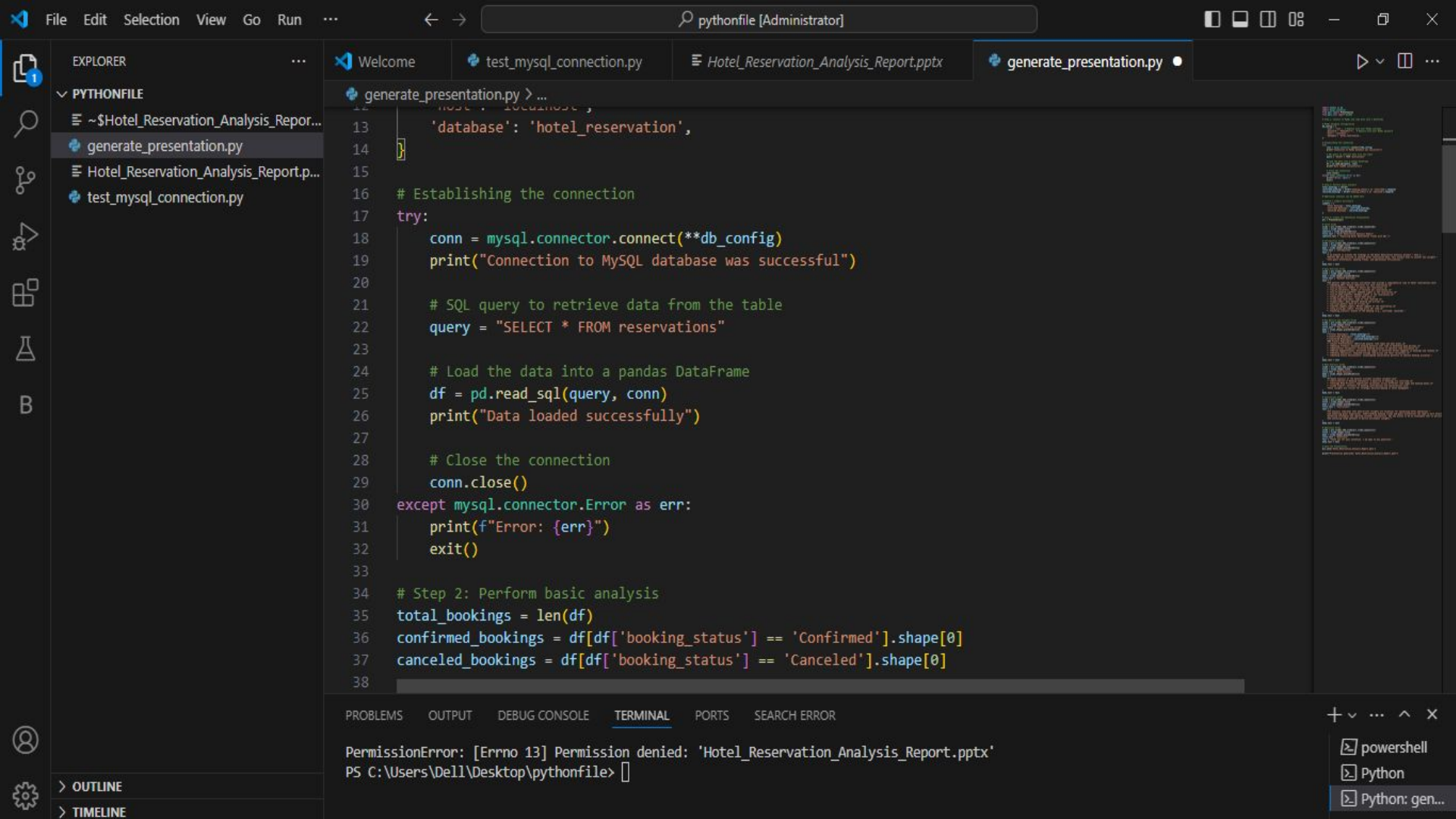


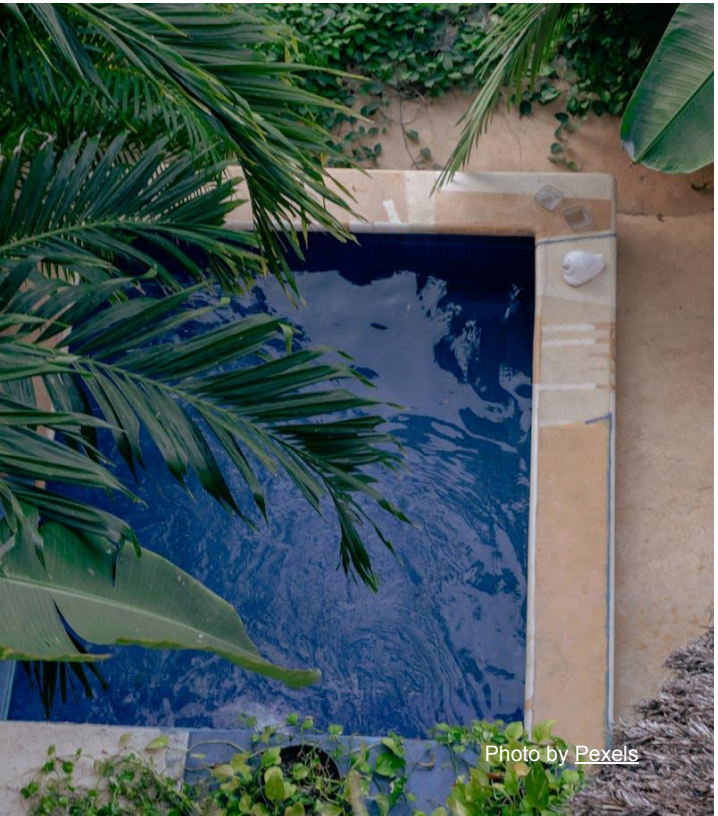
14. For reservations involving children, what is the most common room type, and what is the average price for that room type?



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



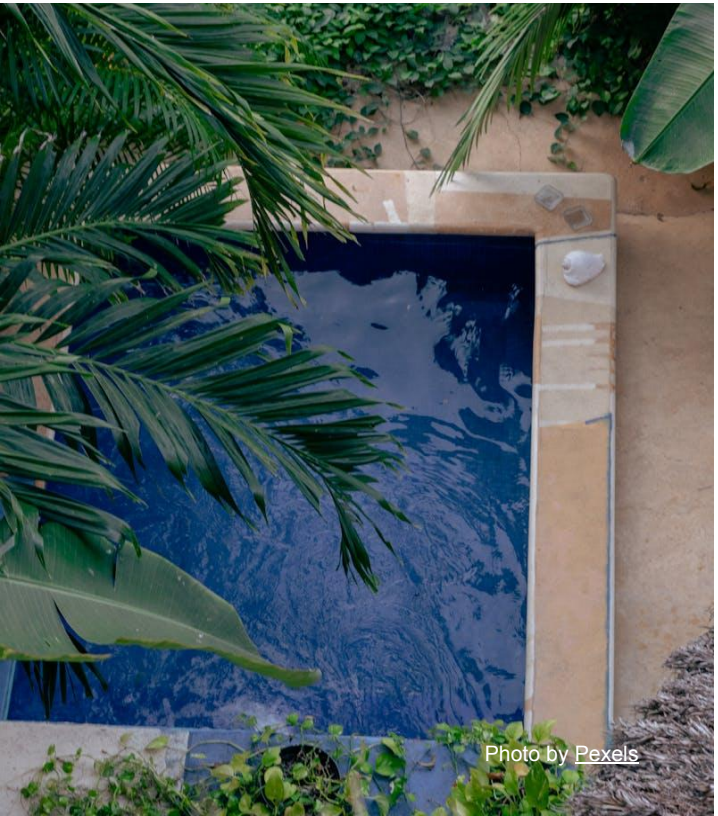

File Edit Selection View Go Run
pythonfile [Administrator]
EXPLORER
PYTHONFILE
~$Hotel_Reservation_Analysis_Repor...
generate_presentation.py
Hotel_Reservation_Analysis_Report.p...
test_mysql_connection.py
Welcome
test_mysql_connection.py
Hotel_Reservation_Analysis_Report.pptx
generate_presentation.py
generate_presentation.py > ...
'database': 'hotel_reservation',
}
# Establishing the connection
try:
conn = mysql.connector.connect(**db_config)
print("Connection to MySQL database was successful")
# SQL query to retrieve data from the table
query = "SELECT * FROM reservations"
# Load the data into a pandas DataFrame
df = pd.read_sql(query, conn)
print("Data loaded successfully")
# Close the connection
conn.close()
except mysql.connector.Error as err:
print(f"Error: {err}")
exit()
# Step 2: Perform basic analysis
total_bookings = len(df)
confirmed_bookings = df[df['booking_status'] == 'Confirmed'].shape[0]
canceled_bookings = df[df['booking_status'] == 'Canceled'].shape[0]
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
SEARCH ERROR
PermissionError: [Errno 13] Permission denied: 'Hotel_Reservation_Analysis_Report.pptx'
PS C:\Users\Dell\Desktop\pythonfile>
powershell
Python
Python: gen...
OUTLINE
TIMELINE



Key Findings :

The analysis highlights key findings and recommendations for hotel management:

- Understanding guest preferences can lead to tailored offerings and increased satisfaction.
- Identifying booking trends helps in resource management and enhancing the guest experience.
- Analyzing booking data improves operational efficiency and revenue management.
- Market segmentation insights aid in targeted marketing strategies.
- Revenue analysis informs dynamic pricing strategies.
- Evaluating booking cancellations helps in refining policies and stabilizing revenue streams.



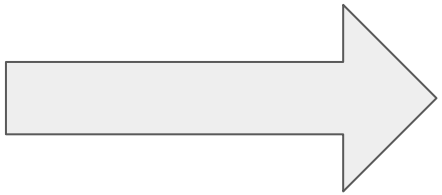
Recommendations:

Develop targeted marketing campaigns and personalize guest experiences.

- Implement dynamic pricing models and optimize operational planning.
- Review booking policies to reduce cancellation rates.

Value of Data Analysis:

- Data-driven decision-making improves operational efficiency, guest satisfaction, and revenue management.
- Understanding market dynamics provides a strategic advantage in a competitive market.
- Continual use of data analysis tools drives innovation and ensures responsiveness to changing market conditions and guest expectations, fostering sustainable growth and success.



Conclusions

The analysis indicates that data-driven insights are essential for optimizing hotel operations and enhancing guest experiences. Understanding booking trends and guest preferences can lead to more effective marketing strategies and improved customer satisfaction. SQL has proven to be an invaluable tool in extracting and analyzing large datasets to derive actionable insights.