

Hotel Reservation Analysis With SQL



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Hotel Reservation Analysis With SQL

Overview

- ✓ Using SQL to query and analyze provided hotel reservation data set.
- ✓ Extract insights of guest's preferences, hotel booking trend and operational factors.
- ✓ Provide actionable recommendation to improve guest experience and optimize hotels operations based on data findings.

Hotel Reservation Analysis With SQL

Data Set

- **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.

Hotel Reservation Analysis With SQL

Data Set

A	B	C	D	E	F	G	H	I	J	K	L
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_per_room	booking_status
INN00001	2	0	1	2	Meal Plan 1	Room_Type 1	224	2/10/2017	Offline	65	Not_Canceled
INN00002	2	0	2	3	Not Selected	Room_Type 1	5	6/11/2018	Online	106.68	Not_Canceled
INN00003	1	0	2	1	Meal Plan 1	Room_Type 1	1	28/02/2018	Online	60	Canceled
INN00004	2	0	0	2	Meal Plan 1	Room_Type 1	211	20/05/2018	Online	100	Canceled
INN00005	2	0	1	1	Not Selected	Room_Type 1	48	11/4/2018	Online	94.5	Canceled
INN00006	2	0	0	2	Meal Plan 2	Room_Type 1	346	13/09/2018	Online	115	Canceled
INN00007	2	0	1	3	Meal Plan 1	Room_Type 1	34	15/10/2017	Online	107.55	Not_Canceled
INN00008	2	0	1	3	Meal Plan 1	Room_Type 4	83	26/12/2018	Online	105.61	Not_Canceled
INN00009	3	0	0	4	Meal Plan 1	Room_Type 1	121	6/7/2018	Offline	96.9	Not_Canceled
INN00010	2	0	0	5	Meal Plan 1	Room_Type 4	44	18/10/2018	Online	133.44	Not_Canceled
INN00011	1	0	1	0	Not Selected	Room_Type 1	0	11/9/2018	Online	85.03	Not_Canceled
INN00012	1	0	2	1	Meal Plan 1	Room_Type 4	35	30/04/2018	Online	140.4	Not_Canceled
INN00013	2	0	2	1	Not Selected	Room_Type 1	30	26/11/2018	Online	88	Canceled
INN00014	1	0	2	0	Meal Plan 1	Room_Type 1	95	20/11/2018	Online	90	Canceled
INN00015	2	0	0	2	Meal Plan 1	Room_Type 1	47	20/10/2017	Online	94.5	Not_Canceled
INN00016	2	0	0	2	Meal Plan 2	Room_Type 1	256	15/06/2018	Online	115	Canceled
INN00017	1	0	1	0	Meal Plan 1	Room_Type 1	0	5/10/2017	Offline	96	Not_Canceled
INN00018	2	0	1	3	Not Selected	Room_Type 1	1	10/8/2017	Online	96	Not_Canceled
INN00019	2	0	2	2	Meal Plan 1	Room_Type 1	99	30/10/2017	Online	65	Canceled
INN00020	2	0	1	0	Meal Plan 1	Room_Type 1	12	4/10/2017	Offline	72	Not_Canceled
INN00021	2	0	2	2	Meal Plan 1	Room_Type 1	99	30/10/2017	Online	65	Canceled
INN00022	1	0	0	1	Meal Plan 1	Room_Type 1	122	25/11/2018	Corporate	67	Not_Canceled
INN00023	2	0	2	4	Meal Plan 1	Room_Type 1	2	20/03/2018	Offline	85	Not_Canceled
INN00024	2	0	0	3	Meal Plan 1	Room_Type 1	37	13/10/2018	Offline	105	Not_Canceled
INN00025	2	0	2	1	Not Selected	Room_Type 1	130	22/05/2018	Online	94.5	Not_Canceled
INN00026	2	0	0	2	Meal Plan 1	Room_Type 1	99	28/04/2018	Online	114.3	Not_Canceled
INN00027	2	0	1	1	Meal Plan 1	Room_Type 1	60	21/09/2017	Offline	65	Not_Canceled

Hotel Reservation Analysis With SQL

Data Base

```
master | Execute | SQLQuery3.sql - DE...JRA4U0V\DeII (70))* | SQLQuery2.sql - DE...JRA4U0V\DeII (51))* | SQLQuery1.sql - DE...JRA4U0V\DeII (72))*  
  
use master  
create database Mentorness;  
go  
  
use Mentorness;  
go  
  
Create Table Resv_Dtl (  
Booking_ID varchar(10),  
no_of_adults integer default 0,  
no_of_children integer default 0,  
no_of_weekend_nights integer default 0,  
no_of_week_nights integer default 0,  
type_of_meal_plan varchar(15),  
room_type_reserved varchar(15),  
lead_time integer default 0,  
arrival_date Date,  
market_segment_type varchar(15),  
avg_price_per_room Numeric(10,2) default 0,  
booking_status varchar(15)  
);
```



Hotel Reservation Analysis With SQL

Data

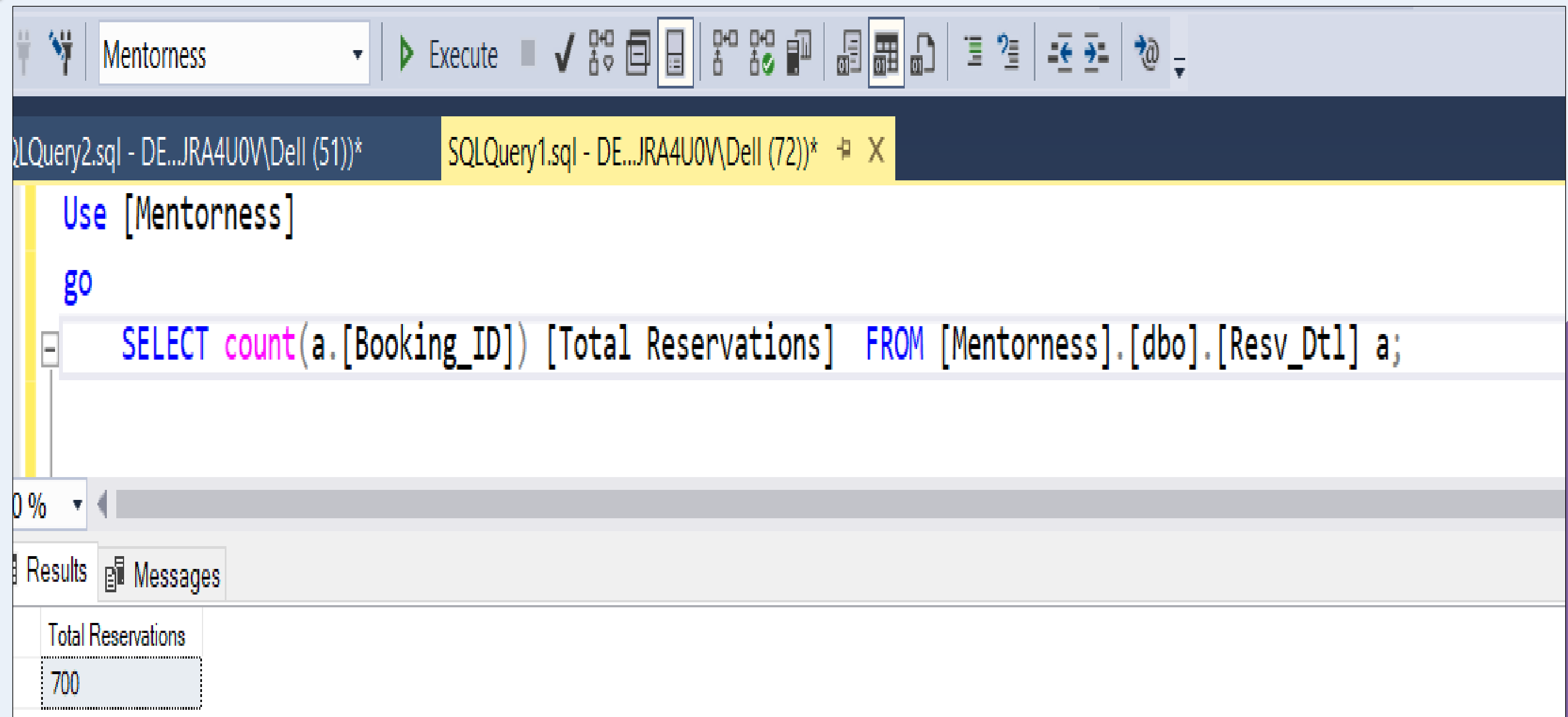
Mentor Ness												
Execute												
SQLQuery3.sql - DE...JRA4U0V\DeI (70))* SQLQuery2.sql - DE...JRA4U0V\DeI (51))* SQLQuery1.sql - DE...JRA4U0V\DeI (72))*												
Use [Mentor ness]												
go												
database Mentor ness												
SELECT												
a.[type_of_meal_plan],a.[room_type_reserved],a.[market_segment_type]												
,a.[booking_status],a.[Booking_ID],a.[no_of_adults],a.[no_of_children]												
,a.[no_of_weekend_nights],a.[no_of_week_nights],a.[lead_time]												
,a.[arrival_date],a.[avg_price_per_room]												
FROM [Mentor ness].[dbo].[Resv_Dtl] a;												
Results Messages												
	type_of_meal_plan	room_type_reserved	market_segment_type	booking_status	Booking_ID	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	lead_time	arrival_date	avg_price_per_room
1	Meal Plan 1	Room_Type 1	Offline	Not_Canceled	INN00001	2	0	1	2	224	2017-10-02	65.00
2	Not Selected	Room_Type 1	Online	Not_Canceled	INN00002	2	0	2	3	5	2018-11-06	106.68
3	Meal Plan 1	Room_Type 1	Online	Canceled	INN00003	1	0	2	1	1	2018-02-28	60.00
4	Meal Plan 1	Room_Type 1	Online	Canceled	INN00004	2	0	0	2	211	2018-05-20	100.00
5	Not Selected	Room_Type 1	Online	Canceled	INN00005	2	0	1	1	48	2018-04-11	94.50
6	Meal Plan 2	Room_Type 1	Online	Canceled	INN00006	2	0	0	2	346	2018-09-13	115.00
7	Meal Plan 1	Room_Type 1	Online	Not_Canceled	INN00007	2	0	1	3	34	2017-10-15	107.55
8	Meal Plan 1	Room_Type 4	Online	Not_Canceled	INN00008	2	0	1	3	83	2018-12-26	105.61
9	Meal Plan 1	Room_Type 1	Offline	Not_Canceled	INN00009	3	0	0	4	121	2018-07-06	96.90
10	Meal Plan 1	Room_Type 4	Online	Not_Canceled	INN00010	2	0	0	5	44	2018-10-18	133.44
11	Not Selected	Room_Type 1	Online	Not_Canceled	INN00011	1	0	1	0	0	2018-09-11	85.03
12	Meal Plan 1	Room_Type 4	Online	Not_Canceled	INN00012	1	0	2	1	35	2018-04-30	140.40
13	Not Selected	Room_Type 1	Online	Canceled	INN00013	2	0	2	1	30	2018-11-26	88.00
14	Meal Plan 1	Room_Type 1	Online	Canceled	INN00014	1	0	2	0	95	2018-11-20	90.00
15	Meal Plan 1	Room_Type 1	Online	Not_Canceled	INN00015	2	0	0	2	47	2017-10-20	94.50
16	Meal Plan 2	Room_Type 1	Online	Canceled	INN00016	2	0	0	2	256	2018-06-15	115.00
17	Meal Plan 1	Room_Type 1	Offline	Not_Canceled	INN00017	1	0	1	0	0	2017-10-05	96.00
18	Not Selected	Room_Type 1	Online	Not_Canceled	INN00018	2	0	1	3	1	2017-08-10	96.00
19	Meal Plan 1	Room_Type 1	Online	Canceled	INN00019	2	0	2	2	99	2017-10-30	65.00
20	Meal Plan 1	Room_Type 1	Offline	Not_Canceled	INN00020	2	0	1	0	12	2017-10-04	72.00
21	Meal Plan 1	Room_Type 1	Online	Canceled	INN00021	2	0	2	2	99	2017-10-30	65.00
22	Meal Plan 1	Room_Type 1	Corporate	Not_Canceled	INN00022	1	0	0	1	122	2018-11-25	67.00
23	Meal Plan 1	Room_Type 1	Offline	Not_Canceled	INN00023	2	0	2	4	2	2018-03-20	85.00
24	Meal Plan 1	Room_Type 1	Offline	Not_Canceled	INN00024	2	0	0	3	37	2018-10-13	105.00
25	Not Selected	Room_Type 1	Online	Not_Canceled	INN00025	2	0	2	1	130	2018-05-22	94.50
Query executed successfully.												
DESKTOP-JRA4U0V\MYSQLDATA (... DESKTOP-JRA4U0V\												

Name: Sanjay N. Ingawale

Hotel Reservation Analysis With SQL

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

Q-1



The screenshot shows the SQL Server Enterprise Manager interface. The 'SQLQuery1.sql' tab is active, displaying the following SQL query:

```
Use [Mentorness]
go
SELECT count(a.[Booking_ID]) [Total Reservations] FROM [Mentorness].[dbo].[Resv_Dtl] a;
```

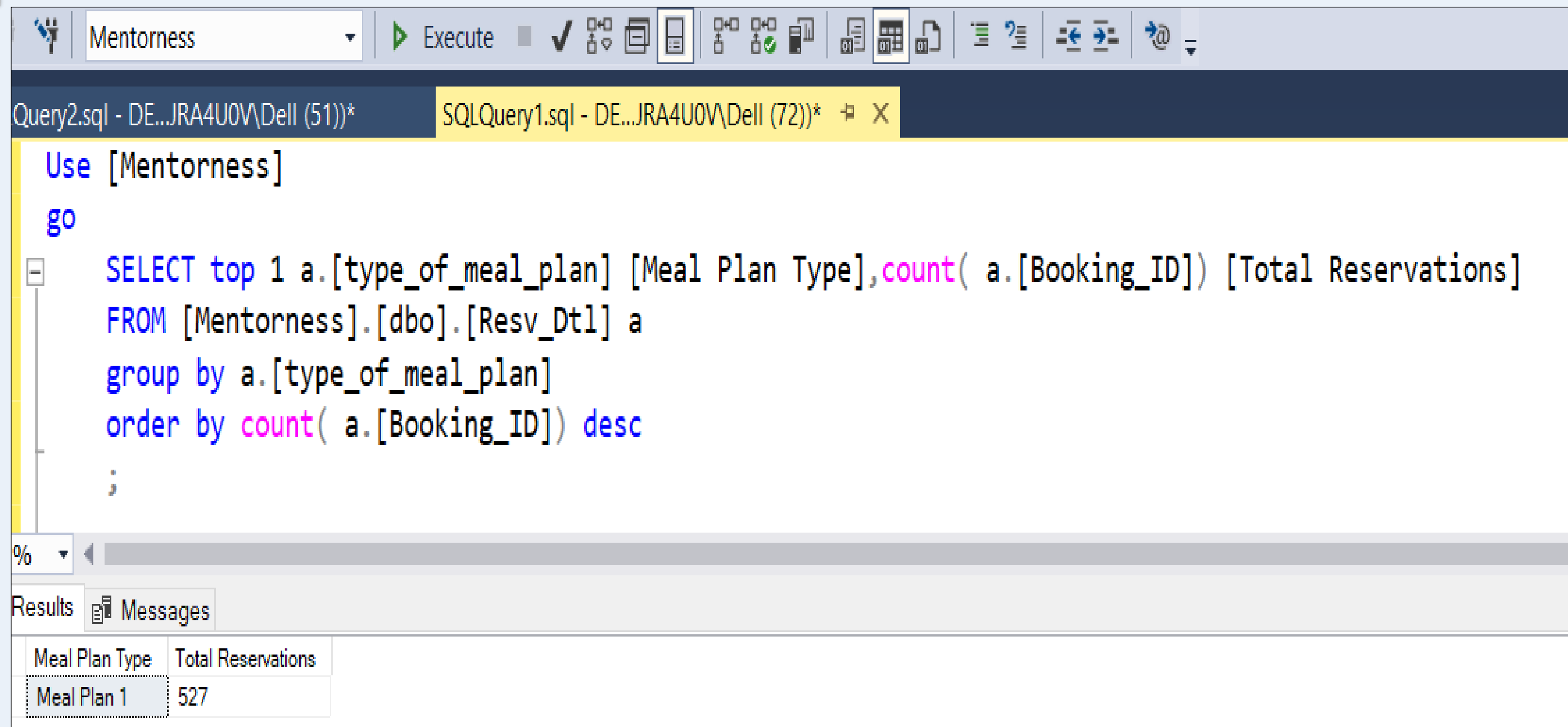
The query has been executed, and the results are shown in the 'Results' pane at the bottom. The results pane displays a single row with the column 'Total Reservations' and the value '700'.

Total Reservations
700

Hotel Reservation Analysis With SQL

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

Q-2



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes icons for connecting, executing, and saving queries. The main window displays a query in the 'SQLQuery1.sql' file. The query is as follows:

```
Use [Mentorness]
go
SELECT top 1 a.[type_of_meal_plan] [Meal Plan Type],count( a.[Booking_ID]) [Total Reservations]
FROM [Mentorness].[dbo].[Resv_Dtl] a
group by a.[type_of_meal_plan]
order by count( a.[Booking_ID]) desc
;
```

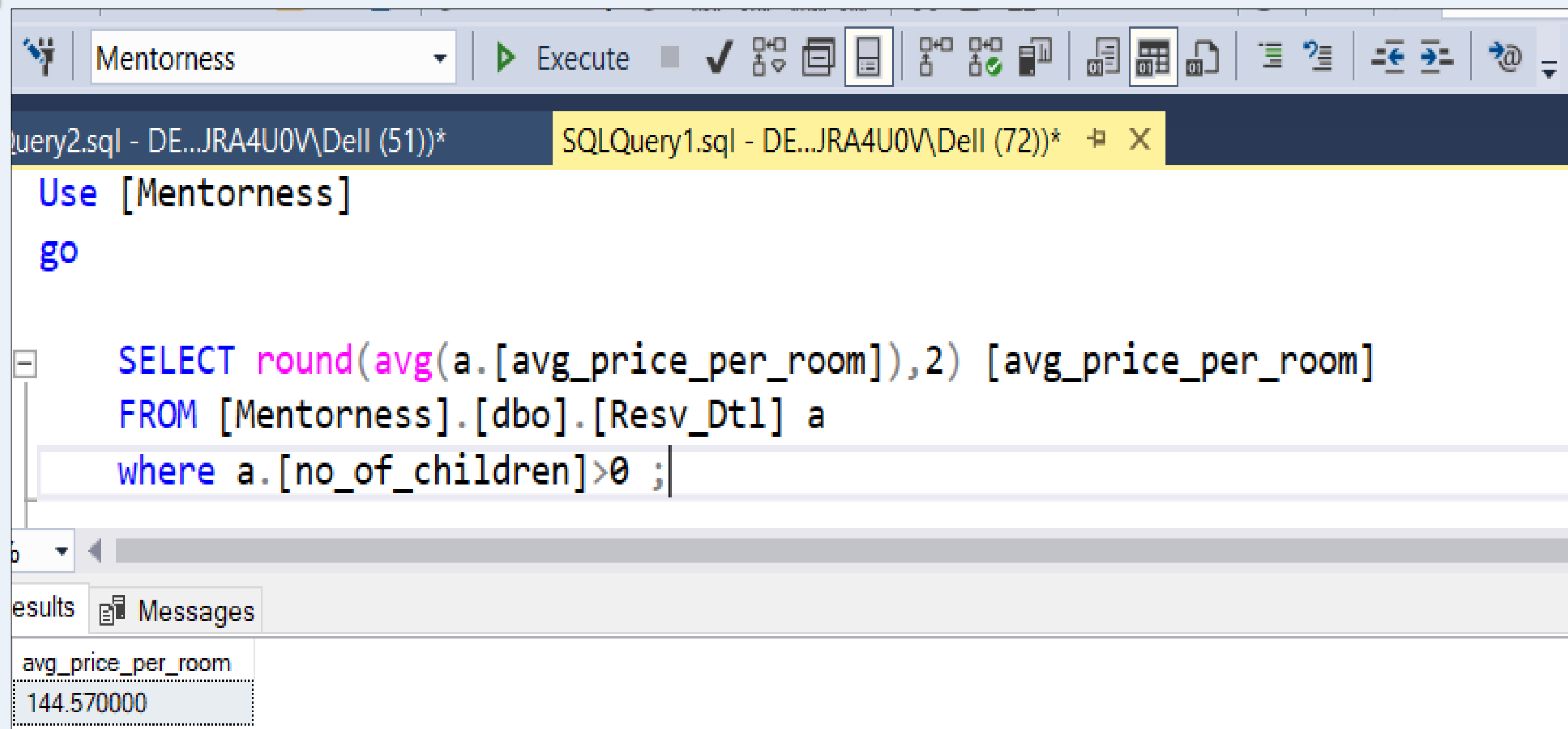
Below the query editor, the 'Results' tab is active, showing a single row of data:

Meal Plan Type	Total Reservations
Meal Plan 1	527

Hotel Reservation Analysis With SQL

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

Q-3



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes an 'Execute' button (a green play icon). Below the toolbar, there are two tabs: 'query2.sql - DE...JRA4U0V\DeII (51))*' and 'SQLQuery1.sql - DE...JRA4U0V\DeII (72))*'. The active tab shows the following SQL query:

```
Use [Mentorness]
go

SELECT round(avg(a.[avg_price_per_room]),2) [avg_price_per_room]
FROM [Mentorness].[dbo].[Resv_Dtl] a
where a.[no_of_children]>0 ;
```

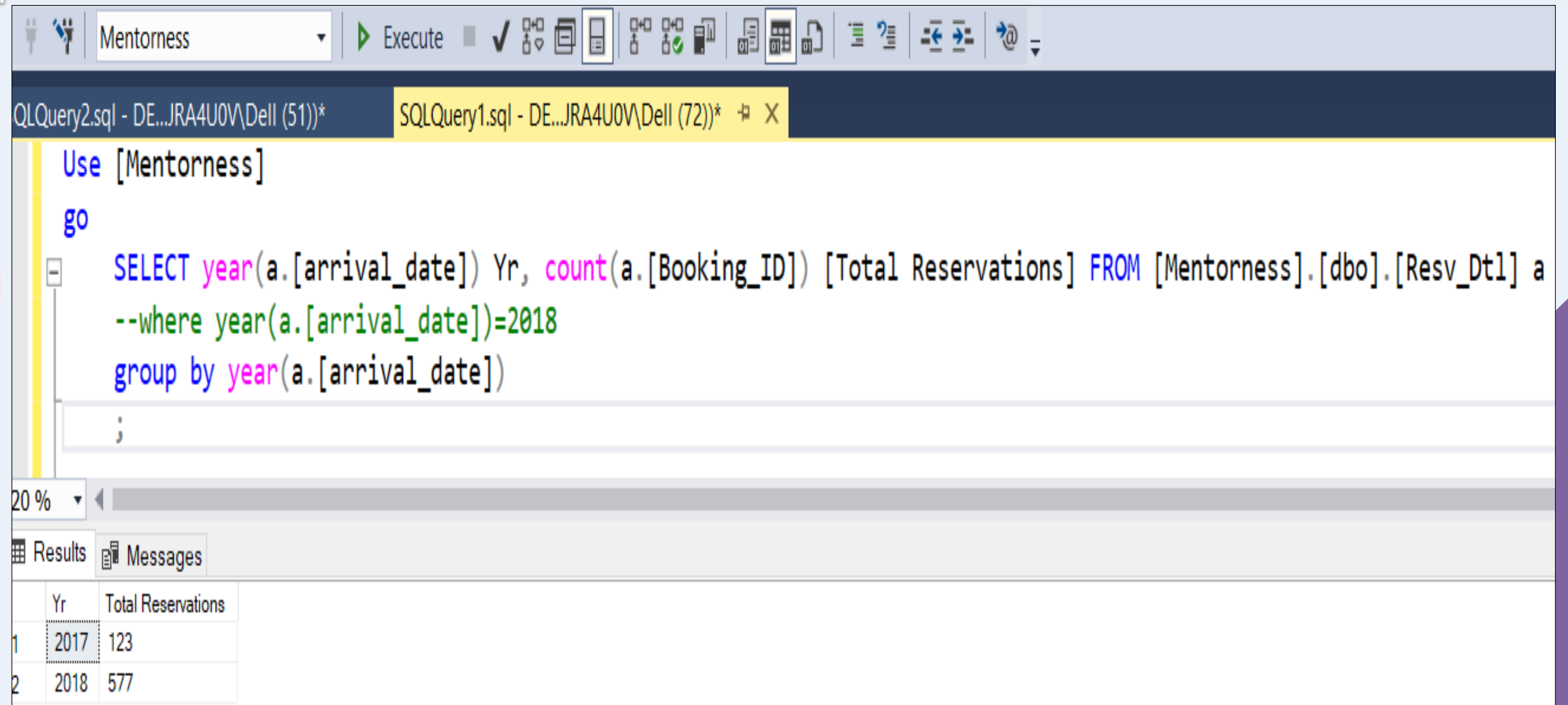
Below the query editor, there are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a single row of data:

avg_price_per_room
144.570000

Hotel Reservation Analysis With SQL

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

Q-4



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes icons for connecting, executing, and saving queries. The main window displays a query in the 'SQLQuery1.sql' file. The query is as follows:

```
Use [Mentor ness]
go
SELECT year(a.[arrival_date]) Yr, count(a.[Booking_ID]) [Total Reservations] FROM [Mentor ness].[dbo].[Resv_Dtl] a
--where year(a.[arrival_date])=2018
group by year(a.[arrival_date])
;
```

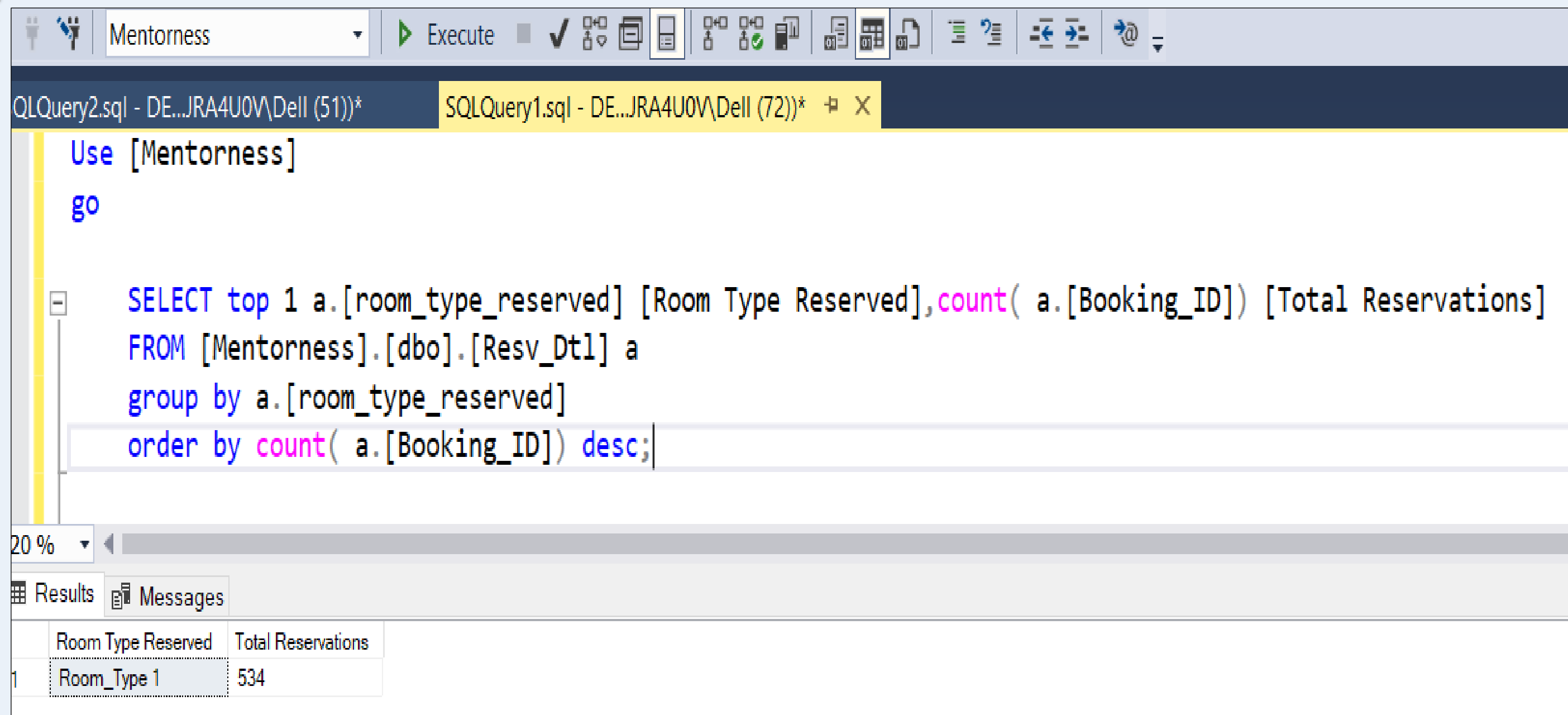
Below the query editor, the 'Results' tab is active, showing the output of the query. The results are displayed in a table with two columns: 'Yr' and 'Total Reservations'.

	Yr	Total Reservations
1	2017	123
2	2018	577

Hotel Reservation Analysis With SQL

5. *What is the most commonly booked room type?*

Q-5



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes buttons for 'Execute', 'Check for Syntax', 'Format', 'Save', 'Print', 'Copy', 'Paste', 'Find', 'Find Next', 'Find Previous', 'Find All', 'Find in Files', 'Find in Object Explorer', 'Find in Results', 'Find in Messages', 'Find in SQL Server', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager', 'Find in SQL Server Enterprise Manager'. The main query editor shows the following SQL code:

```
Use [Mentorness]
go

SELECT top 1 a.[room_type_reserved] [Room Type Reserved],count( a.[Booking_ID]) [Total Reservations]
FROM [Mentorness].[dbo].[Resv_Dtl] a
group by a.[room_type_reserved]
order by count( a.[Booking_ID]) desc;
```

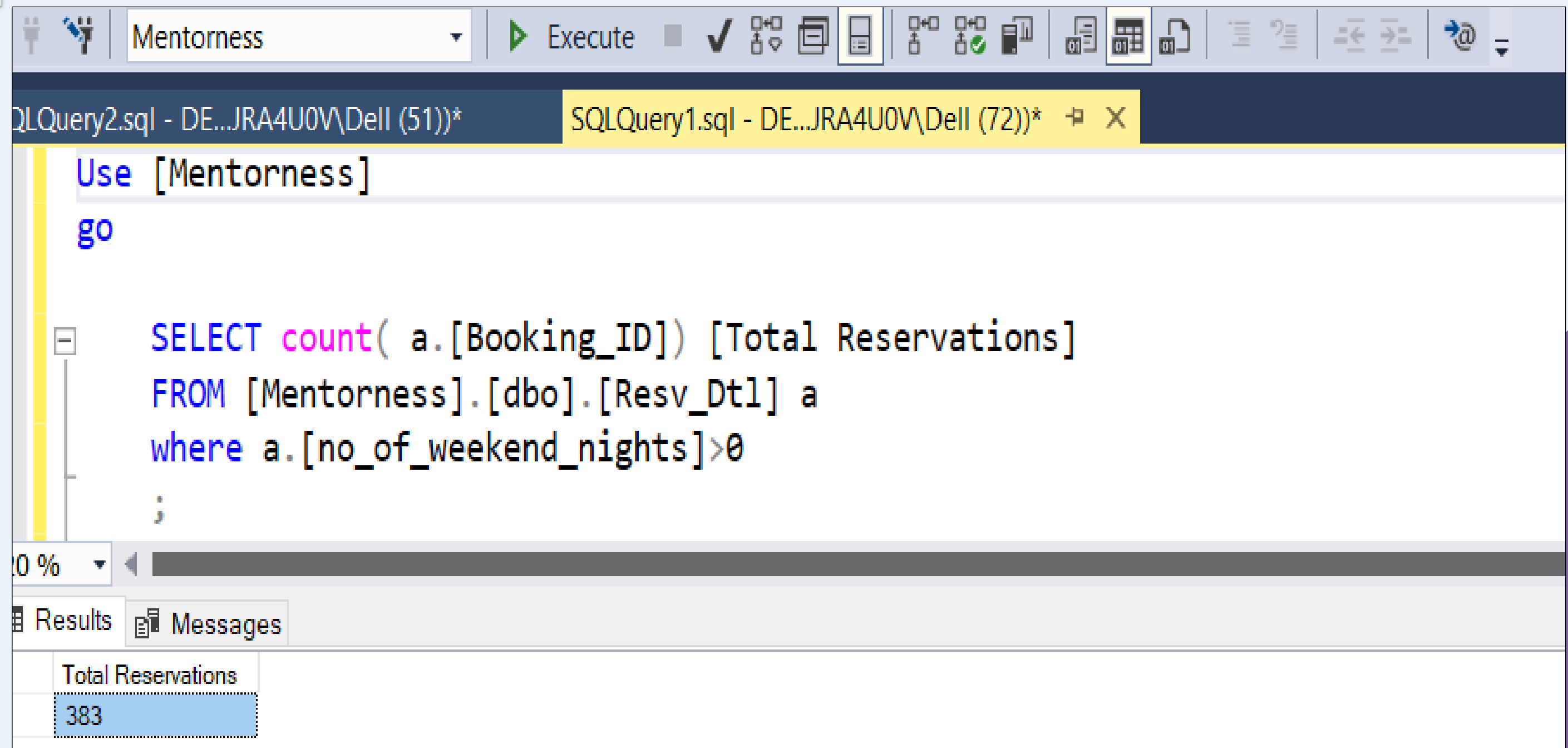
The bottom pane shows the 'Results' tab with the following data:

Room Type Reserved	Total Reservations
Room_Type 1	534

Hotel Reservation Analysis With SQL

6. How many reservations fall on a weekend ($\text{no_of_weekend_nights} > 0$)?

Q-6



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes icons for connecting, executing, and saving. The main window displays a query in the 'SQLQuery1.sql' file. The query is as follows:

```
Use [Mentorness]
go

SELECT count( a.[Booking_ID]) [Total Reservations]
FROM [Mentorness].[dbo].[Resv_Dtl] a
where a.[no_of_weekend_nights]>0
;
```

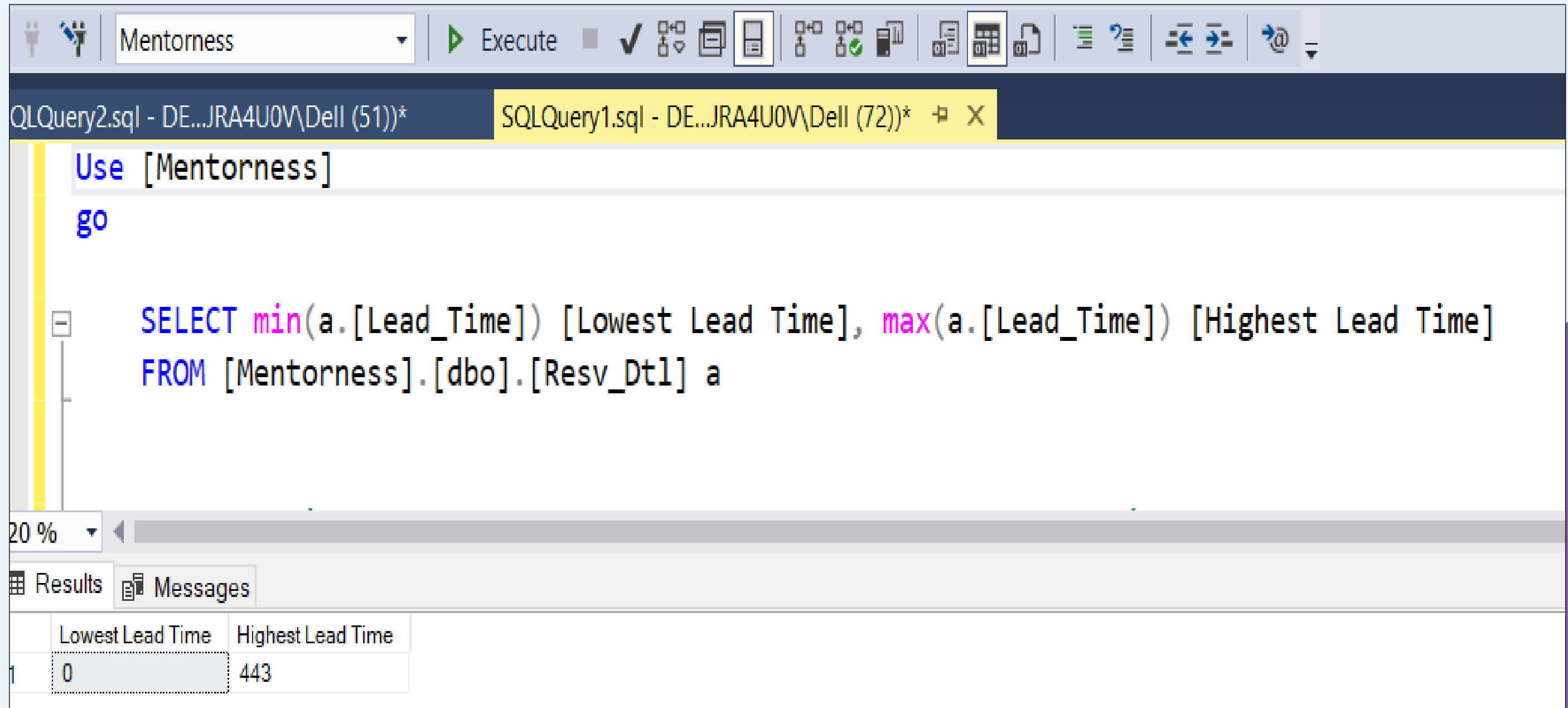
Below the query editor, the 'Results' tab is active, showing a single row of data:

Total Reservations
383

Hotel Reservation Analysis With SQL

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

Q-7



SQLQuery1.sql - DE...JRA4U0V\DeII (72))*

```
Use [Mentorless]
go

SELECT min(a.[Lead_Time]) [Lowest Lead Time], max(a.[Lead_Time]) [Highest Lead Time]
FROM [Mentorless].[dbo].[Resv_Dtl] a
```

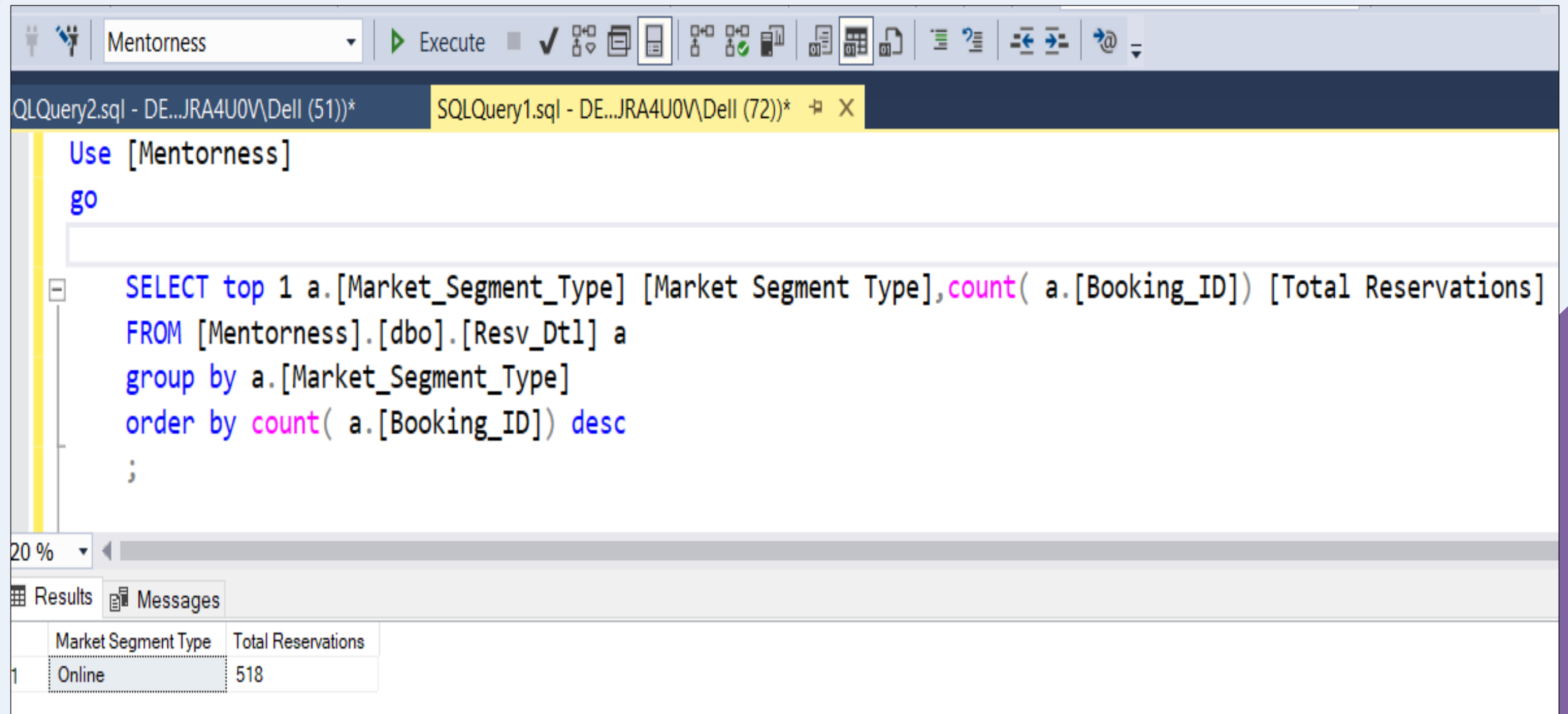
Results

	Lowest Lead Time	Highest Lead Time
1	0	443

Hotel Reservation Analysis With SQL

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

Q-8



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes buttons for 'Execute', 'Check', 'Save', 'Print', 'Refresh', 'Stop', 'Help', 'Find', 'Go To', 'Zoom In', 'Zoom Out', and 'Full Screen'. Below the toolbar, there are two tabs: 'QLQuery2.sql - DE...JRA4U0V\ Dell (51)*' and 'SQLQuery1.sql - DE...JRA4U0V\ Dell (72)*'. The active tab shows the following SQL query:

```
Use [Mentorness]
go

SELECT top 1 a.[Market_Segment_Type] [Market Segment Type],count( a.[Booking_ID]) [Total Reservations]
FROM [Mentorness].[dbo].[Resv_Dt1] a
group by a.[Market_Segment_Type]
order by count( a.[Booking_ID]) desc
;
```

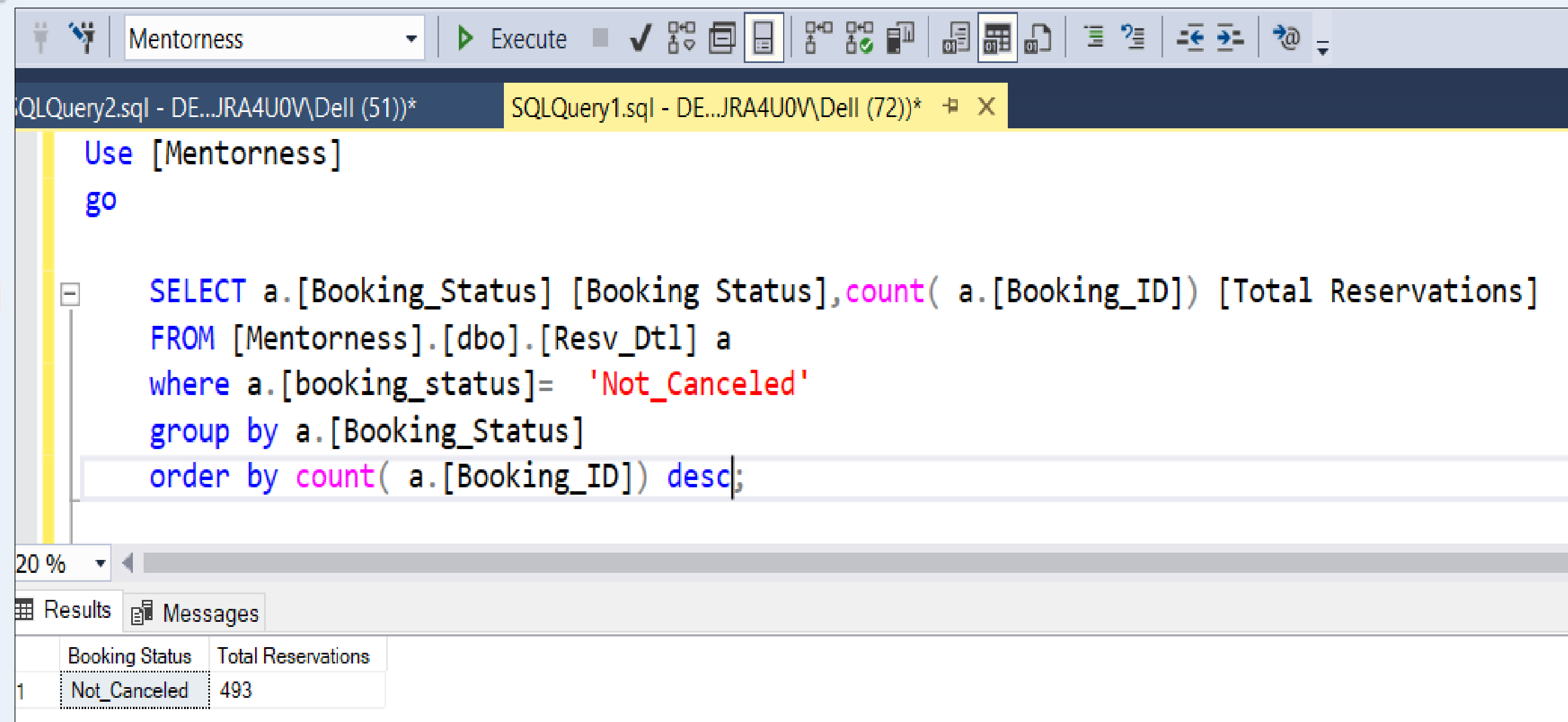
Below the query editor, there is a 'Results' tab and a 'Messages' tab. The 'Results' tab is active, showing a table with two columns: 'Market Segment Type' and 'Total Reservations'. The table contains one row with the value 'Online' for 'Market Segment Type' and '518' for 'Total Reservations'.

Market Segment Type	Total Reservations
Online	518

Hotel Reservation Analysis With SQL

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

Q-9



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes icons for connecting, executing, and viewing results. The query editor displays the following SQL code:

```
Use [Mentorness]
go

SELECT a.[Booking_Status] [Booking Status],count( a.[Booking_ID]) [Total Reservations]
FROM [Mentorness].[dbo].[Resv_Dtl] a
where a.[booking_status]= 'Not_Canceled'
group by a.[Booking_Status]
order by count( a.[Booking_ID]) desc;
```

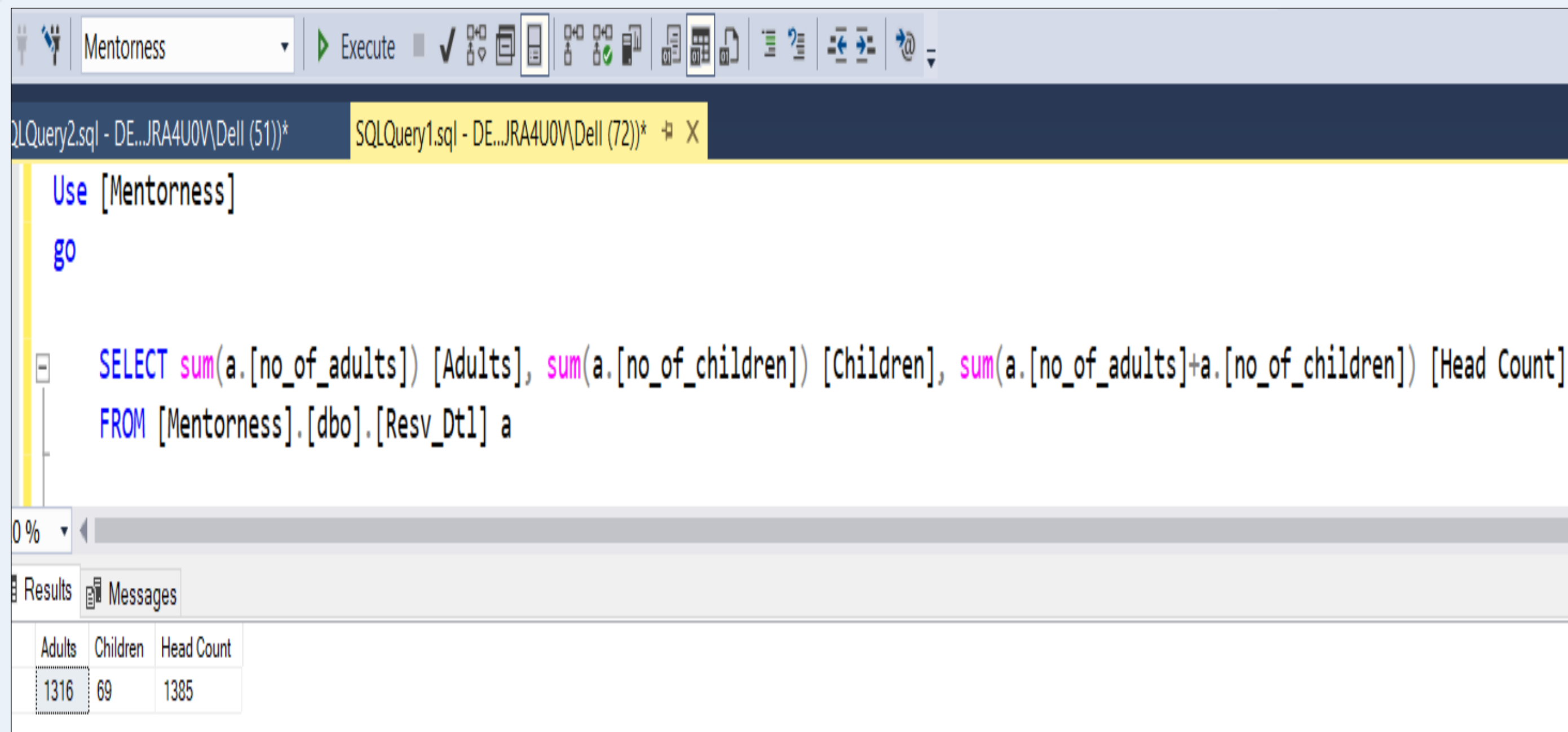
Below the query editor, the 'Results' tab is active, showing a single row of data:

	Booking Status	Total Reservations
1	Not_Canceled	493

Hotel Reservation Analysis With SQL

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

Q-10



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes a dropdown menu set to 'Mentorness', an 'Execute' button, and various icons for saving, refreshing, and other database operations. Below the toolbar, there are two tabs: 'SQLQuery2.sql - DE...JRA4U0V\ Dell (51))*' and 'SQLQuery1.sql - DE...JRA4U0V\ Dell (72))*'. The active tab shows the following SQL query:

```
Use [Mentorness]
go

SELECT sum(a.[no_of_adults]) [Adults], sum(a.[no_of_children]) [Children], sum(a.[no_of_adults]+a.[no_of_children]) [Head Count]
FROM [Mentorness].[dbo].[Resv_Dtl] a
```

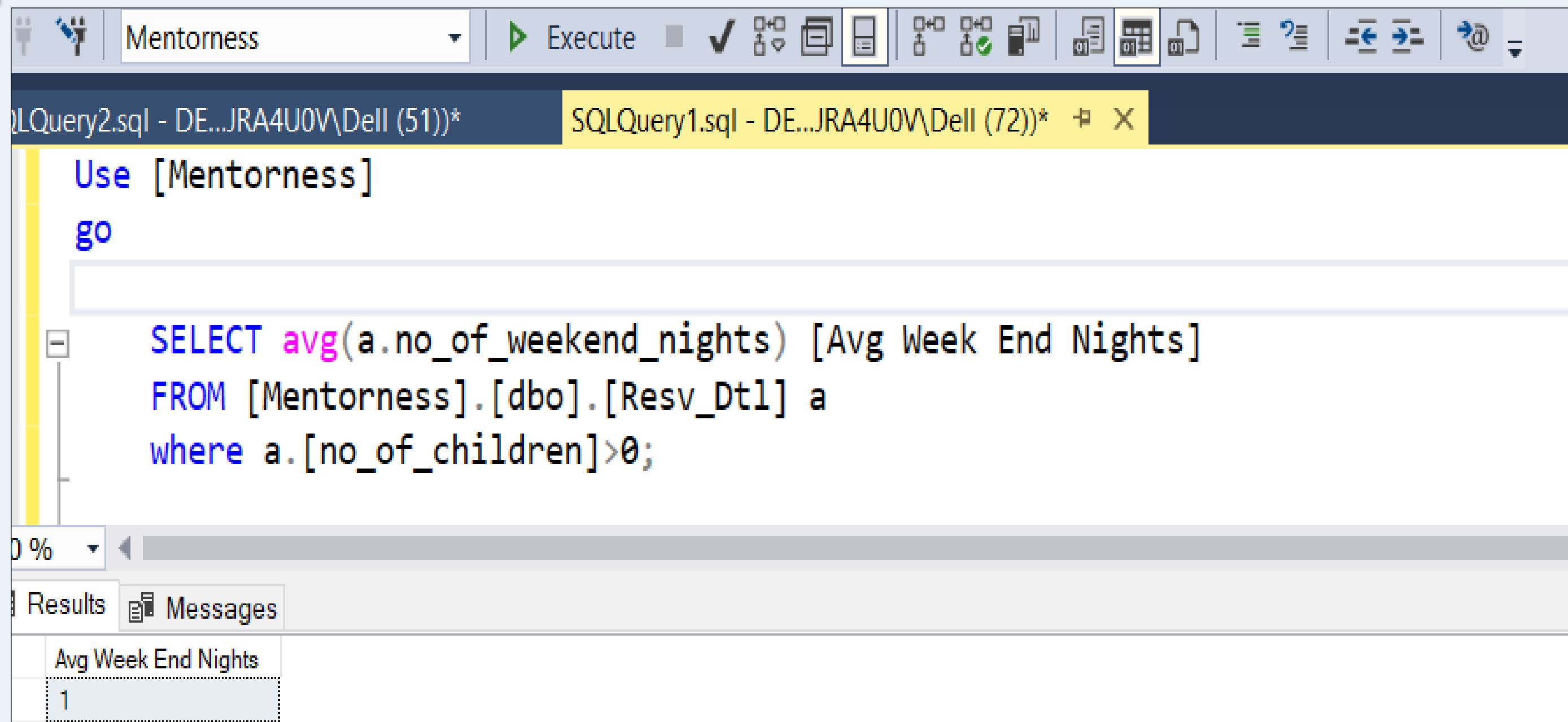
Below the query editor, there is a 'Results' tab and a 'Messages' tab. The 'Results' tab is active, displaying a table with the following data:

Adults	Children	Head Count
1316	69	1385

Hotel Reservation Analysis With SQL

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

Q-11



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes buttons for 'Execute', 'Check', 'Copy', 'Paste', 'Print', 'Save', 'Find', 'Help', 'Zoom In', 'Zoom Out', and 'Refresh'. Below the toolbar, there are two tabs: 'SQLQuery2.sql - DE...JRA4U0V\De11 (51))*' and 'SQLQuery1.sql - DE...JRA4U0V\De11 (72))*'. The active tab shows the following SQL query:

```
Use [Mentorness]
go

SELECT avg(a.no_of_weekend_nights) [Avg Week End Nights]
FROM [Mentorness].[dbo].[Resv_Dt1] a
where a.[no_of_children]>0;
```

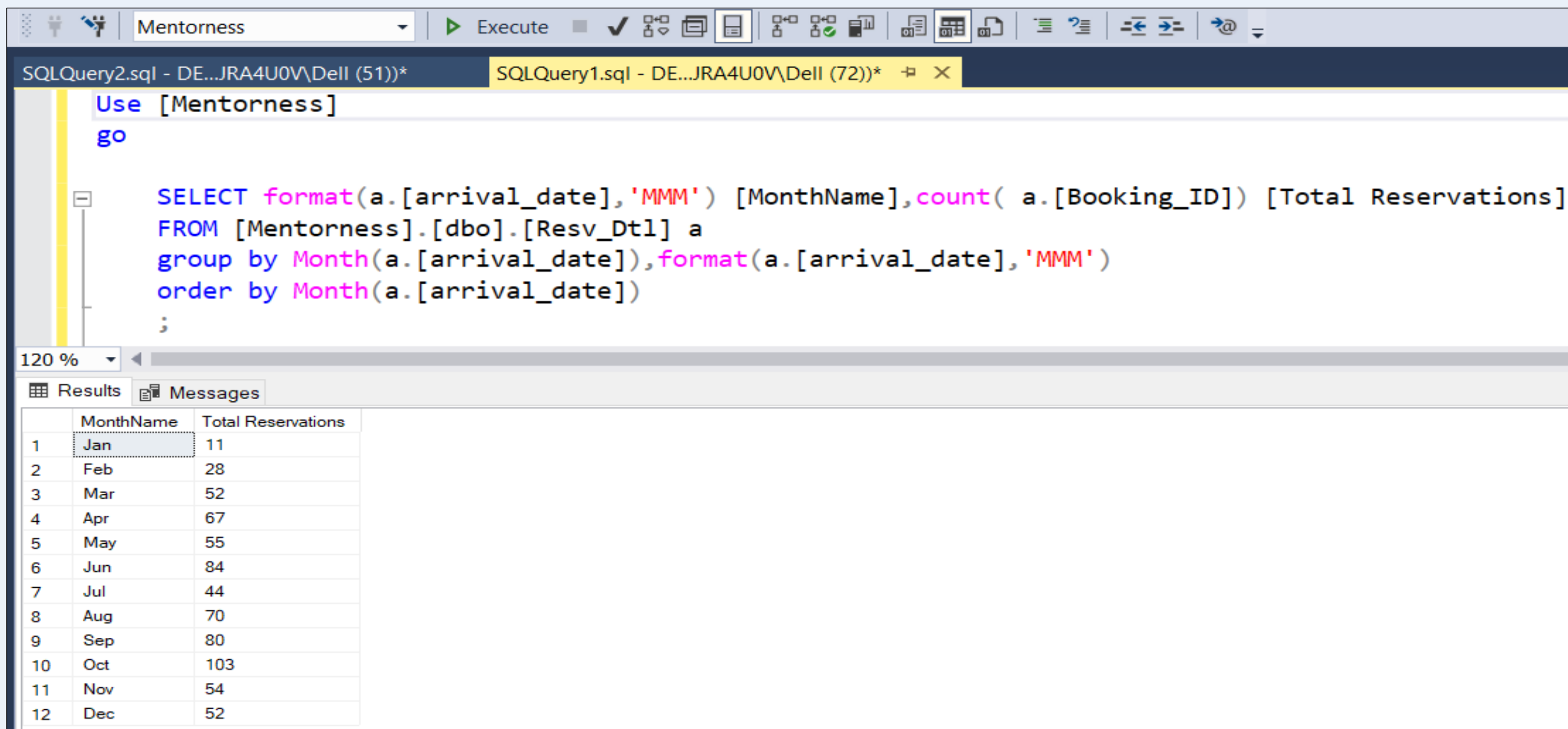
Below the query editor, there are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a single row of data:

Avg Week End Nights
1

Hotel Reservation Analysis With SQL

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

Q-12



The screenshot shows a SQL Server Enterprise Manager window with the 'MentorNess' database selected. The 'SQLQuery1.sql' file is open, displaying the following SQL query:

```
Use [MentorNess]
go

SELECT format(a.[arrival_date], 'MMM') [MonthName], count( a.[Booking_ID]) [Total Reservations]
FROM [MentorNess].[dbo].[Resv_Dtl] a
group by Month(a.[arrival_date]), format(a.[arrival_date], 'MMM')
order by Month(a.[arrival_date])
;
```

The 'Results' tab is active, showing the output of the query as a table with two columns: 'MonthName' and 'Total Reservations'. The results are as follows:

	MonthName	Total Reservations
1	Jan	11
2	Feb	28
3	Mar	52
4	Apr	67
5	May	55
6	Jun	84
7	Jul	44
8	Aug	70
9	Sep	80
10	Oct	103
11	Nov	54
12	Dec	52

Hotel Reservation Analysis With SQL

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

Q-13

Mentorless

Execute

SQLQuery2.sql - DE...JRA4U0V\DeII (51)* SQLQuery1.sql - DE...JRA4U0V\DeII (72)*

```

Use [Mentorless]
go

SELECT a.[room_type_reserved] [Room Type], isnull(avg(a.no_of_weekend_nights),0) [Avg Week End Nights]
, isnull(avg(a.no_of_week_nights),0) [Avg Week Nights]
FROM [Mentorless].[dbo].[Resv_Dtl] a
group by a.[room_type_reserved];
  
```

120 %

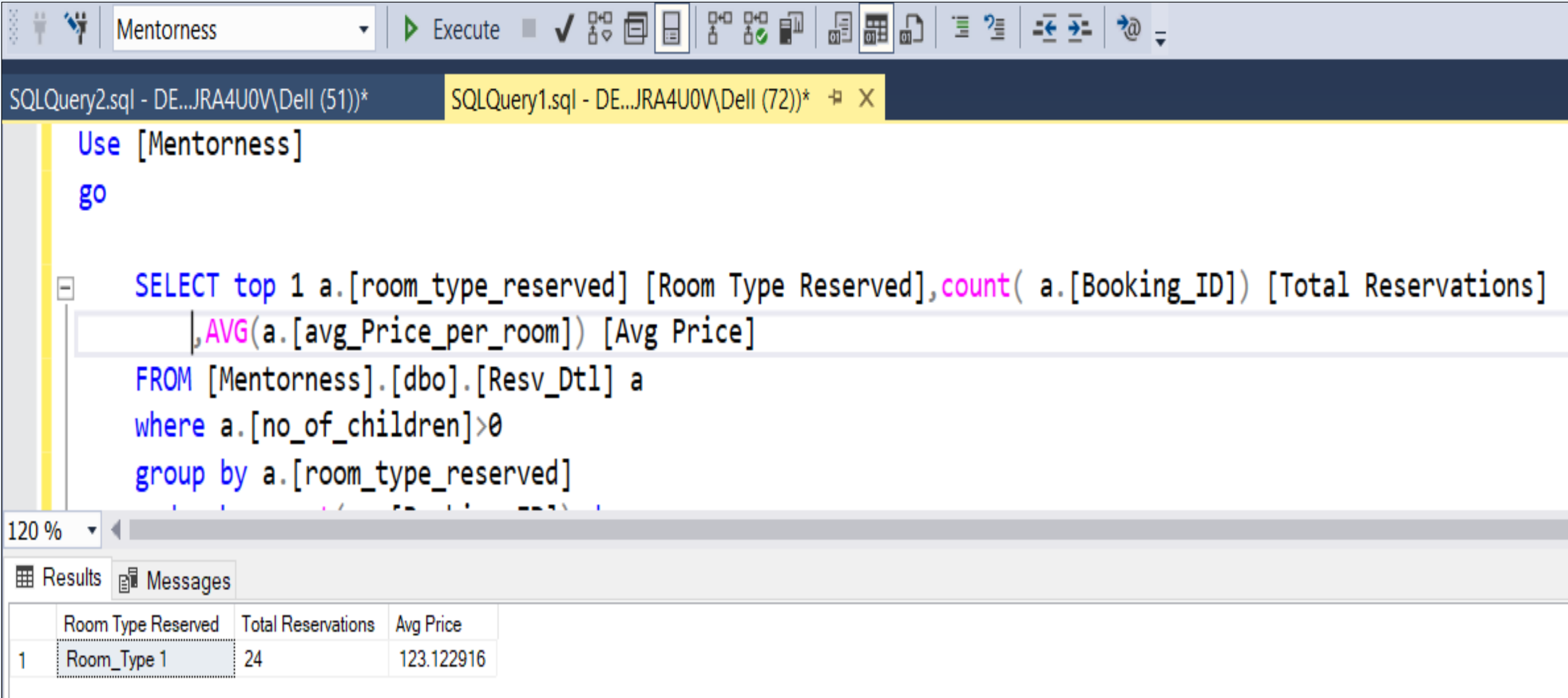
Results Messages

	Room Type	Avg Week End Nights	Avg Week Nights
1	Room_Type 1	0	2
2	Room_Type 2	1	2
3	Room_Type 4	1	2
4	Room_Type 5	0	2
5	Room_Type 6	1	2
6	Room_Type 7	1	1

Hotel Reservation Analysis With SQL

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

Q-14



The screenshot shows the SQL Server Enterprise Manager interface. The top toolbar includes icons for connecting, executing, and saving queries. Below the toolbar, two query windows are open: 'SQLQuery2.sql - DE...JRA4U0V\DeII (51))*' and 'SQLQuery1.sql - DE...JRA4U0V\DeII (72))*'. The active window displays the following SQL query:

```
Use [Mentorness]
go

SELECT top 1 a.[room_type_reserved] [Room Type Reserved],count( a.[Booking_ID]) [Total Reservations]
,AVG(a.[avg_Price_per_room]) [Avg Price]
FROM [Mentorness].[dbo].[Resv_Dtl] a
where a.[no_of_children]>0
group by a.[room_type_reserved]
```

Below the query editor, the 'Results' tab is selected, showing a table with the following data:

	Room Type Reserved	Total Reservations	Avg Price
1	Room_Type 1	24	123.122916

Hotel Reservation Analysis With SQL

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

Q-15

SQLQuery2.sql - DE...JRA4U0V\ Dell (51))* SQLQuery1.sql - DE...JRA4U0V\ Dell (72))*

Use [Mentor ness]
go

```
SELECT top 1 a.[market_segment_type] [Market Segment Type], sum(a.[avg_Price_per_room]) [Avg Price]
FROM [Mentor ness].[dbo].[Resv_Dtl] a
group by a.[market_segment_type]
order by sum(a.[avg_Price_per_room]) desc;
```

120 %

Results Messages

	Room Type Reserved	Total Reservations	Avg Price
1	Room_Type 1	24	123.122916

Hotel Reservation Analysis With SQL

Insights & Recommendations

- ❖ Based on the analysis of the hotel reservation dataset, it's evident that MEAL plan 1 is the most ordered among guests.
 - ❖ Improving feedback collection, customizing the menu to suit guests' tastes, and adjusting prices strategically will make people like MEAL plan 1 even more.
 - ❖ Using online ads can help attract more guests to choose MEAL plan 1.
-
- ❖ The most booked room type is Room 1. However, there exists a significant variation in the booking trends across other types of rooms. This variance indicates an opportunity to implement effective measures aimed at increasing the booking rates of other room types as well.
 - ❖ Understanding what guests like about the popular rooms can help hotels make the other rooms more appealing to guests too.&
-
- ❖ Insights suggest that guests prefer online booking due to its convenience, accessibility.
 - ❖ Hotels can use this information to focus more on promoting their services online, improve their websites for booking, and offer special deals to make people want to book online even more.

Hotel Reservation Analysis With SQL

Thanks !!

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