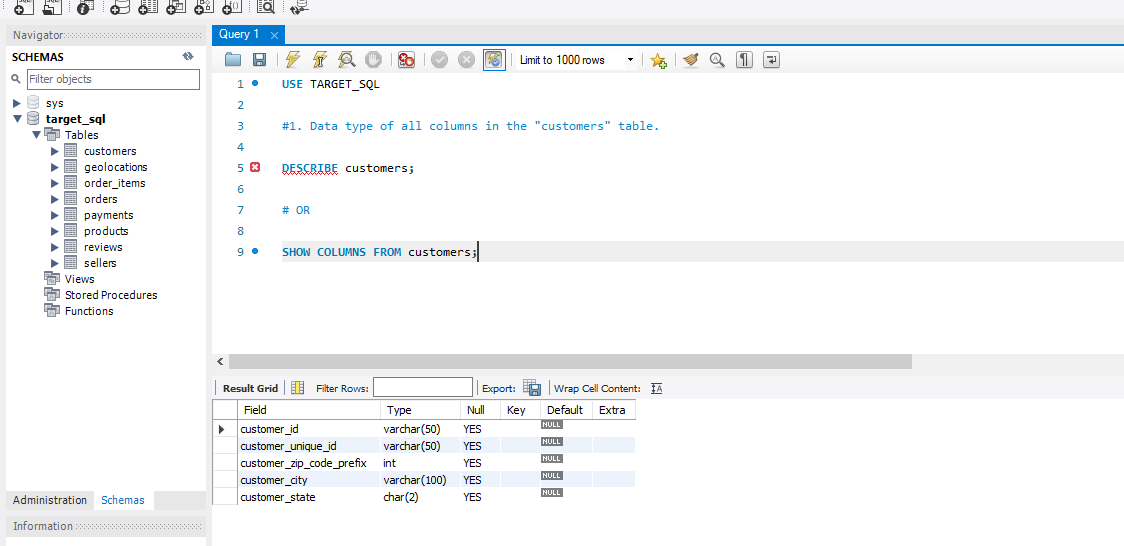
**Problem Statement:**

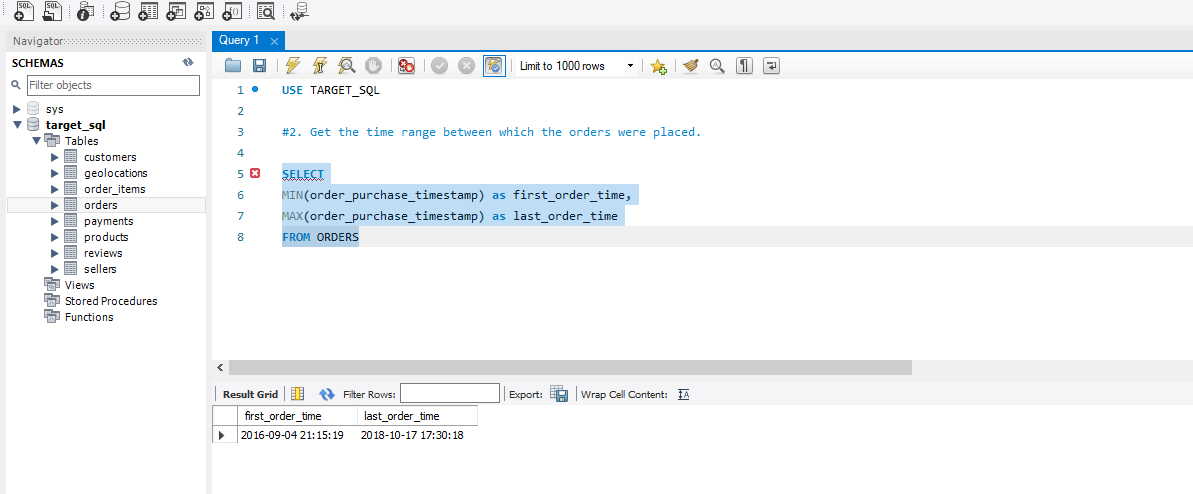
Assuming you are a data analyst/ scientist at Target, you have been assigned the task of analyzing the given dataset to extract valuable insights and provide actionable recommendations.

**What does 'good' look like?**

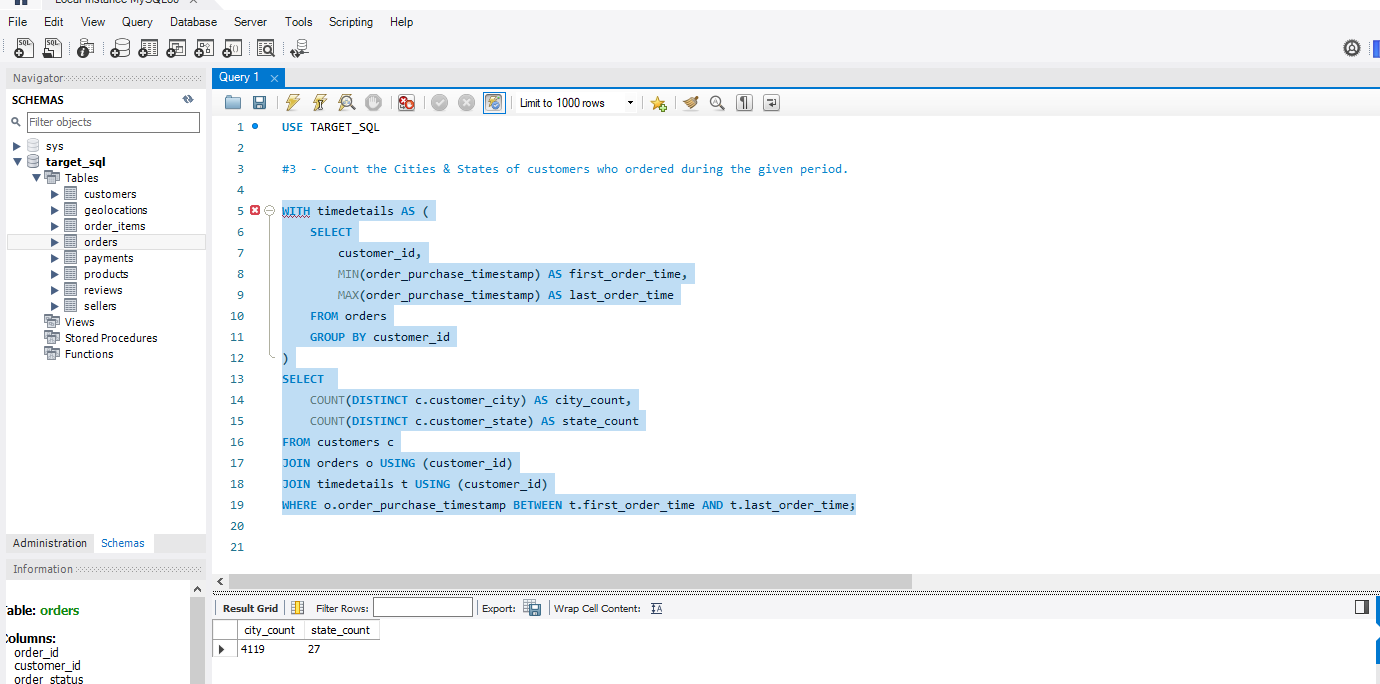
1. **Import the dataset and do usual exploratory analysis steps like checking the structure & characteristics of the dataset:**
   1. Data type of all columns in the "customers" table.



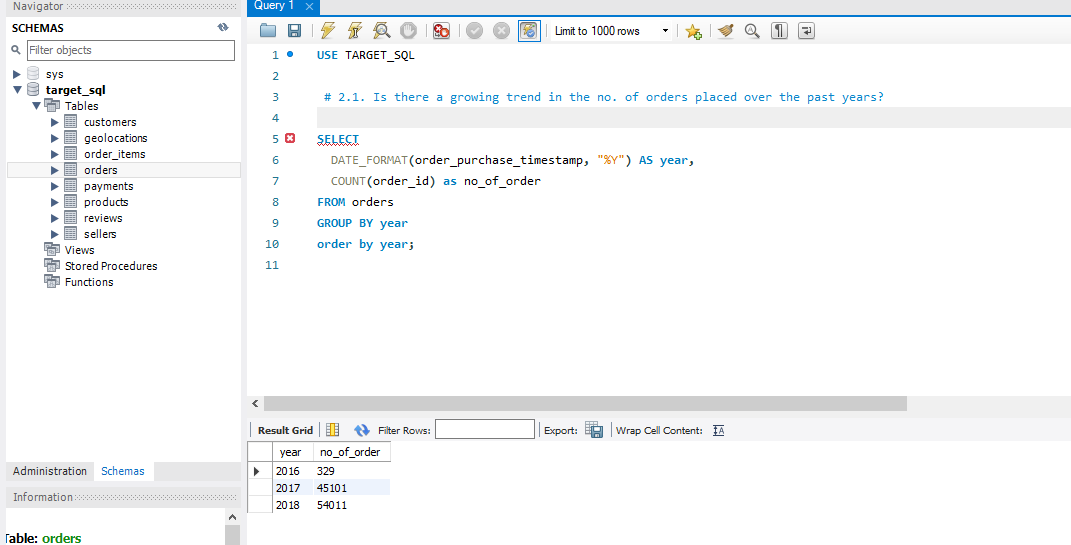
* 1. Get the time range between which the orders were placed.



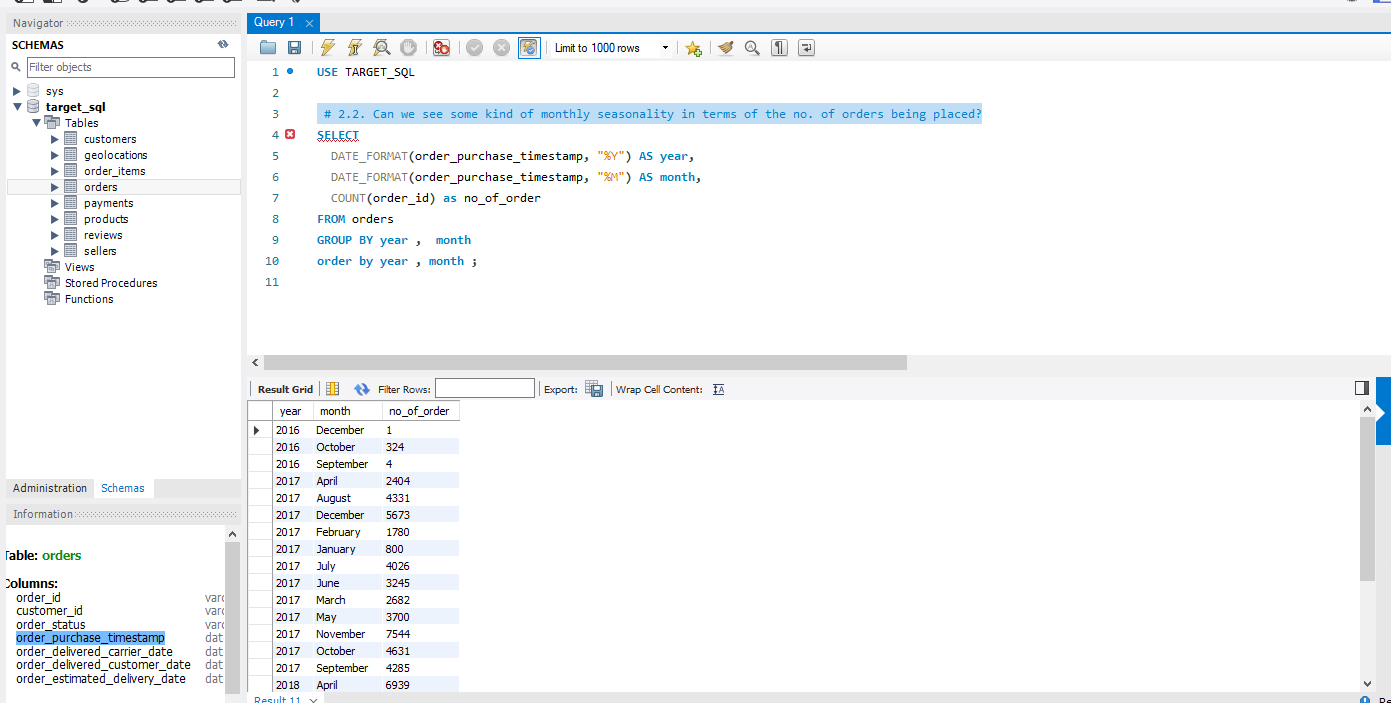
1. - Count the Cities & States of customers who ordered during the given period.



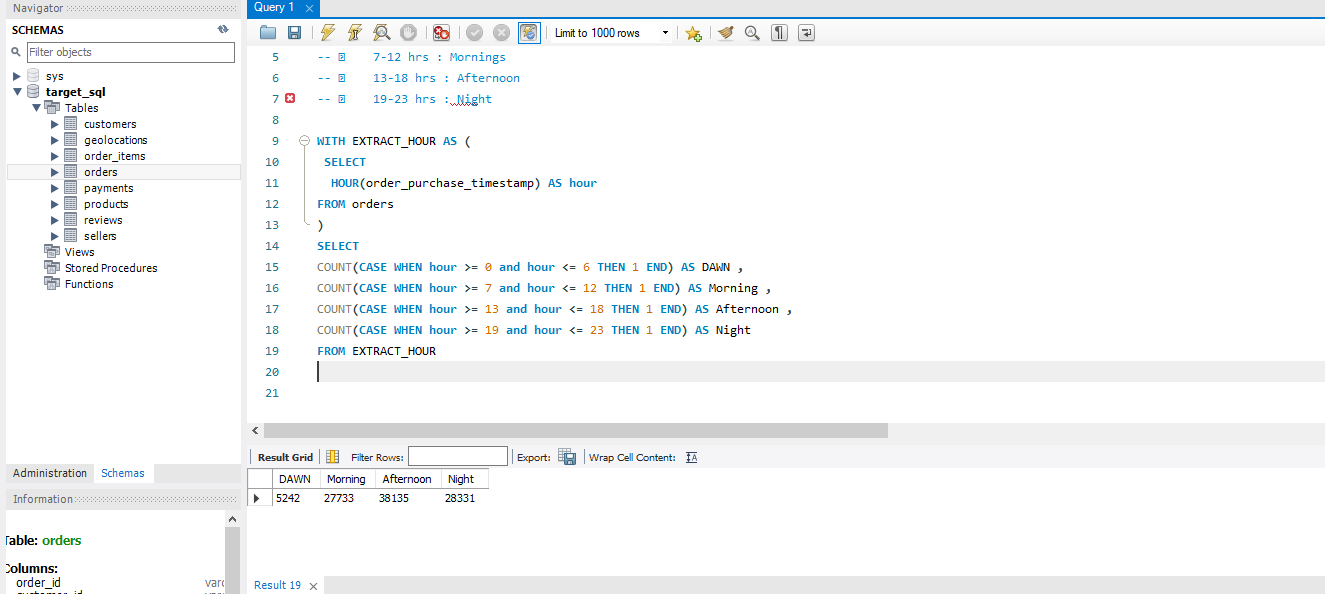
1. **In-depth Exploration:**  
   1. Is there a growing trend in the no. of orders placed over the past years?



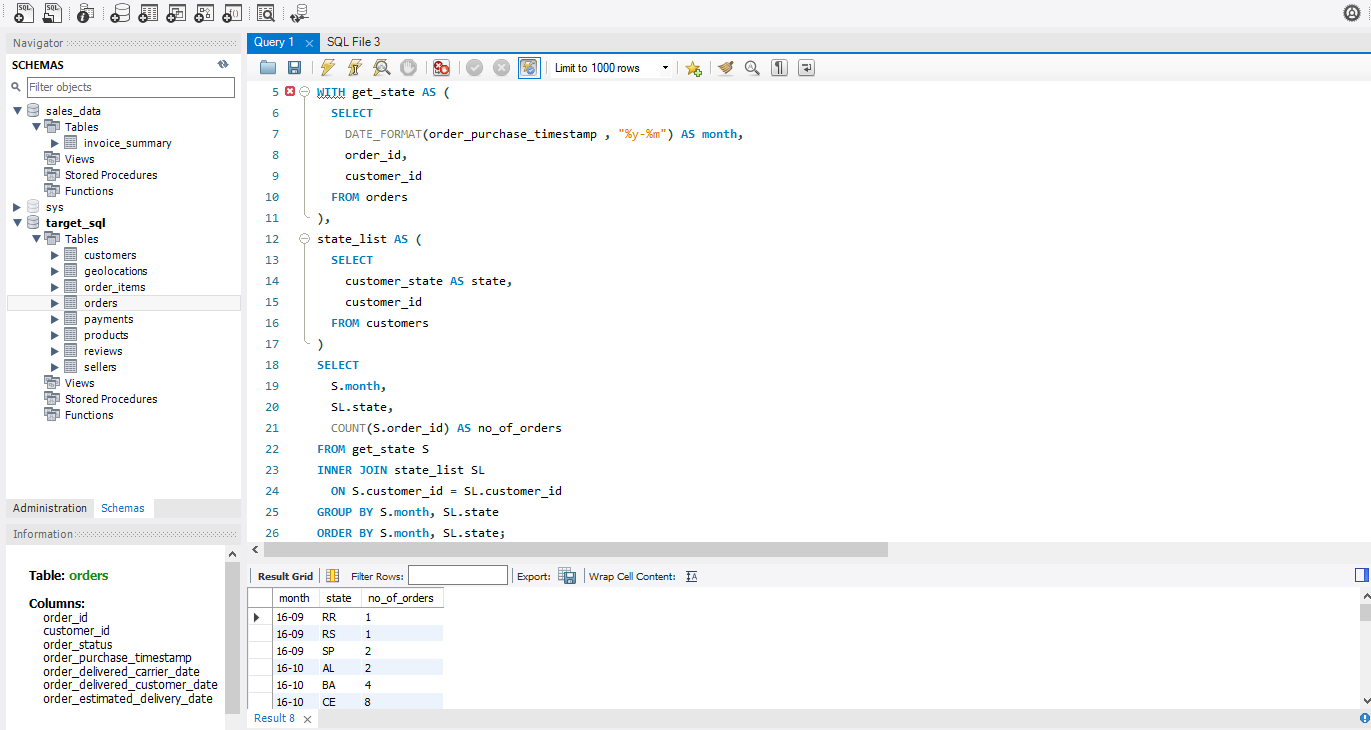
* 1. Can we see some kind of monthly seasonality in terms of the no. of orders being placed?



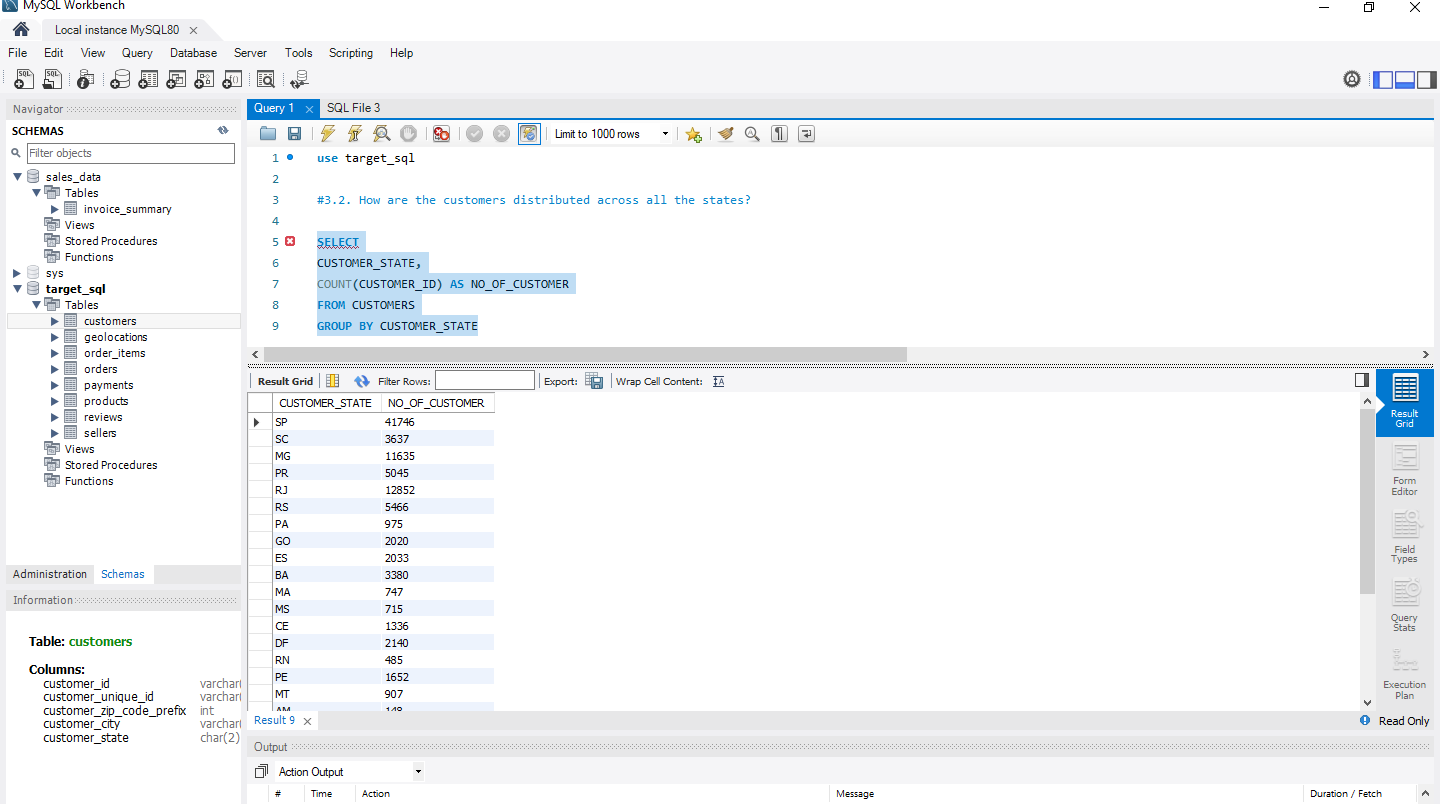
* 1. During what time of the day, do the Brazilian customers mostly place their orders? (Dawn, Morning, Afternoon or Night)
     + 0-6 hrs : Dawn
     + 7-12 hrs : Mornings
     + 13-18 hrs : Afternoon
     + 19-23 hrs : Night



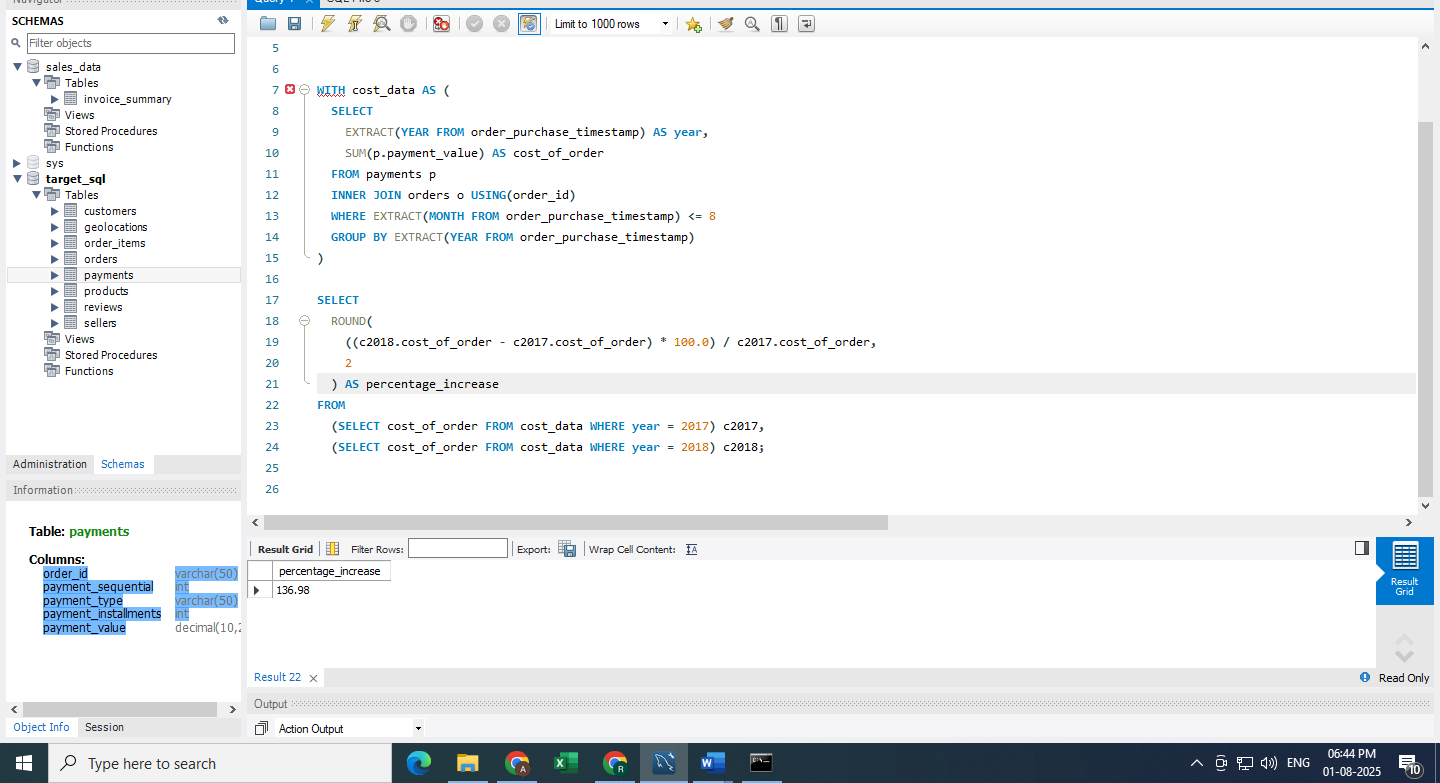
1. **Evolution of E-commerce orders in the Brazil region:**
   1. Get the month on month no. of orders placed in each state.



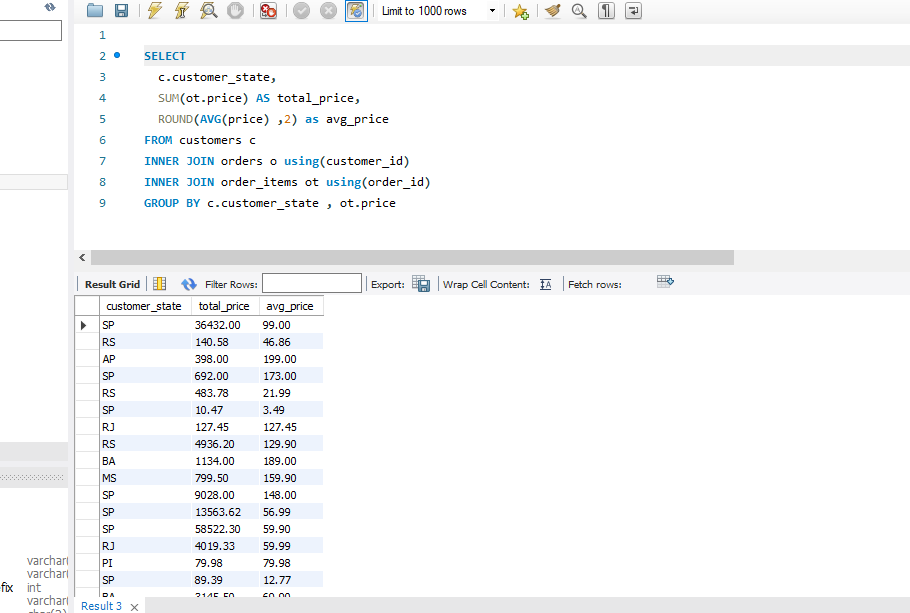
* 1. How are the customers distributed across all the states?



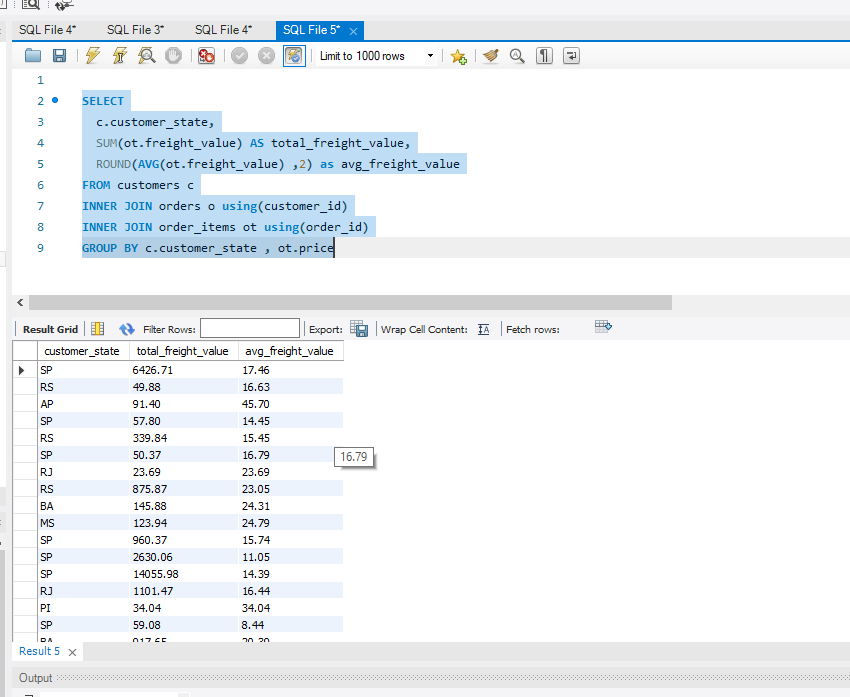
1. **Impact on Economy: Analyze the money movement by e-commerce by looking at order prices, freight and others.**
   1. Get the % increase in the cost of orders from year 2017 to 2018 (include months between Jan to Aug only).  
      You can use the "payment\_value" column in the payments table to get the cost of orders.



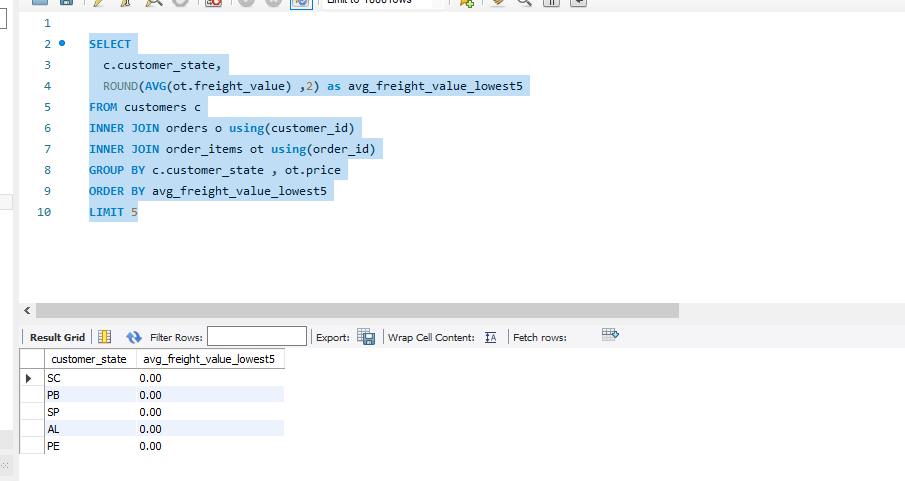
* 1. Calculate the Total & Average value of order price for each state.

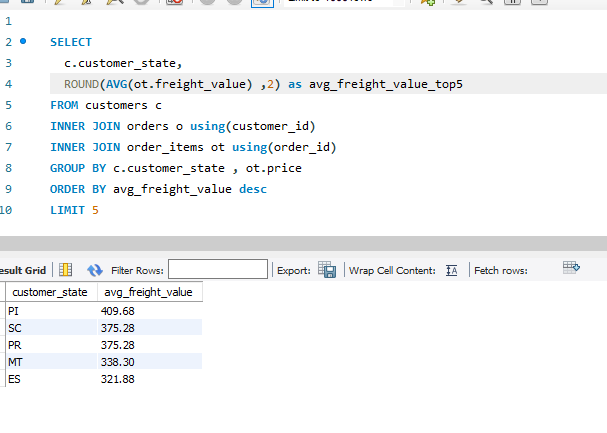


* 1. Calculate the Total & Average value of order freight for each state.

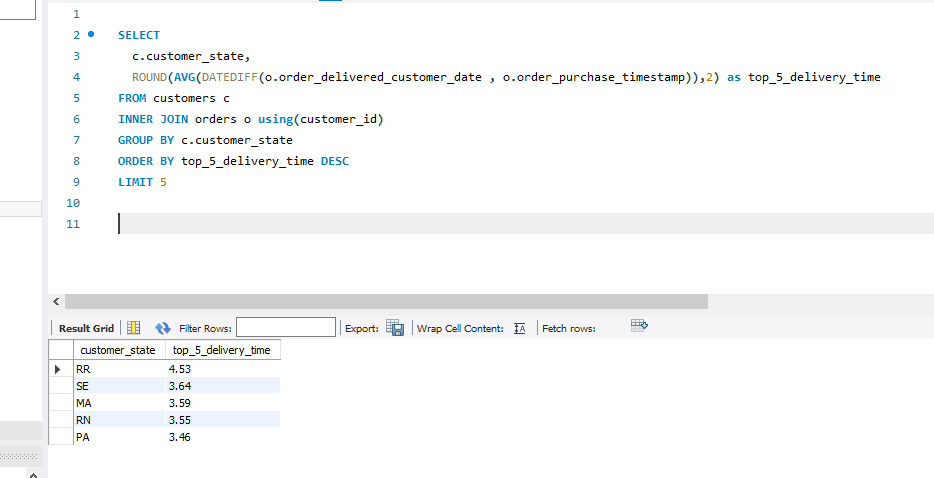


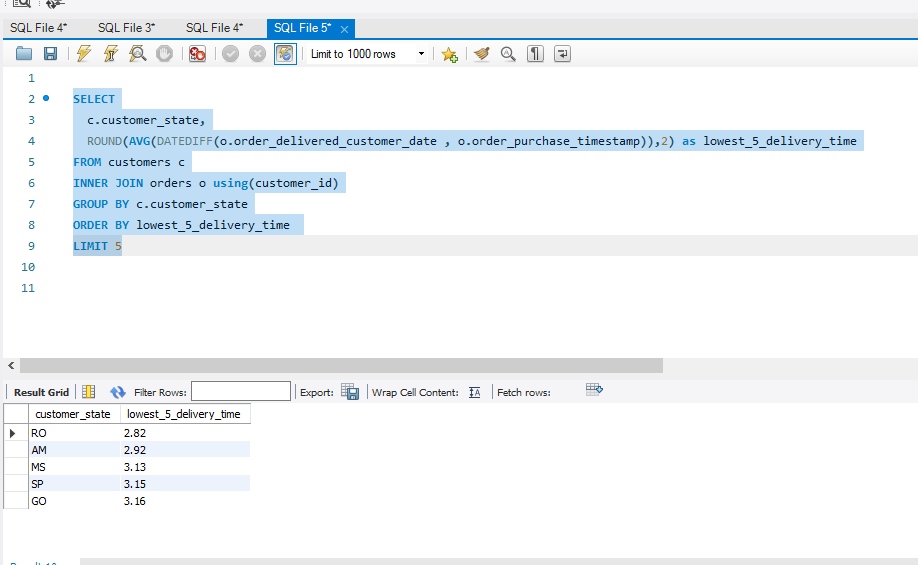
1. **Analysis based on sales, freight and delivery time.**
   1. Find out the top 5 states with the highest & lowest average freight value.

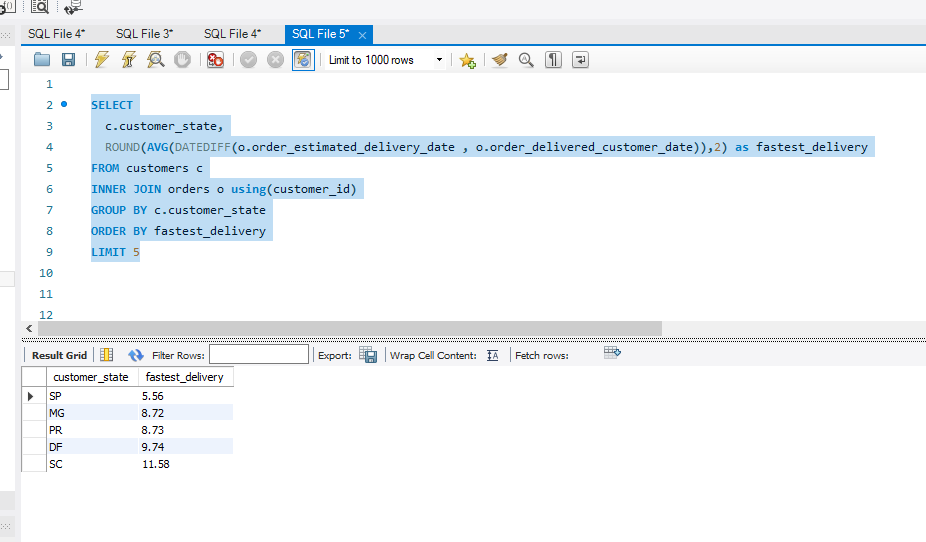




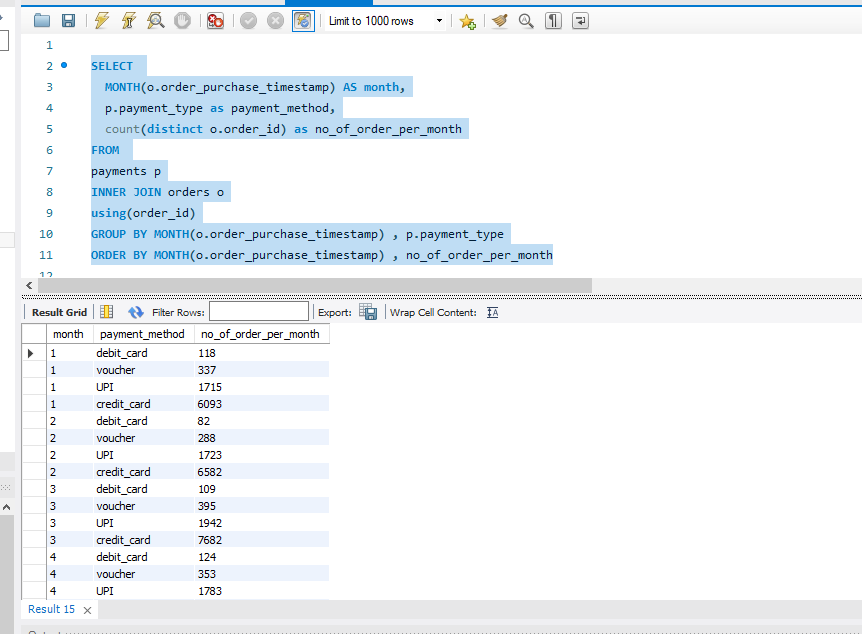
* 1. Find out the top 5 states with the highest & lowest average delivery time.



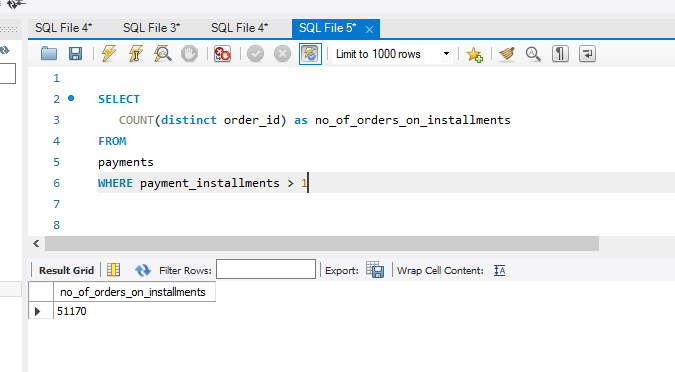


* 1. Find out the top 5 states where the order delivery is really fast as compared to the estimated date of delivery.  
     You can use the difference between the averages of actual & estimated delivery date to figure out how fast the delivery was for each state.

1. **Analysis based on the payments:**
   1. Find the month on month no. of orders placed using different payment types.



* 1. Find the no. of orders placed on the basis of the payment installments that have been paid.



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Insights:

* Order volume has grown over the past years, indicating a flourishing e-commerce market in Brazil. Orders peak in afternoons and during certain months, suggesting targeted promotions during these times.
* There's a variation in average order value across states. Target may explore optimizing pricing strategies based on location and customer segments.
* Order value has increased year-over-year (2017 vs 2018, Jan-Aug). This suggests the potential for upselling or introducing higher-priced products.
* Delivery times vary by state. Target can prioritize improvements in regions with slower delivery times. A comparison of actual vs. estimated delivery times can help identify areas for improvement in logistics or communication.
* Understanding popular payment methods (credit card, debit card, installments) can help tailor the checkout process. A significant portion of customers uses installments, indicating a preference for spreading purchase costs. Target might explore offering more attractive instalment plans or partnering with financing companies.

Recommendations**:**

* Implement data-driven promotions based on seasonality, customer location, and order history.
* Focus on improving delivery times in states with slower performance.
* Develop location-specific pricing strategies considering customer segments and average order values.
* Offer a variety of payment options including instalments to cater to customer preferences.
* Segment customers based on demographics, purchase behaviour, and location to personalize marketing efforts.
* Optimize inventory levels in warehouses across Brazil to ensure faster delivery times.