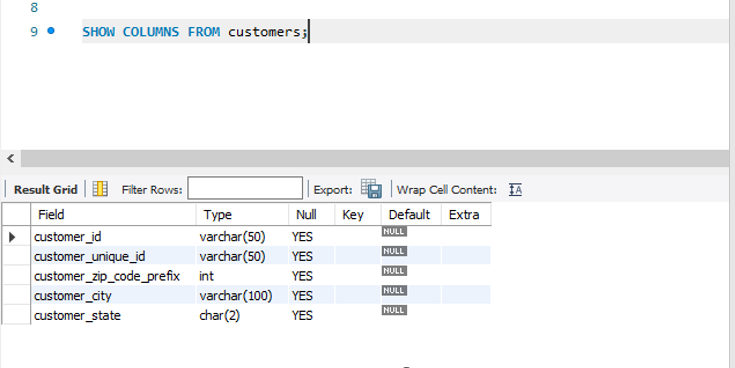
**Problem Statement:**

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.

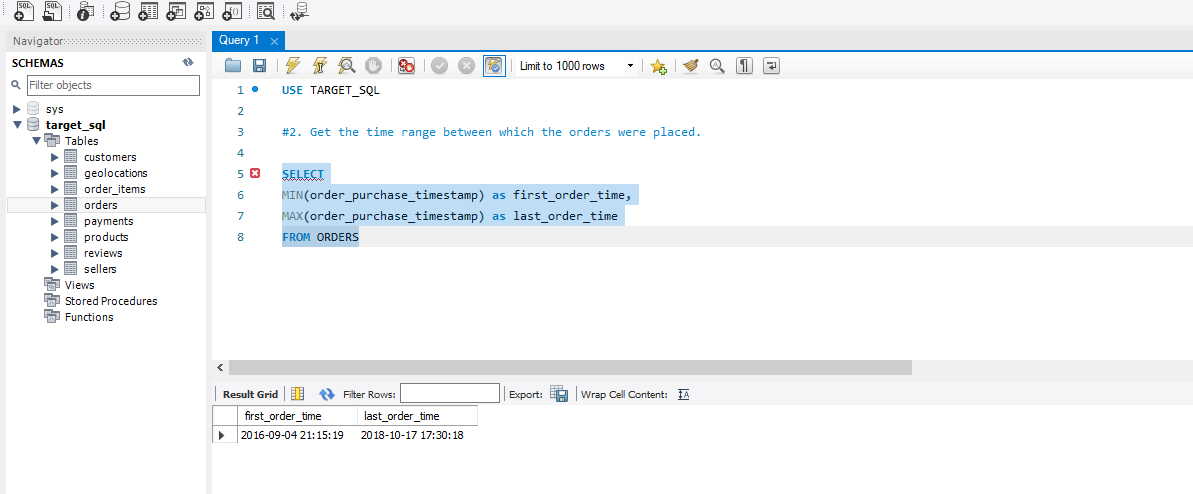
I’ll first try to explore the data, understand it and answer some questions with simple queries.

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

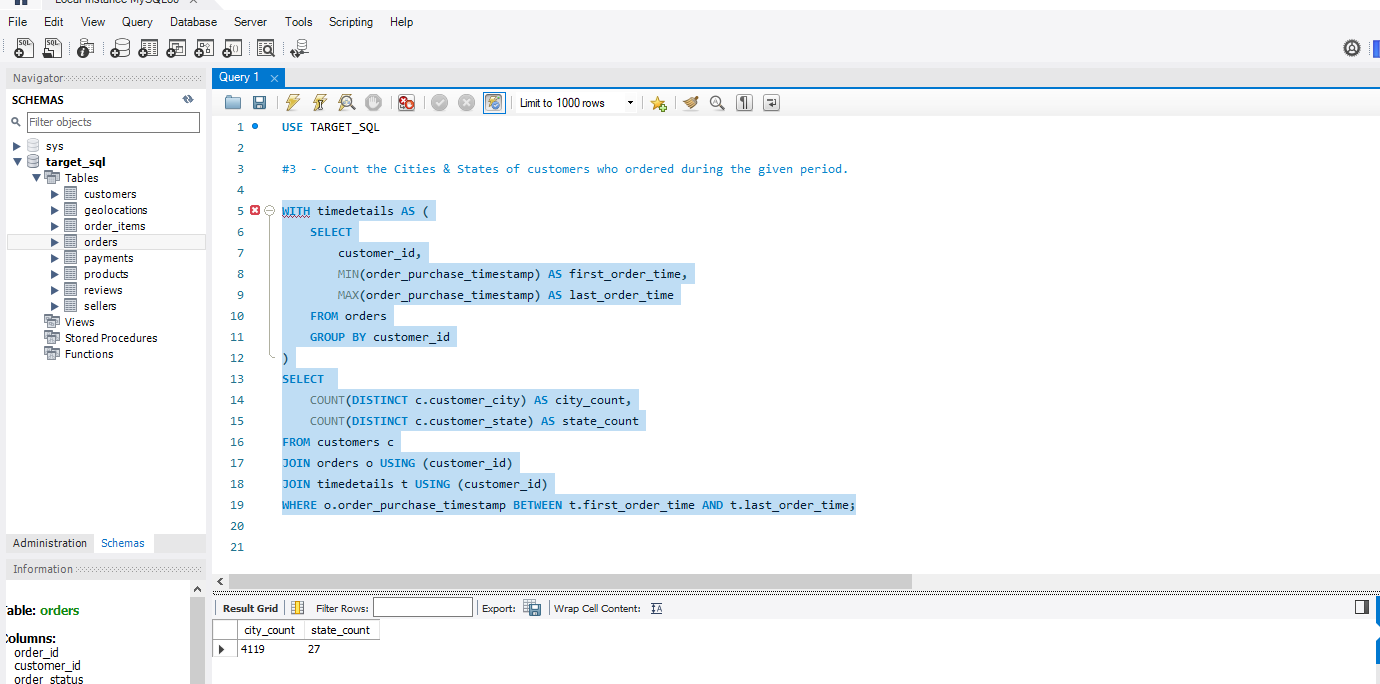
1. **Import the dataset and do usual exploratory analysis steps like checking the structure & characteristics of the dataset:**
   1. Data type of all columns in the "customers" table.



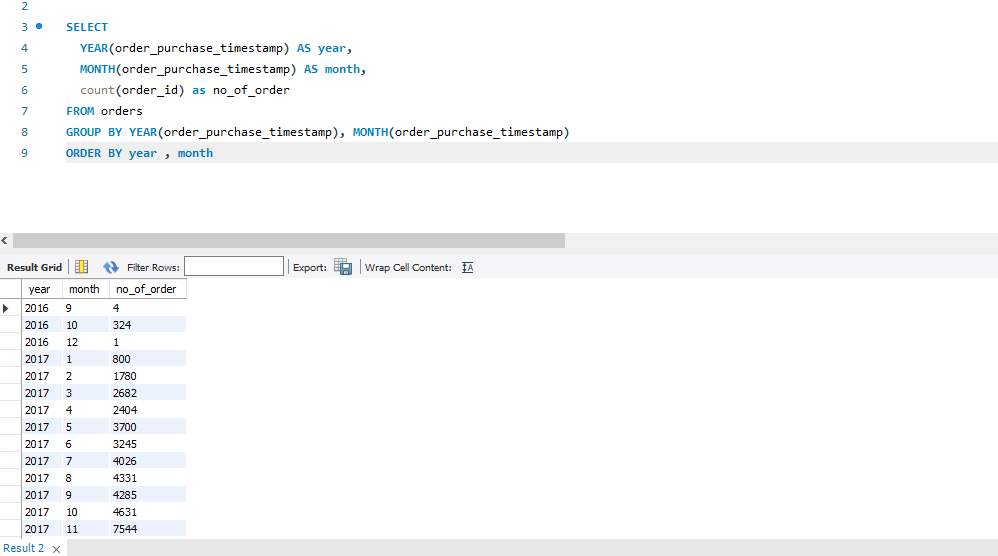
* 1. Get the time range between which the orders were placed.



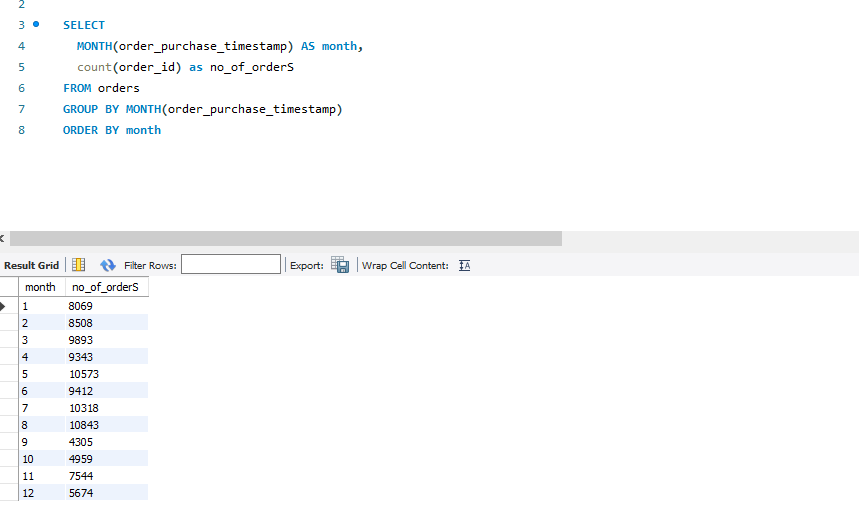
1. - Count the Cities & States of customers who ordered during the given period.



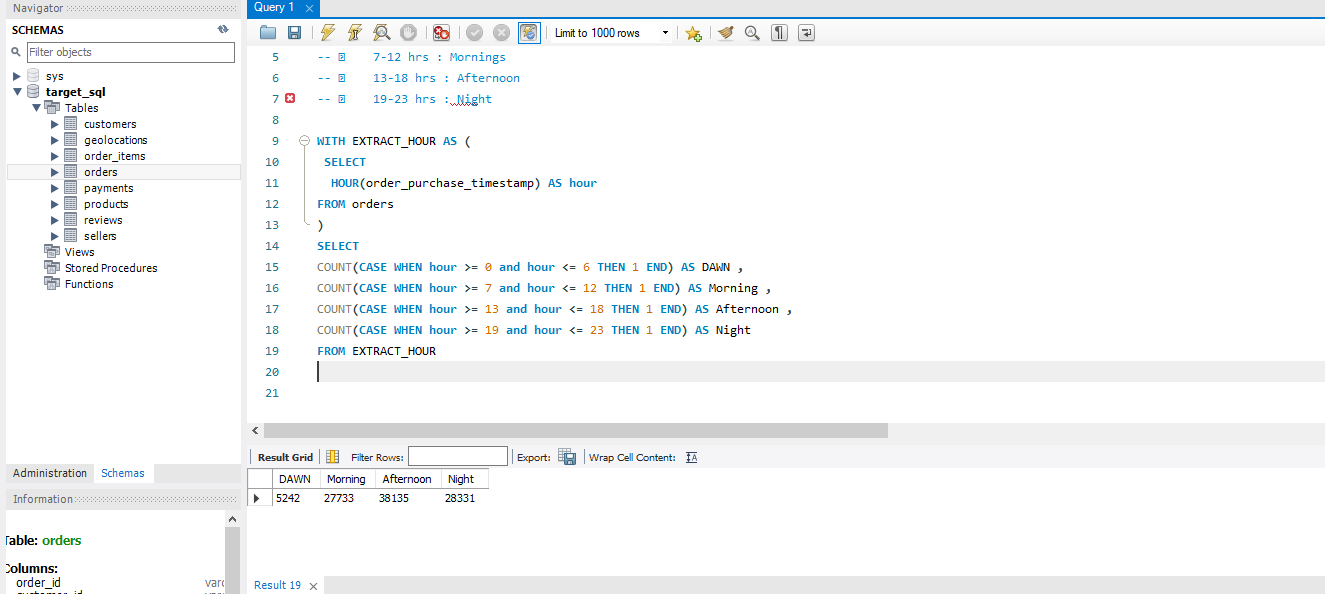
1. **In-depth Exploration:**  
   1. Is there a growing trend in the no. of orders placed over the past years?



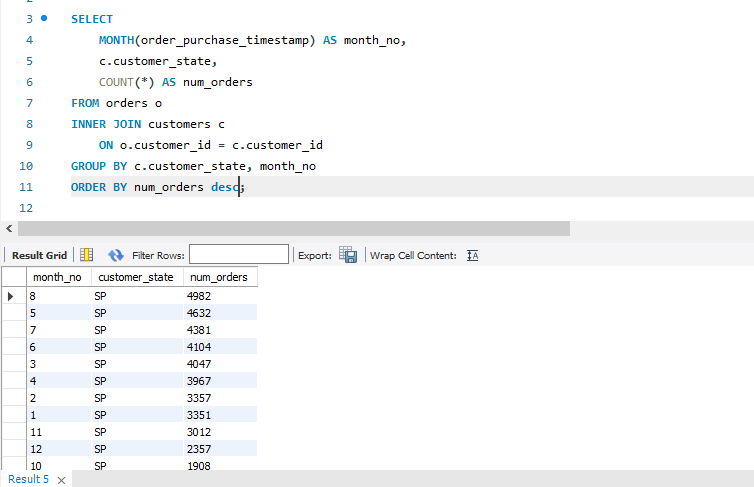
* 1. Can we see some kind of monthly seasonality in terms of the no. of orders being placed?



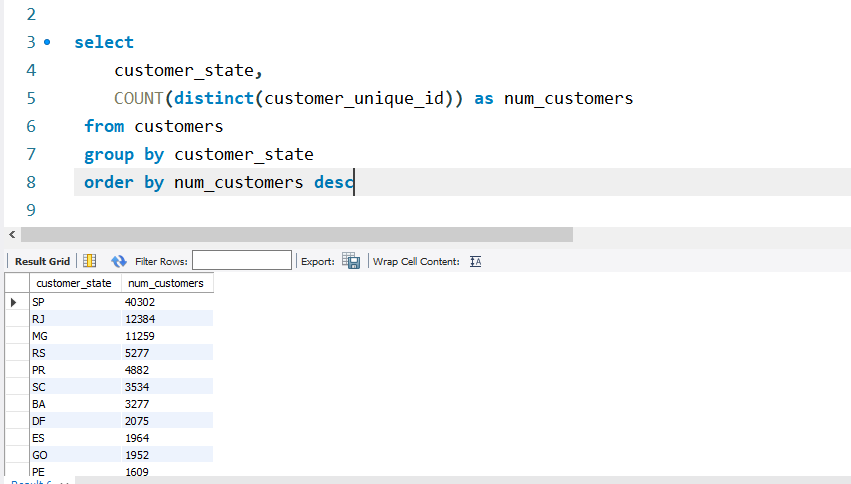
* 1. During what time of the day, do the Brazilian customers mostly place their orders? (Dawn, Morning, Afternoon or Night)
     + 0-6 hrs : Dawn
     + 7-12 hrs : Mornings
     + 13-18 hrs : Afternoon
     + 19-23 hrs : Night



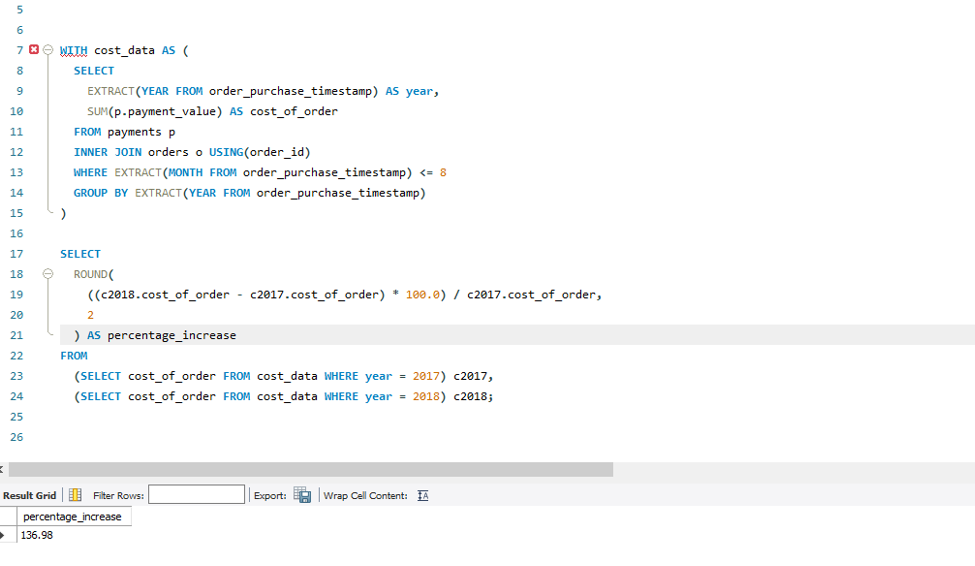
1. **Evolution of E-commerce orders in the Brazil region:**
   1. Get the month on month no. of orders placed in each state.



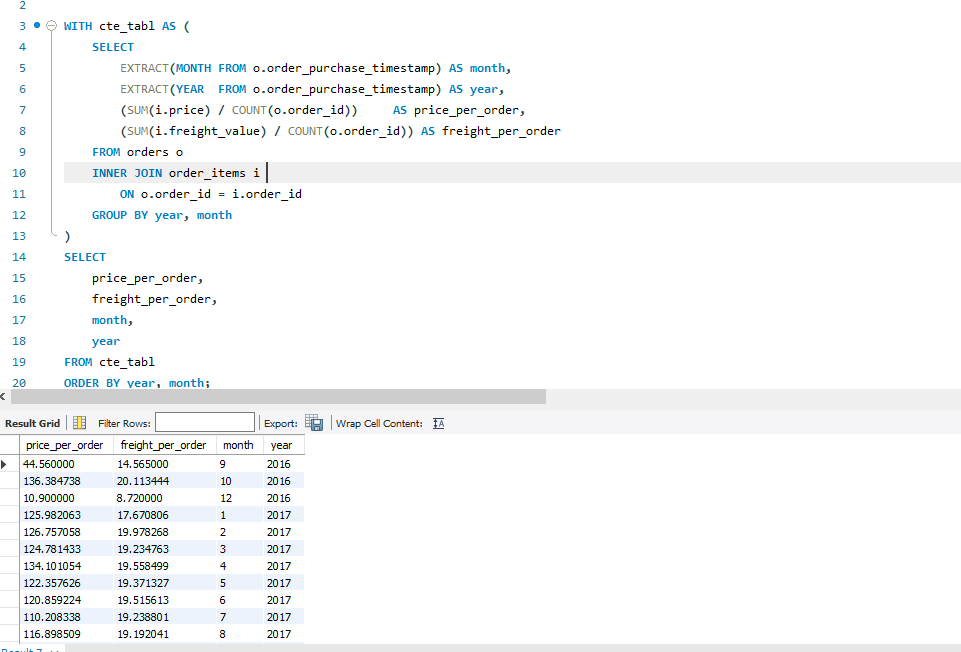
* 1. How are the customers distributed across all the states?



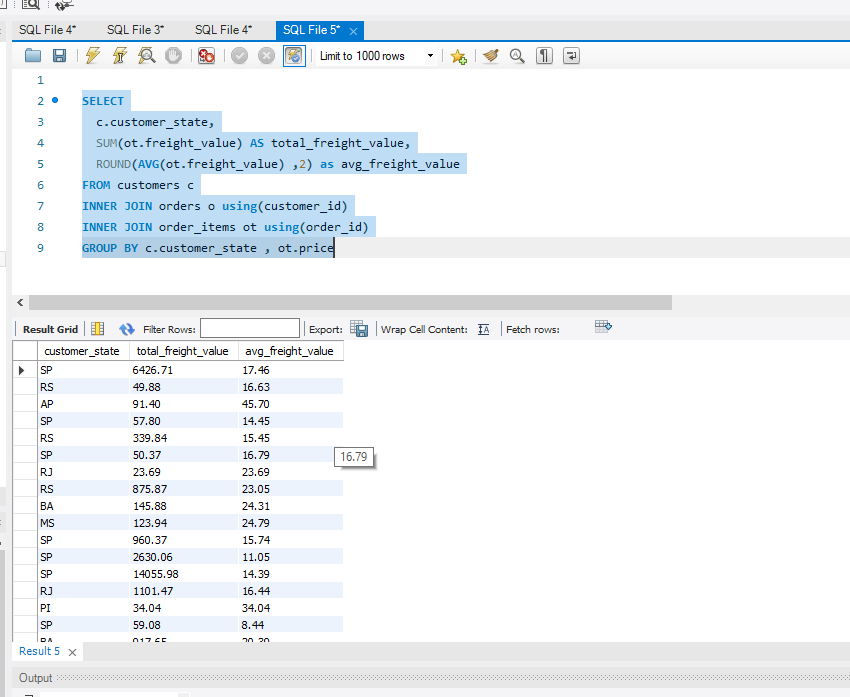
1. **Impact on Economy: Analyze the money movement by e-commerce by looking at order prices, freight and others.**
   1. Get the % increase in the cost of orders from year 2017 to 2018 (include months between Jan to Aug only).  
      You can use the "payment\_value" column in the payments table to get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



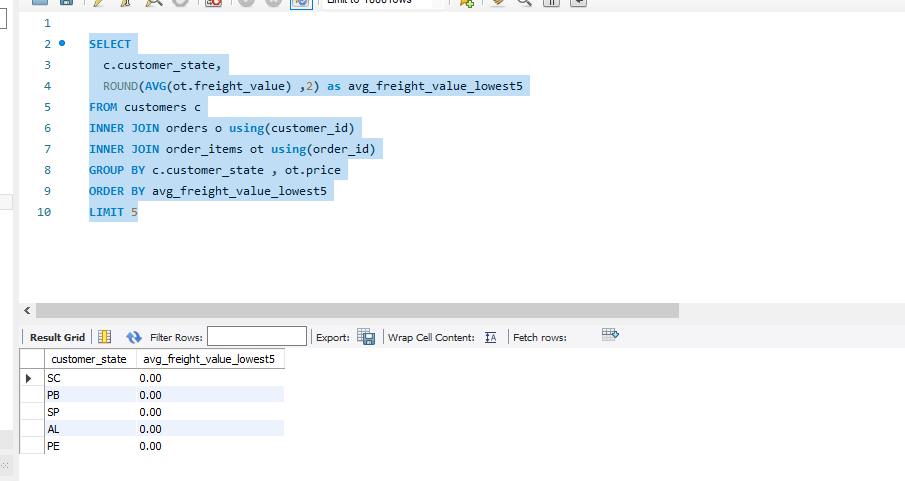
* 1. Calculate the Total & Average value of order price for each state.

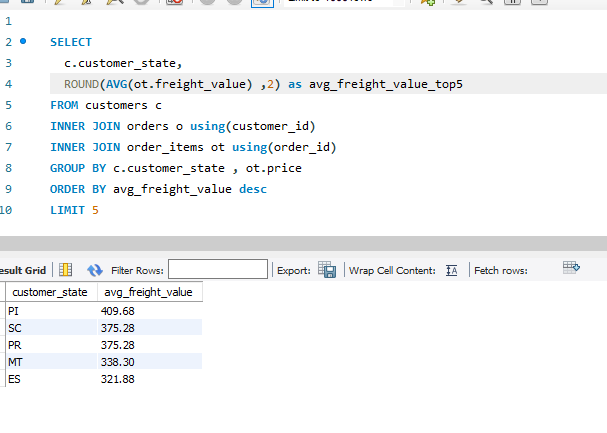


* 1. Calculate the Total & Average value of order freight for each state.

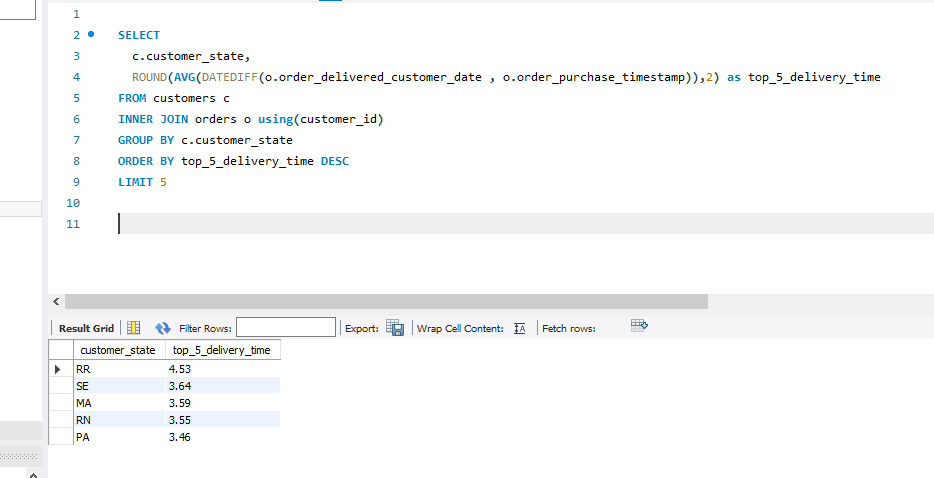


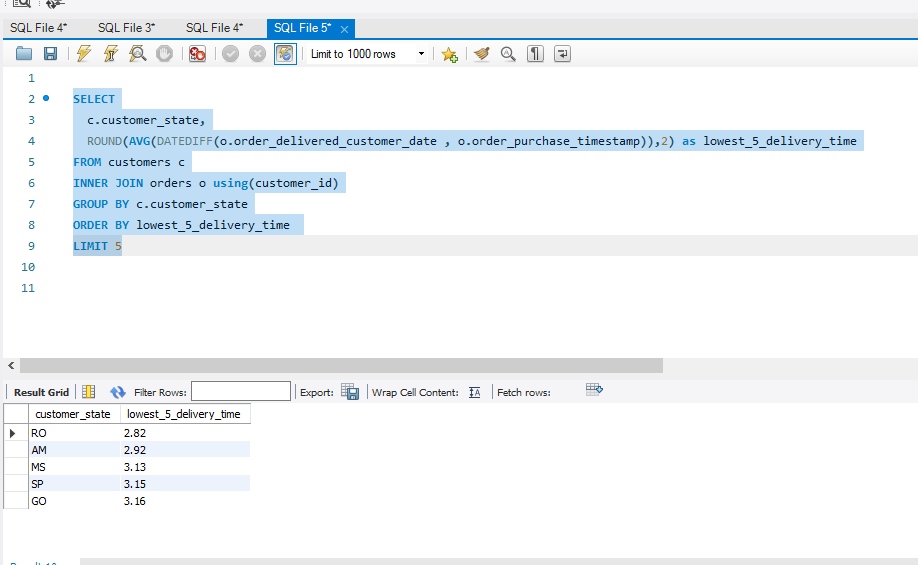
1. **Analysis based on sales, freight and delivery time.**
   1. Find out the top 5 states with the highest & lowest average freight value.



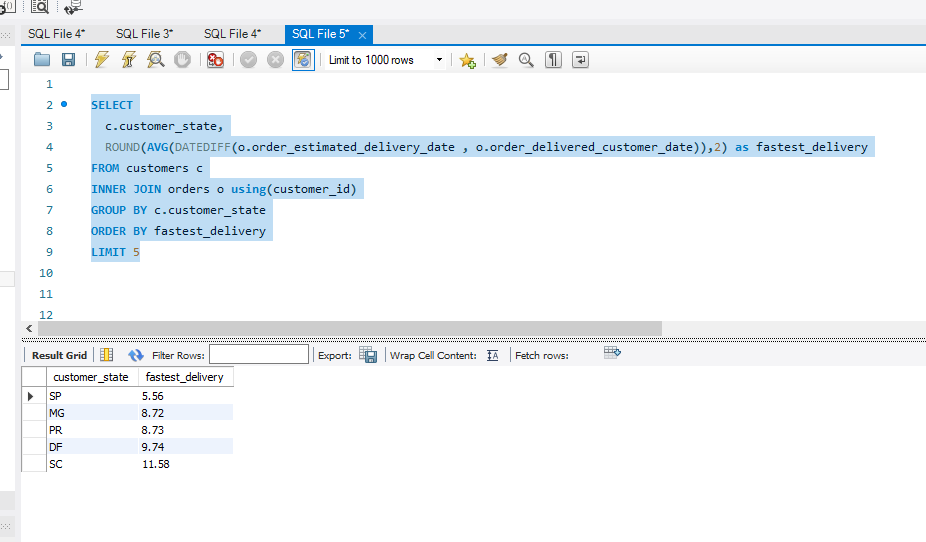


* 1. Find out the top 5 states with the highest & lowest average delivery time.

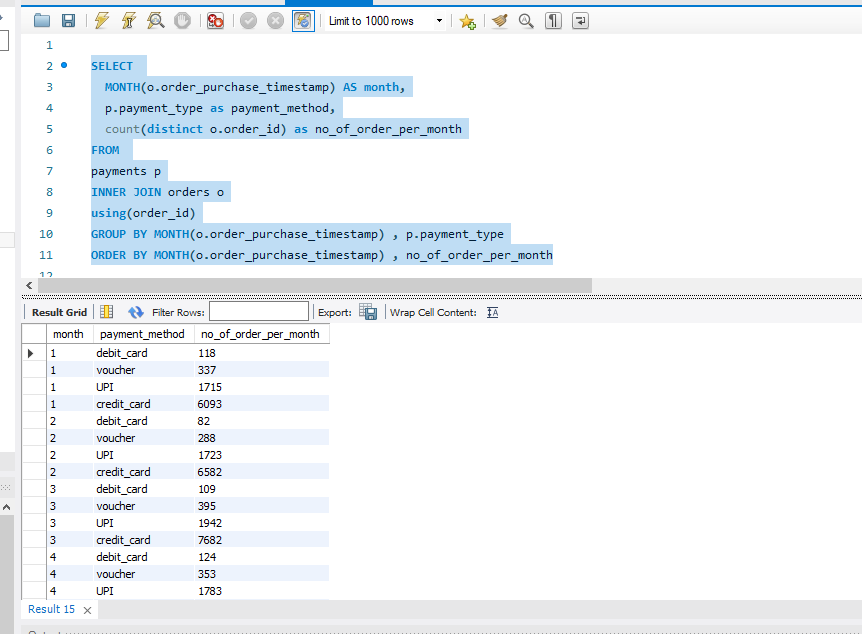




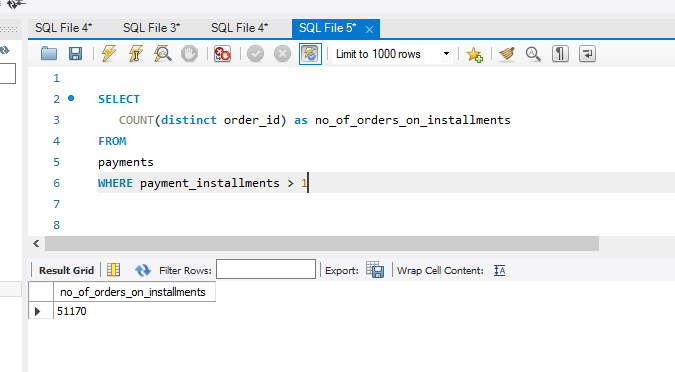
* 1. Find out the top 5 states where the order delivery is really fast as compared to the estimated date of delivery.  
     You can use the difference between the averages of actual & estimated delivery date to figure out how fast the delivery was for each state.



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.

**SQL Skills Demonstrated**

* Window functions (RANK, LEAD/LAG, ROW\_NUMBER)
* Date/time operations (EXTRACT, DATEDIFF)
* Aggregations (SUM, AVG, COUNT, GROUP BY)
* Joins across multiple tables (customers, orders, payments, geolocations)