Project Title: E-commerce Database Analysis

- Description: Analyze an e-commerce database to identify sales trends and customer behavior.
- Data Collection: Use open datasets from platforms like Kaggle, or simulate data by generating sample transactions and user profiles.
- Skills Demonstrated: Database design, SQL queries using PostgreSQL, subqueries and data aggregation.

Title: Analyzing an e-commerce dataset to identify sales trends and customer behavior.

Dataset: https://www.kaggle.com/datasets/carrie1/ecommerce-data

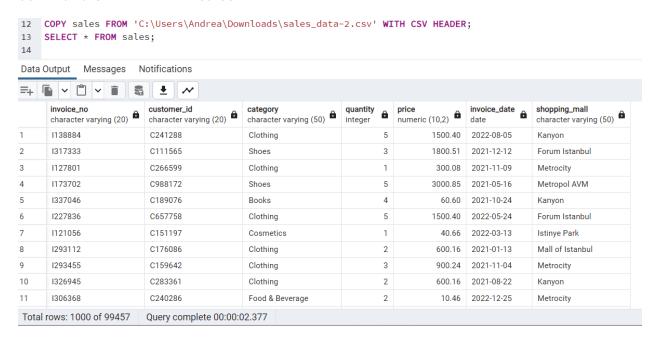
Details about the dataset: This dataset contains all the transactions which occurred between 01/12/2010 and 09/12/2011 for a UK –based and registered non-store online retail. This dataset is present in the UCI Machine Learning repository.

The below query shows how to create the table that is required for the analysis.

Query Query History

```
CREATE TABLE sales (
1
        invoice_no VARCHAR(20),
2
        customer_id VARCHAR(20),
3
        category VARCHAR(50),
4
        quantity INT,
5
        price NUMERIC(10, 2),
6
7
        invoice_date DATE,
        shopping_mall VARCHAR(50)
8
9
    );
10
11
```

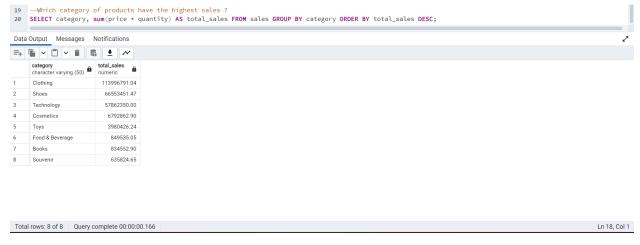
This syntax below helps in loading the data to the table that was just created using the SQL command CREATE TABLE sales.



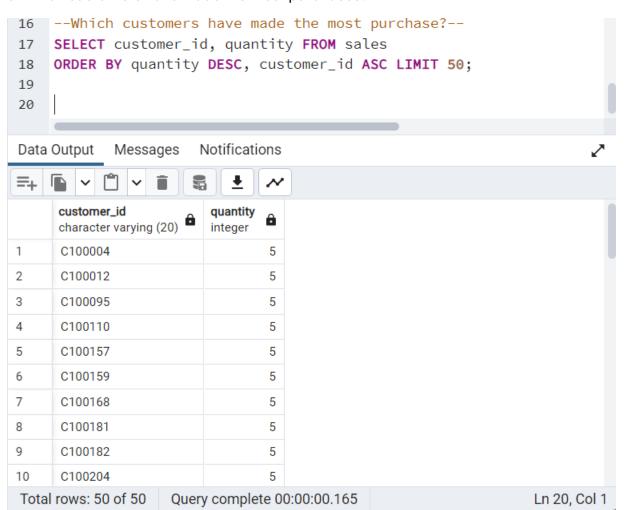
1. Calculate the total sales for each month?



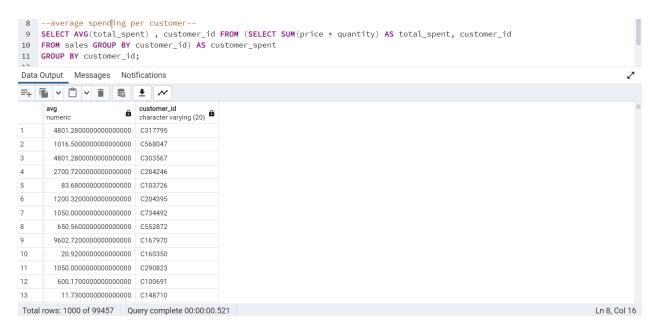




3. Which customers have made the most purchases?

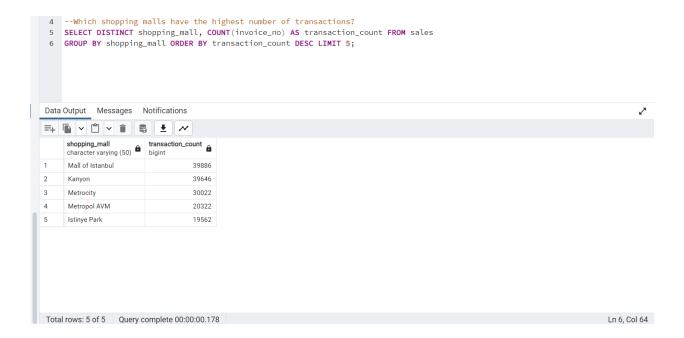


4. Average spending per customer

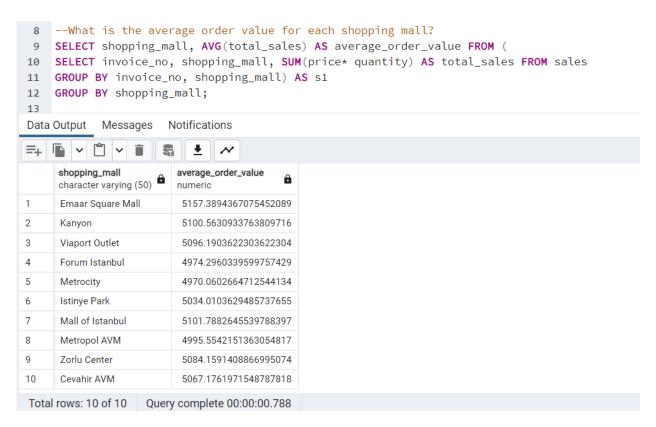


5. Which shopping malls have the highest number of transactions?

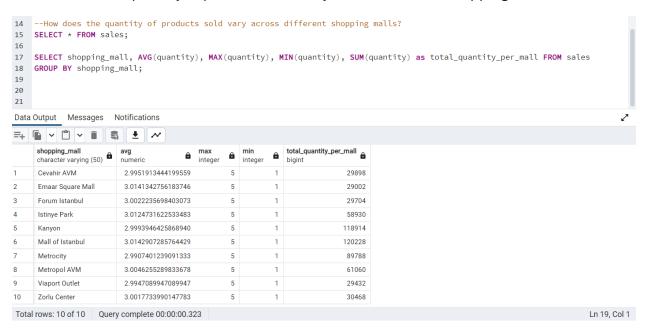
Showing the top 5 shopping malls with the highest number of transactions.



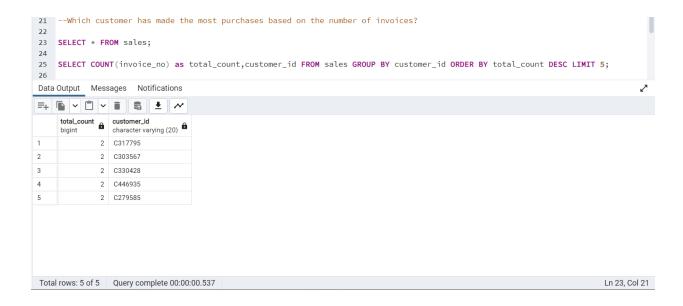
6. What is the average order value for each shopping mall?



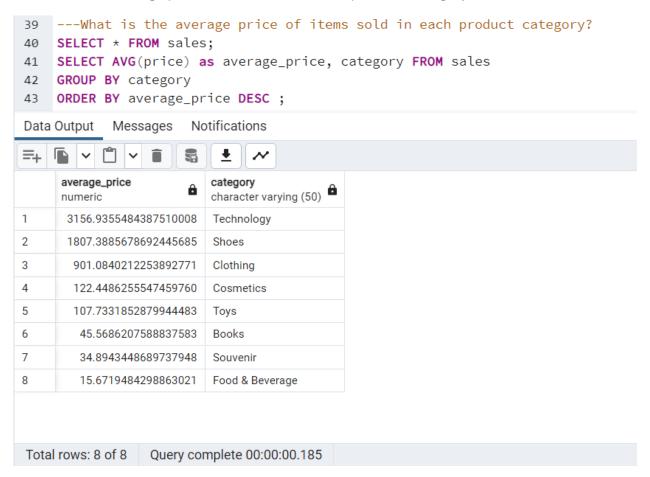
7. How does the quantity of products sold vary across different shopping malls?



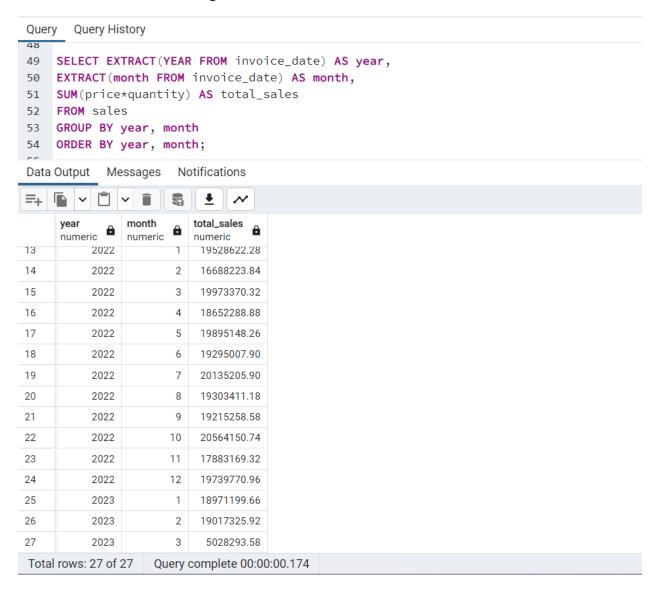
8. Which customer has made the most purchases based on the number of invoices?



9. What is the average price of items sold in each product category?



10. How does revenue change over different months?



11. Which shopping mall sells the most expensive items on average?

```
--Which shopping mall sells the most expensive items on average?

SELECT * FROM sales;

SELECT AVG(price) as average_price, shopping_mall FROM sales

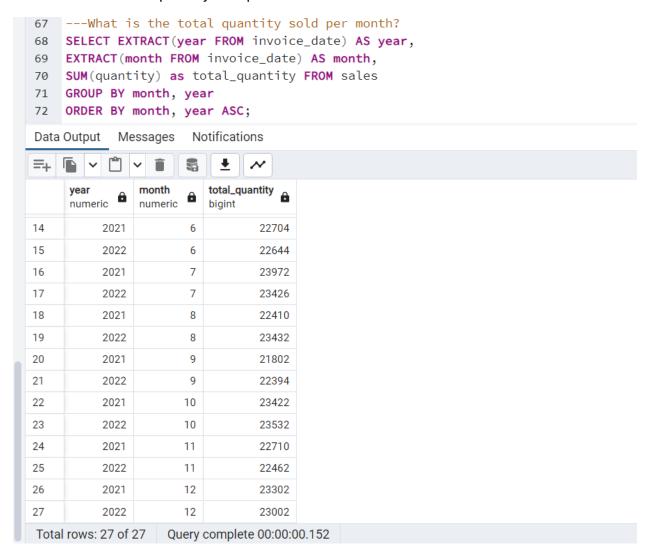
GROUP BY shopping_mall

ORDER BY average_price DESC LIMIT 1;

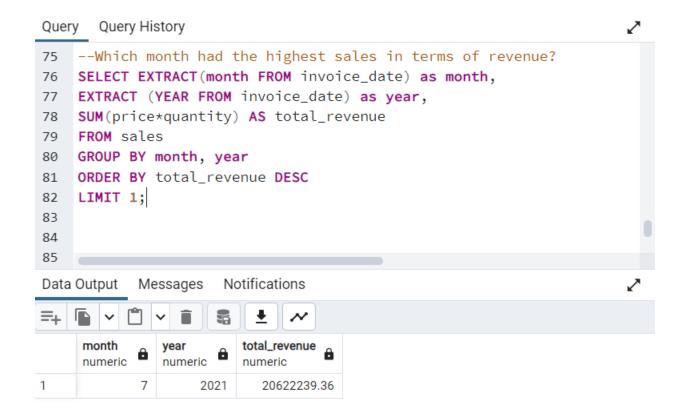
Data Output Messages Notifications

Average_price ashopping_mall character varying (50) average_price character varying (50) average_price numeric ashopping_mall character varying (50) average_price numeric ashoppi
```

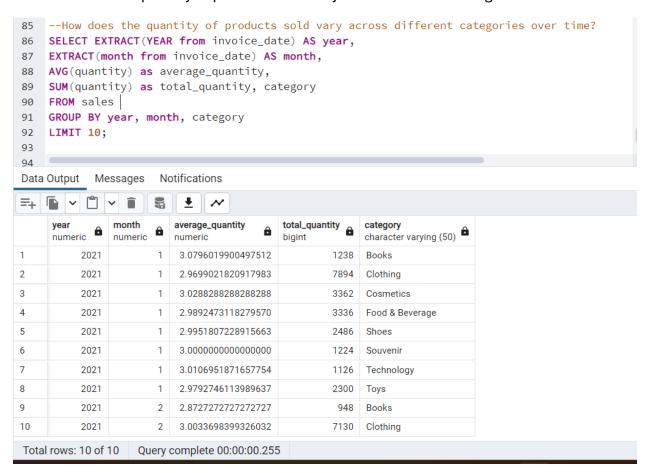
12. What is the total quantity sold per month?



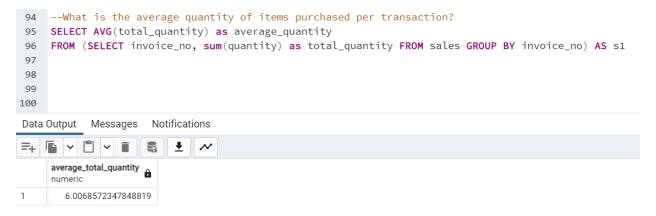
13. Which month had the highest sales in terms of revenue?



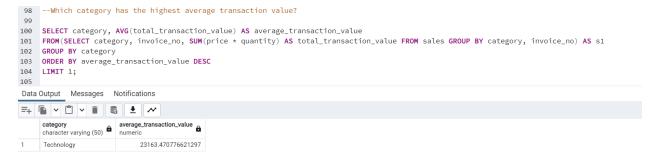
14. How does the quantity of products sold vary across different categories over time?



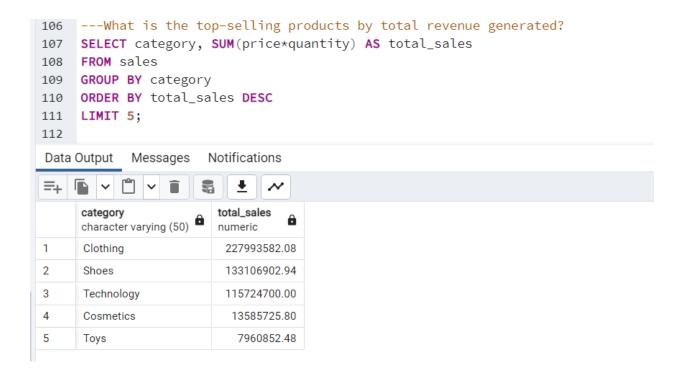
15. What is the average quantity of items purchased per transaction?



16. Which category has the highest average transaction value?

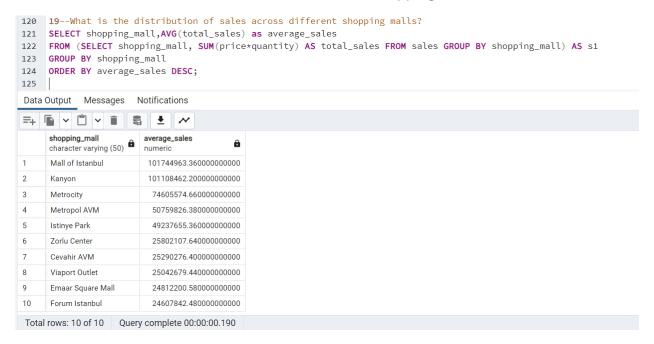


17. What is the top-selling products by total revenue generated?



```
113 -- Which customer has spent the most money overall?
    SELECT customer_id, SUM(price*quantity) as total_sales
114
115
    FROM sales
116 GROUP BY customer_id
117
    ORDER BY total_sales DESC
118
    LIMIT 1
119
Data Output
                       Notifications
            Messages
     customer_id
                         total_sales
     character varying (20)
                         numeric
      C248633
1
                            52500.00
```

19. What is the distribution of sales across different shopping malls?



20. How many unique customers have made purchases at each shopping mall?

```
126 20 -- How many unique customers have made purchases at each shopping mall?
127 SELECT Count(customer_id) as count_of_customers, shopping_mall FROM sales
128
     GROUP BY shopping_mall
129
     ORDER BY count_of_customers DESC;
130
131
132
133
Data Output Messages
                        Notifications
      count_of_customers
                         shopping_mall
                        character varying (50)
      bigint
1
                  39886
                         Mall of Istanbul
2
                  39646
                         Kanyon
                  30022 Metrocity
3
4
                  20322
                         Metropol AVM
5
                  19562
                         Istinye Park
6
                  10150 Zorlu Center
7
                   9982 Cevahir AVM
8
                   9894 Forum Istanbul
```

9

10

9828 Viaport Outlet 9622 Emaar Square Mall