Analysis Questions

In this project, several questions were explored using MySQL for data extraction and Python for analysis and visualization. The aim was to uncover insights related to customer behavior, sales trends, and product performance. Below is a list of the key questions addressed:

1. **Customer Distribution by City:**
   Identified the distribution of customers across various cities.
2. **Order Count in 2017:**
   Determined the total number of orders placed in the year 2017.
3. **Sales Performance by Category:**
   Analyzed total sales revenue for different product categories.
4. **Payment Installments Analysis:**
   Calculated the percentage of orders paid in installments.
5. **Customer Distribution by State:**
   Counted the number of customers from each state.
6. **Monthly Orders in 2018:**
   Calculated the number of orders per month for the year 2018.
7. **Average Products per Order by City:**
   Found the average number of products per order, grouped by customer city.
8. **Revenue Contribution by Product Category:**
   Calculated the percentage of total revenue contributed by each product category.
9. **Price vs. Purchase Frequency Correlation:**
   Identified the correlation between product price and the number of times a product was purchased.
10. **Total Revenue by Seller:**
    Determined the total revenue generated by each seller and ranked them by revenue.
11. **Moving Average of Order Values:**
    Calculated the moving average of order values for each customer over their order history.
12. **Cumulative Sales per Month:**
    Analyzed cumulative sales per month for each year.
13. **Year-Over-Year Sales Growth Rate:**
    Calculated the year-over-year growth rate of total sales.
14. **Customer Retention Rate:**
    Measured the retention rate of customers, defined as the percentage of customers who made another purchase within 6 months of their first purchase.
15. **Top Customers by Spending:**
    Identified the top 3 customers who spent the most money each year.

These questions were explored to gain valuable insights from the e-commerce dataset, helping to understand customer behavior, sales trends, and product performance better.