

Junior Data Analyst – Technical Task

This assessment is designed to showcase your technical skills and the understanding of data analytics. There is no right or wrong way on how to complete the tasks. We are interested in your thought process throughout the assessment, like the assumptions you made, coding / presentation options you chose, steps you applied to answer the questions, etc.

Technical Assessment

Background

Part of your role will involve using data to create and calculate metrics, analyse trends, and provide insights and support on performance to drive informed decision making.

Gross Processing Volume (GPV) is a performance metric used to describe the total monetary amount that is processed by merchants through our payment terminals, and is calculated as the sum of all completed purchases over a specified period of time.

Sales are assessed twice a week: once on Mondays to retrospectively analyse the week prior, and again mid-week on Thursdays to calibrate our strategies for the rest of the week.

The tasks

You are required to present an analysis on our performance at the Thursday weekly meeting on the 15th of December, 2022 to the strategy team / leadership board and provide recommendations based on the insights you have discovered. The sample data that is collected to be used for analysis is located in the `transactions` table.

The team has asked the following questions:

1. Did we perform better the previous week commencing the 5th of December, 2022 compared to the week prior? Are there any particular industries that have been performing better or worse compared to the previous week?

2. The management wants to assess the business growth in GPV and transaction volume, in a cumulative perspective. Can you use the data up to November 2022 to provide some insights by month?
3. The marketing team wants to target campaigns towards merchants in the bottom 3 performing industries for all time to diversify the merchant portfolio. What are the bottom 3 performing industries, and how much of the entire portfolio do they contribute?
4. The marketing team also wants to reach out to a few merchants to provide dedicated support personnel for their ongoing needs. There are two types of merchants that they want to contact:
 - a. Top performing merchants: merchants who are high earners, based on their total GPV. Who are the top 5 performing merchants in December, 2022, and are there any trends that you can identify between them?
 - b. Potentially churned merchants: merchants who have not made a transaction for over 6 months. Who are the merchants that have stopped transacting?
5. What other interesting trends do you see in the data?

Some notes on this task:

- Merchant details are shown in the `merchants` table. This can be joined to the `transactions` table using the common key.
- A sales week commences on Monday and ends on Sunday, with Monday being considered the first day of the trading week.

Data

transactions

| Field Name | Data Type | Description |
|----------------|-----------|--|
| DATE | date | The date of transaction |
| TRANSACTION_ID | string | The transaction identifier |
| MERCHANT_ID | string | The merchant identifier that processed the transaction |
| TYPE | string | The type of transaction |
| AMOUNT | double | The amount in dollars of the transaction |
| STATUS | string | The processing status of the transaction |

merchants

| Field Name | Data Type | Description |
|----------------|-----------|---|
| MERCHANT_ID | string | The merchant identifier |
| NAME | string | The trading name of the merchant |
| CATEGORY | string | The trading category of the merchant |
| SALES_MERCHANT | boolean | Whether or not a merchant was obtained via the Sales Team |

Submission details

The zip file you received shall contain datasets and information for you to complete the technical assessment.

You are required to complete this technical assessment by SQL, then provide scripts and output for each task. For the first two tasks, the additional requirement is a presentation of your analysis. Feel free to use any form of reports to present your findings and showcase your skills!

For the SQL output, please save it as `.sql` files, with the file name being the task number in the format of `task_XX.sql`.

When you finish the tasks, save all files created in a folder, and send the zipped folder in an email back to us.