Revolut · Operations · Hometask

Congratulations for making it to the Challenge stage of the application process! The goal of this home task is to assess your ability to generate great ideas and solve problems that our team has faced in the past!

There are two independent tasks in this challenge:

- Improving KYC
- Catching fraud

Your submission should contain:

1. Improving KYC report/presentation of your findings and solutions in pdf / doc / html etc. (up to 5 slides or pages, document can include appendix)
2. Catching fraud report in pdf / doc / html (up to 2 pages or 3 slides)
3. Supporting materials (calculation files, additional analysis, etc)

If the files are too big please upload to an external storage (gdrive, dropbox, etc.). Make sure to allow public access and send the coordinator the link.

Deadline: 7 calendar Days from the date you received the email

Task 1: Improving KYC

As a financial institution regulated by the FCA, Revolut has the obligation to verify the identity of all customers who want to open a Revolut account. Each prospective customer has to go through a Know Your Customer (KYC) process by submitting a government-issued photo ID and a facial picture of themself to our partner, Veritas. Veritas then would perform 2 checks:

• Document check: To verify that the photo ID is valid and authentic;
• Facial Similarity check: To verify that the face in the picture is the same as that on the submitted ID.

The customer will 'pass' the KYC process and get onboarded if the results of both Document and Facial Similarity checks are 'clear'. If the result of any check is not 'clear', the customer has to submit all the photos again.

The "pass rate" is defined as the number of customers who pass both the KYC process divided by the number of customers who attempt the process. Each customer has up to 2 attempts. The pass rate has decreased substantially in the recent period.

Please write a report that outlines the root causes and solutions.

Relevant files:
• facial_similarity_reports.csv - Reports of all Facial Similarity checks
• doc_reports.csv - Reports of all Document checks
• veritas.html - The API documentation of Veritas explaining some terms used in the reports (you might need to download it to your computer and open it with a browser)

The candidate is free to use Excel or any scripting language to parse and analyse the data. Please show all your work (including your code if applicable) and assumptions.

Task 2: Catching fraud

Financial Crime team has noticed something odd happening over the last few days and have requested additional information to investigate. They asked for you help in analysing the data. You're not sure what you're looking for but you're sure that once you get your hands on that data, you'll be able to figure it out in no time!

In the zip file "hc_data", the data team have provided six files and a message for you.

1. Examine the following SQL query, and explain clearly and succinctly what it means. Will the query work? Explain why or why not.

```sql
WITH processed_users
     AS (SELECT LEFT(u.phone_country, 2) AS short_phone_country,
                u.id
         FROM   users u)
SELECT t.user_id,
       t.merchant_country,
       Sum(t.amount / fx.rate / Power(10, cd.exponent)) AS amount
FROM   transactions t
       JOIN fx_rates fx
         ON ( fx.ccy = t.currency
              AND fx.base_ccy = 'EUR' )
       JOIN currency_details cd
         ON cd.currency = t.currency
       JOIN processed_users pu
         ON pu.id = t.user_id
WHERE  t.source = 'GAIA'
       AND pu.short_phone_country = t.merchant_country
GROUP  BY t.user_id,
          t.merchant_country
ORDER  BY amount DESC;
```

2. Now it's your turn! Write a query to identify users whose **first** transaction was a successful card payment over $10 USD **equivalent**
3. Find 5 likely fraudsters (not already found in fraudsters.csv!), provide their user_ids, and explain how you found them and why they are likely fraudsters.

Feel free to ask us any questions you might have, but before you do, please check out the **FAQ file.**

Good luck!