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Technical test Analytics Engineer

Estimated duration from 4 to 8 hours according candidates experience in dbt

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Context of our business relevant for the technical test

Founded in 2017, Qualifyze is revolutionizing the European GxP supplier audit market with its online platform. Initially operating on a transactional model, we have strategically shifted to a subscription-based model to foster long-term client relationships and ensure a stable revenue stream. This transition is central to our data strategy and presents unique challenges and opportunities for data analysis and modeling.

A Real-World Example

In order to fully grasp the implications of our business model shift from transactional to subscription-based, let's consider a concrete example involving one of our clients, referred to as "Customer A."

Transactional Model (Prior to 2023):

- **Scenario:** In November 2022, under our transactional model, Customer A engaged with us on a per-audit basis. This meant that they paid separately for each audit request they submitted. For instance, if Customer A requested five audits in November 2022, they were billed individually for each of these audits.
- **Implications:** This model offered flexibility to Customer A, as they could request audits as needed without any long-term commitment. However, this approach also led to variable costs for the customer and less predictable revenue streams for us.

Shift to Subscription Model (Starting in 2023):

- **New Approach:** In 2023, we transitioned to a subscription model. Under this new framework, Customer A now purchases a subscription that includes a set number of credits (e.g., 10 credits) to be used over a year.
- **Usage of Credits:** These credits can be redeemed for audit requests. For instance, if an audit costs 1 credit, Customer A can use their 10 credits to request 10 audits throughout the subscription period.
- **Benefits:** This change offers Customer A a more predictable cost structure and the ability to budget for audit services more effectively over the year. For us, it means more stable and predictable revenue, as well as the opportunity to build a more consistent and long-term relationship with the customer.

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Objectives of the Test

1. To evaluate proficiency in designing and implementing effective data models using DBT, addressing critical business questions pertinent to Qualifyze's evolving business model.
2. To assess the usage of normalization and denormalization techniques in data modeling.
3. To understand the depth of knowledge in dbt & SQL.
4. To test the ability to write and implement DBT tests ensuring data quality and integrity (bonus point)
5. To examine experience with version control systems (like Git) in managing DBT projects.

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Business questions to be answered with the output of your data modelling in any BI tool

1. ***Customer Engagement Evolution:***

   How does your data model reflect the transition of customers from individual audit requests (transactional model) to using credit packages (subscription model)? Can it identify which customers have switched models over the last year?

2. ***Subscription Data Integration:***

   How does your model integrate the raw_data_credit_packages with customer data from raw_data_requests? Can it provide insights into how different subscription types (e.g., number of credits in a package) are associated with customer profiles or audit request behaviors?

3. ***Credit Package Utilization and Expiry Analysis:***

   How effectively does your model use the raw_data_credit_packages to track the utilization of credits against their expiration dates? What insights can it provide regarding the rate of credit usage or unused credits?

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Data Handling and Repository Instructions:

Data Setup:

Datasets: You will work with two datasets: raw_data_requests and raw_data_credit_packages, with their data definitions available in Data schema Google sheet.

Database Selection: You are free to select any database for this task. It could be a cloud-based platform like Google BigQuery, Amazon Redshift, Snowflake, or a local database. The choice of database will not impact the evaluation.
Importing Data: The first step involves importing these datasets into your chosen database, setting the stage for data modeling and analysis with dbt.

DBT Transformations:

Transformation Process: Once the data is in the database, use dbt for the required transformations. Your aim should be to develop a data model that effectively addresses the business questions provided.
Model Documentation: Ensure that your dbt models are well-organized and documented. This includes detailing the transformations used and the reasoning behind them.

Code Hosting and Repository Organization:

GitHub Repository: Host your project on GitHub, which should include the dbt models, SQL scripts, and other pertinent files.
Repository Structure: Organize your GitHub repository for easy navigation and comprehension. Include a README file that offers a project overview, repository structure, and any necessary instructions for running or understanding your dbt models.

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Data Schemas and Definitions:

4. ***DBT Testing (Bonus point)***
   - Write and implement at least one dbt test to validate the integrity of the data. This could involve testing for data consistency, completeness, or accuracy.
   - Document what your tests are checking and why these tests are important in the context of the given business questions.

5. ***Sharing Your Work:***
   - Once you have completed the test, share the link to your GitHub repository with us. Ensure that the repository is public or that we have been granted access to view it.

Communication:

For any questions or clarifications about the test, please reach out to Mariela Haya at mariela.haya@qualifyze.com. We encourage you to document any assumptions or decision-making processes throughout the test.