Hello,

The goal of the following assignments is to evaluate your Power BI and SQL skills.

- The Power BI assignment is presented as a request from a business stakeholder, Jane Doe. You will receive it in the form of an email she sent you, outlining her questions and report requirements.
- The SQL assignment is presented as two data tables and a report scenario.

Net effort of approximately 3 hours should be sufficient to complete both assignments successfully.

We kindly ask you to submit your results within 72 hours, by replying to the assignment invitation email. Please include your name as a prefix to the submitted filenames.

The deliverables should include:

1. A reply email to Jane, the business stakeholder (.docx/.pdf or any other document format)
    - example: john_smith_reply_to_jane.pdf

2. A Power BI solution file (.pbix)
    - example: john_smith_sales_report.pbix

3. A SQL query solution file (.txt or .sql)
    - example: john_smith_sql_solution.txt

If your deliverables are adequate, you will be invited to a technical follow-up interview and requested to elaborate on them further.

You'll need the Power BI Desktop software. Download it here: https://aka.ms/pbidesktopstore, or here https://www.microsoft.com/en-us/download/details.aspx?id=58494

If you have any questions, please reach out via email to the talent acquisition team.

Good luck!

Part 1 - Power BI

Please meet Jane Doe, the CMO of our company. Jane sent you the following email. Please answer her questions and develop a Power BI solution for her.

Your submitted deliverables should include:
1. A reply email to Jane, answering her questions (.docx/.pdf or any text format)
2. A Power BI solution file (.pbix)

Dear Colleague,
I need your assistance with building an interactive report that will enable my department to analyze sales data. Please find the latest sales data (actual and expected) in the attached excel file – "Financial Sample.xlsx"

First, I'd like your opinion: what visuals would you recommend for presenting sales data graphically? We'd like to analyze it in various ways, including (but not limited to): geographical breakdown, monthly trend, actuals compared to expected, etc. For every visual you propose, please clarify its advantages & limitations, and optimal use cases.

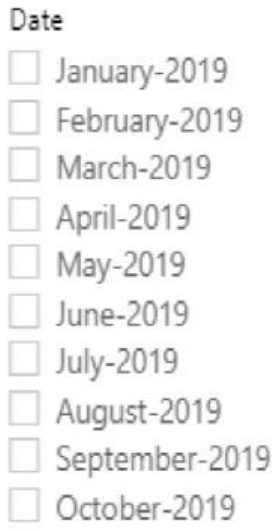
The following requirements are already approved, please proceed with the development:

1. Please add a visual for displaying actual and expected sales data by country.

Example:

Country	Actual Sale	Expected sale
Austrailia		21358427
Canada	24,887,654.89	
France	24,354,172.28	
Germany	23,505,340.82	19824952
Mexico	20,949,352.11	18041829
Poland		20573152
United States of America	25,029,830.17	22034288
Total	**118,726,350.26**	**101832648**

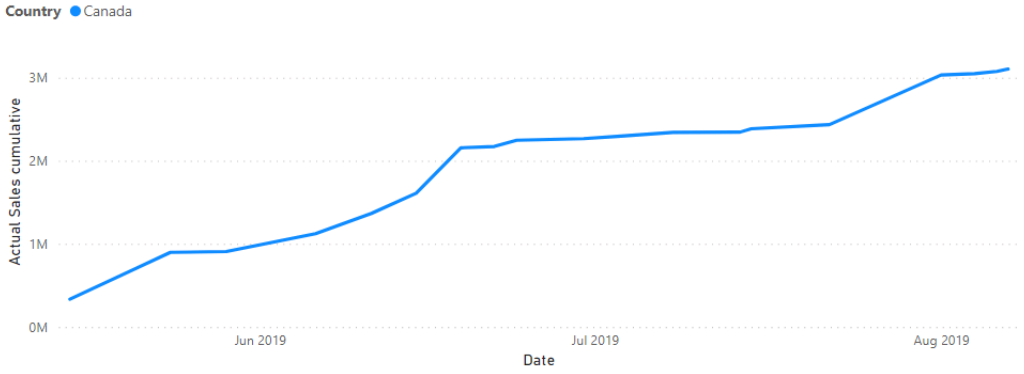
2. Please add a period slicer that will be used for filtering the report. It should have all the periods from both actual and expected sales data. It should be displayed as a month and a year; please use the format as shown in the following example:



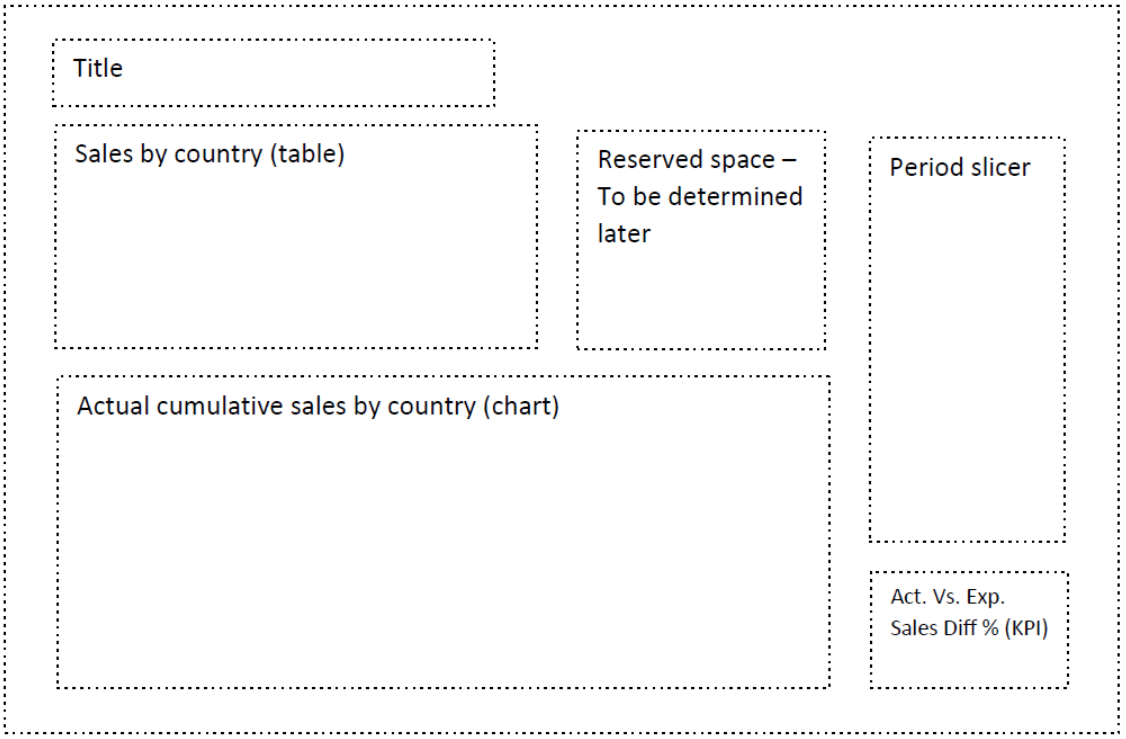
3. Please calculate the Difference % between actual and expected sales, which is defined as ([actual sales] / [expected sales]) - 1. It should be calculated whenever both actual and expected data is available, otherwise it should be blank. As to the placement, please add this as an additional column to the table visual that is mentioned above in item #1 (on the country level) and as a stand-alone KPI in the report (on the totals level).

4. Please add a running total chart for actual sales, with country breakdown. To clarify, the x-axis should display the date, and the y-axis should display the total (cumulative) actual sales to date. Each country should be represented by its own series and colored differently.

Here's an example for a single country:



I leave the design of the visual elements to your best judgement.
Regarding placement, please refer to the following wireframe for guidance:



Thank you for your support with this project,

Regards,
-Jane Doe, CMO

Part 2 – SQL

Context: we are analyzing survey results, measuring academic courses popularity among university students.

Please review the tables and the assignment details below.
Your deliverables should include a SQL query solution file (.txt or .sql)

"**course**" – contains a list of the available courses:

course_id (int)	course_name (str)	faculty (str)
1001	economics_101	business
1002	algebra_101	math
1003	geometry_101	math
1005	management_101	business
1004	marketing_101	business
1006	physics_101	science

"**survey**" – contains the survey details:

survey_id (int)	option_a (str)	option_b (str)	votes_a (num)	votes_b (num)
2001	economics_101	geometry_101	61	34
2002	algebra_101	economics_101	31	68
2003	marketing_101	management_101	11	72
2005	management_101	algebra_101	43	54
2004	geometry_101	marketing_101	48	46

Report scenario assignment:

Write an SQL query that displays the course popularity, in descending order.
Course popularity is measured in points, which are determined as follows:

For every survey:

A. If the vote difference > 5% of total votes, the more popular course gets 1 point, and the less popular course gets 0 points
B. If the vote difference <= 5% of total votes, each course gets 0.5 points

The result dataset should include all courses in the "course" table, regardless of whether the course was part of any survey or not. If a course wasn't included in any survey, its popularity should be displayed as 0 points.