Welcome to the Product Analytics Test

This test is designed to bring you a flavor of data analytics with Platanomelon. Please finish the test 72 hours upon receiving, and email it to tammy.liang@platanomelon.com. If you have any technical questions feel free to reach out and we will get back to you as soon as we can.

What we value:

- Efficient solutions to the problems given
- Critical thinking and creative problem solving
- Idiomatic use of Python and SQL
- Clean coding style and easy to understand comments

A Bit Background:

Oh Tech, our sex toy research and development company, has a goal of developing innovative sex toys to meet market needs. As a product analyst on the team, you will need to develop a holistic understanding of the internal product portfolio and external market landscape. Helping the team to extract product insights from our e-commerce sales data, constructing dashboards to monitor KPIs, curating automated internal data logging processes, developing ML models for forecasting, sentimental analysis, product positioning, pricing... The opportunities of exploration is unlimited, now the question is if you are ready for the challenge :D

PART 1 - Business Intuition

1. Product Intuition (25 points) Oh Tech is considering the next new sex toy to add into the portfolio. In your opinion, what product would you consider? What are your considerations and assumptions? What are the data sources you would include to make sure our product finds the product-market fit? Explain your answers and provide a step-by-step explanation of your thought process.

2. KPIs and Dashboarding (25 points) It is important for the company to develop a holistic overview of the product portfolio performances. In your opinion, what are three KPIs should Oh Tech set as the north stars for it's day to day operation? How would you present/ visualize the KPIs to explain them to the non-technical business users? Detail your choices and make educated guesses about their values, then provide example graphs for the KPI tracking.

PART 2 - Data Skills

3. SQL (25 points) In the orders table you can find orderline data. (Feel free to use the data *order.csv* to help with the process)
- created_at : timestamp of when order is created
- order_number : self-explanatory
- sku: unique reference for each product
- total_order_price: self explanatory
- code: the discount code applied to this order

	created_at	order_number	sku	total_order_price	code
0	2020-08-15 15:17:08+00:00	66449	0097	65.570000000	None
1	2020-08-15 15:17:08+00:00	66449	92	65.570000000	None
2	2020-08-15 15:17:08+00:00	66449	M099	65.570000000	None
3	2020-08-15 15:17:08+00:00	66449	91	65.570000000	None
4	2020-08-15 15:16:56+00:00	66444	91	43.970000000	None
5	2020-08-15 15:16:56+00:00	66444	M099	43.970000000	None
6	2020-08-15 15:16:56+00:00	66444	92	43.970000000	None
7	2020-08-15 15:16:48+00:00	66443	M099	23.980000000	None
8	2020-08-15 15:16:48+00:00	66443	91	23.980000000	None
9	2020-08-15 15:16:47+00:00	66442	M099	42.970000000	None

Use SQL query to answer the following questions:

1. How many orders/day? How much sales per day?
2. What is the top selling product?
3. What percentage of orders are with discount codes?
4. What percentage of orders include the product with SKU PM591?
5. Which hour of day do people buy most products?

4. Python (25 points) In the file *price_analytics.csv* you have the product sales history within one product category. As we are planning a promotion for our top sellers, please identify the top 2 products(we will refer to them as No.1 and No.2) and answer the following questions with detailed analytics:

1. How much price should we drop for top seller No.2 to encourage more sales?
2. Would lowering the price of No.2 impact the sales of product No.1? If so, how much?
3. Should we also drop the price for product No.1? How would your decision impact the performance of the category performance?

	Date	sku	unit_price	units
0	Feb 15, 2021	M735H7159	55.71	262.0
1	Feb 15, 2021	3637H1617	140.36	5.0
2	Feb 15, 2021	P036H2062	68.03	13.0
3	Feb 15, 2021	M630H8980	49.77	186.0
4	Feb 15, 2021	P037H2072	68.03	5.0
5	Feb 15, 2021	-233H1277	93.20	5.0
6	Feb 15, 2021	P036H2066	74.11	6.0
7	Feb 15, 2021	3635H0605	106.03	5.0
8	Feb 15, 2021	2734H9994	11.31	6.0
9	Feb 15, 2021	P036H2067	83.81	7.0