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Q: What ?

A: To find all possible insights (min 5) from a customers' two years transaction detail.

Q: Why ?

A: To evaluate the thinking capacity of the candidate.

Q: Where is the data?

A: Please find the dataset [here](https://docs.google.com/spreadsheets/d/1-31wL1vkNU8-yxfc2ItAX6KE4Re7RuUP/e) :

<https://docs.google.com/spreadsheets/d/1-31wL1vkNU8-yxfc2ItAX6KE4Re7RuUP/edit?usp=sharing&oid=107093923581893374366&rtpof=true&sd=true>.

Q: Tell me about the data.

A: Here is the data discovery summary:

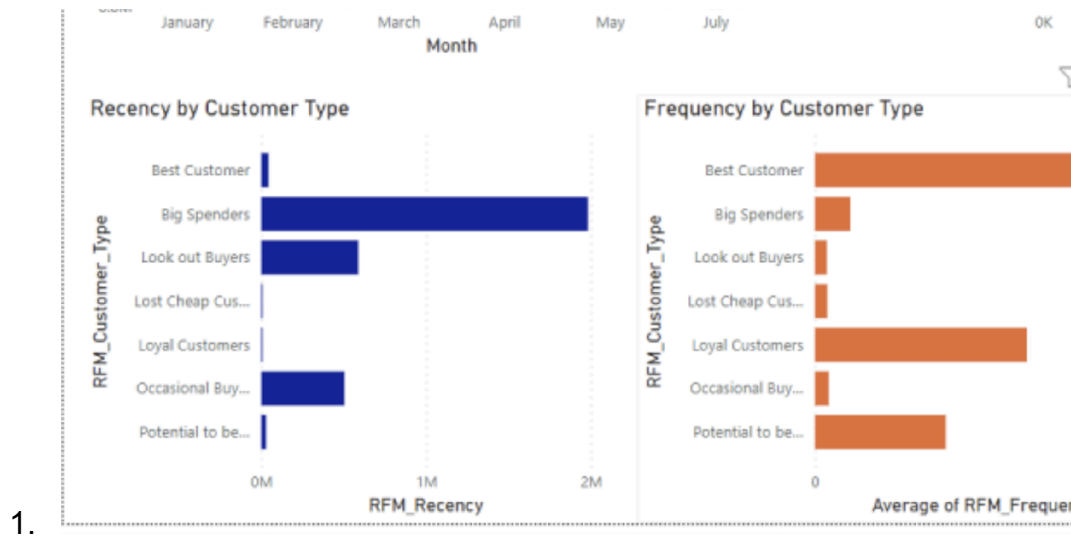
1. Shape: (1067371, 8)
2. Column:
 - InvoiceNo - Invoice number. Nominal. A 6-digit integral number uniquely assigned to each transaction. If this code starts with the letter 'c', it indicates a cancellation.
 - StockCode - Product (item) code. Nominal. A 5-digit integral number uniquely assigned to each distinct product.
 - Description - Product (item) name. Nominal.
 - Quantity - The quantities of each product (item) per transaction. Numeric.
 - InvoiceDate - Invoice date and time. Numeric. The day and time when a transaction was generated.
 - UnitPrice - Unit price. Numeric. Product price per unit in sterling (£).
 - CustomerID - Customer number. Nominal. A 5-digit integral number uniquely assigned to each customer.
 - Country - Country name. Nominal. The name of the country where a customer resides.

Q: What is the Expectation from the candidate:

A: The candidate is expected derive 5+ data backed strategies, in total, to answer questions from the following vertical within the organization :

1) Marketing :

- a. “How can we best cluster our customers and get a view on Cluster_Customer x RFM (Recency, Frequency & Monetary)”
 - i. Please create a model to cluster the customers into 3-4 segments.
 - ii. Please justify quantitatively how you choose and why you finalised the above model.
 - iii. Create a view ‘similar’ to the below image and derive & present marketing strategies out if it.



2) Operation team:

- a. “How can we forecast sales to make sure that we have enough stock for the next quarter (i.e. the next 3 months)”
 - i. Please create a model to predict the daily sales at country level for the next 2 months.
 - ii. Please justify quantitatively how you choose and why you finalised the above model.
 - iii. Create a view similar to the below image and derive & present marketing strategies out if it.



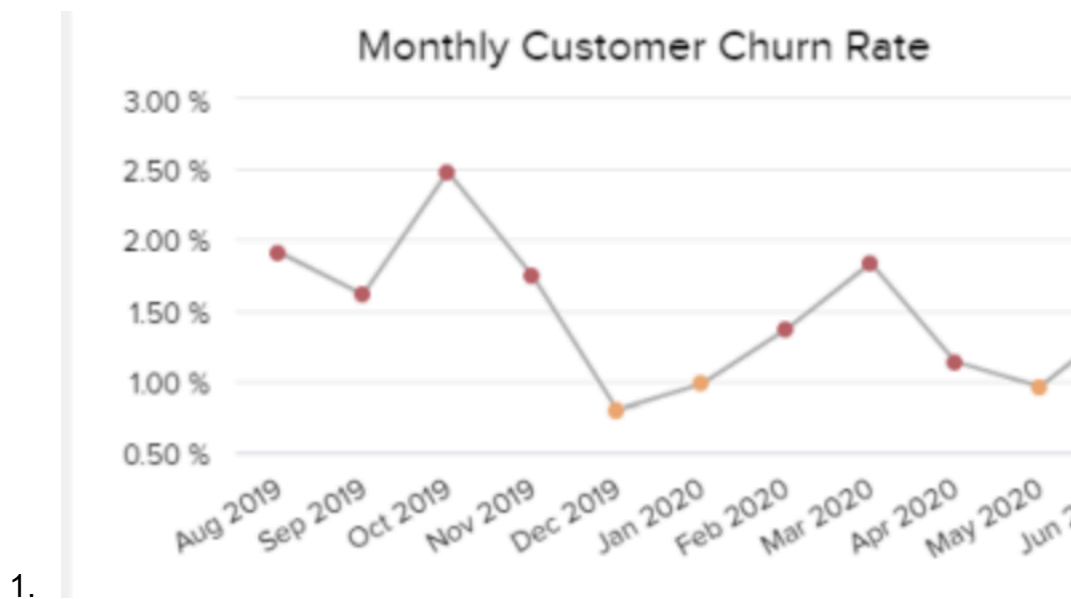
1.

3) Retail products team:

- a. "How can we arrange the shelf in each store so that we can promote cross sell & up sell for our products in the physical store. Can we start by you suggesting the 'next best product in line' for the top 10 selling stock code?"
 - i. Hint : ABI index (Average Basket item index is a number which depicts how many time two items where bought together. So if the ABI index of one of the top 10 selling item , let's say MILK, was high then for the MILK x Butter matrix it could be said that the probability of butter being bought every time milk was bought is high)
 - ii. Create a visualization to the best of your ability as a star member of the Consumer Data science team.
 - iii. Make sure you handle the elements of time series forecasting such as seasonality.

4) Customer relationship management:

- a. "How can we know which customers are about to churn? If we could know which customer has the highest churn rate in a given a month then we could optimize our customer retention initiatives."
 - i. Please create a model to reduce the churn rate for the organization at country level x month level.
 - ii. Please justify quantitatively how you choose and why you finalised the above model.
 - iii. Create a view similar to the below image and derive & present marketing strategies out of it. [Each dashboard should have country as a filter]



Q: How & where should I submit my work for evaluation:

A:

- a. You are requested to share the .sql/.py/.ipynb/ file IN PDF FORMAT & the presentation IN .PPT FORMAT & with us to evaluate the result.
 - i. Note : Readability is an important criteria of evaluation. Putting efforts in making sure that your submission is well commented, structured and easy to read & understand is highly appreciated.
- b. Create 'ONE' presentation(.ppt) to share your methodology, result and recommendation.
 - i. Note:
 1. Create sections at the team level
 2. As you will be asked to present this in your interviews please make sure that the presentation is also symmetric, structured and explains the strategies with data
- c. Upload it in your drive and share the link to it with a 'READ ACCESS' for evaluation or upload it here in the internshala