SQL CASE STUDY

Challenge 4 Finance Analysis

@DataCoach

INTRODUCTION:

You are a Finance Analyst working for 'The Big Bank' You have been tasked with finding out about your customers and their banking behavior.

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Examine the accounts they hold and the type of transactions they make to develop greater insight into your customers.

TABLES

Customers

CustomerID	FirstName	LastName	City	State
1	John	Doe	New York	NY
2	Jane	Doe	New York	NY
3	Bob	Smith	San Francisco	CA
4	Alice	Johnson	San Francisco	CA
5	Michael	Lee	Los Angeles	CA
6	Jennifer	Wang	Los Angeles	CA

Accounts

AccountID	CustomerID	BranchID	AccountType	Balance
1	1	5	Checking	1000
2	1	5	Savings	5000
3	2	1	Checking	2500
4	2	1	Savings	####
5	3	2	Checking	7500
6	3	2	Savings	####
7	4	8	Checking	5000
8	4	8	Savings	####
9	5	14	Checking	####
10	5	14	Savings	####
11	6	2	Checking	5000
12	6	2	Savings	####
13	1	5	Credit Card	-500
14	2	1	Credit Card	-1000
15	3	2	Credit Card	-2000

Transactions

TransactionID	AccoutID	TransactionDate	Amount
1	1	2022-01-01	-500
2	1	2022-01-02	-250
3	2	2022-01-03	1000
4	3	2022-01-04	-1000
5	3	2022-01-05	500
6	4	2022-01-06	1000
7	4	2022-01-07	-500
8	5	2022-01-08	-2500
9	6	2022-01-09	500
10	6	2022-01-10	-1000
11	7	2022-01-11	-500
12	7	2022-01-12	-250
13	8	2022-01-13	1000
14	8	2022-01-14	-1000
15	9	2022-01-15	500

Branches

BranchID	BranchName	City	State
1	Main	New York	NY
2	Downtown	San Francisco	CA
3	West LA	Los Angeles	CA
4	East LA	Los Angeles	CA
5	Uptown	New York	NY
6	Financial District	San Francisco	CA
7	Midtown	New York	NY
8	South Bay	San Francisco	CA
9	Downtown	Los Angeles	CA
10	Chinatown	New York	NY
11	Marina	San Francisco	CA
12	Beverly Hills	Los Angeles	CA
13	Brooklyn	New York	NY
14	North Beach	San Francisco	CA
15	Pasadena	Los Angeles	CA

1. What are the names of all the customers who live in New York?

```
SELECT
    CONCAT(firstName, ' ', lastname) AS Customer_Name
FROM customers1
WHERE
    city = 'New York';
```

Customer_Name
John Doe
Jane Doe

INSIGHT: In our customer database, individuals residing in New York are: John Doe and Jane Doe.

2. What is the total number of accounts in the Accounts table?

```
SELECT
    COUNT(accountID) AS Total_accounts
FROM accounts;
```

Total_accounts
15

INSIGHT: The Accounts table encompasses a total of 15 individual accounts.

3. What is the total balance of all checking accounts?

```
SELECT
    SUM(balance) AS Total_Balance
FROM accounts
WHERE
    AccountType = 'Checking';
```

Total_Balance
31000.00

INSIGHT: The cumulative balance across all checking accounts stands at $31,000.

4. What is the total balance of all accounts associated with customers who live in Los Angeles?

```sql
SELECT
    CONCAT(c.firstname, ' ', c.lastname) AS Customer_Name,
    SUM(a.balance) AS Total_Balance
FROM customers1 c
JOIN accounts a ON c.customerID = a.customerID
WHERE
    city = 'Los Angeles'
GROUP BY Customer_Name
ORDER BY Total_Balance DESC;
```

Customer_Name	Total_Balance
Michael Lee	60000.00
Jennifer Wang	15000.00

INSIGHT: Among accounts linked to customers residing in Los Angeles, Michael Lee holds a total balance of $60,000, while Jennifer Wang maintains a balance of $15,000.

5. Which branch has the highest average account balance?

```sql
SELECT
    b.BranchID,
    b.Branchname,
    ROUND(AVG(a.balance), 2) AS Avg_account_balance
FROM accounts a
JOIN branches b ON a.branchID = b.branchID
GROUP BY b.branchID , b.Branchname
ORDER BY Avg_account_balance DESC
LIMIT 1;
```

BranchID	Branchname	Avg_account_balance
14	North Beach	30000.00

INSIGHT: The North Beach branch boasts the highest average account balance, reaching $30,000.

6. Which customer has the highest current balance in their accounts?

```
WITH cte AS (
SELECT
CONCAT(c.FirstName, ' ', c.LastName) AS Customer_Name,
SUM(a.Balance) AS Total_Balance,
RANK() OVER (ORDER BY SUM(a.Balance) DESC) AS Rnk
FROM Customers1 c
JOIN  Accounts a ON c.CustomerID = a.CustomerID
GROUP BY  c.CustomerID, Customer_Name
)
SELECT customer_name,
Total_balance
FROM cte
WHERE Rnk = 1;
```

customer_name	Total_balance
Michael Lee	60000.00

INSIGHT: Michael Lee holds the highest current balance among customers, totaling $60,000 across his accounts.

7. Which customer has made the most transactions in the Transactions table?

```sql
WITH cte AS (
SELECT
concat(c.firstname, ' ', c.lastname) AS Customer_Name,
count(t.transactionID) AS Transactions_count,
ROW_NUMBER() OVER (ORDER BY count(t.transactionID) DESC) AS Rnk
FROM transactions t
JOIN accounts a ON a.accountID= t.accountID
JOIN customers1 c ON a.customerID = c.customerID
GROUP BY customer_name)

SELECT
customer_name,
Transactions_count
FROM cte
WHERE rnk = 1;
```

customer_name	Transactions_count
Jane Doe	4

INSIGHT: Jane Doe holds the record for the highest number of transactions within the Transactions table, totaling 4 transactions.

8. Which branch has the highest total balance across all of its accounts?

```
SELECT
    b.branchname, SUM(a.balance) AS total_balance
FROM accounts a
JOIN branches b ON a.branchID = b.branchID
GROUP BY b.branchname
ORDER BY total_balance DESC
LIMIT 1;
```

branchname	total_balance
North Beach	60000.00

INSIGHT: The North Beach branch accumulates the highest total balance across all of its accounts, amounting to $60,000.

9. Which customer has the highest total balance across all of their accounts, including savings and checking accounts?

```
SELECT
    CONCAT(c.firstname, ' ', c.lastname) AS Customer_Name,
    SUM(a.balance) AS Total_balance
FROM customers1 c
JOIN accounts a ON a.customerID = c.customerID
WHERE
    accounttype IN ('Savings' , 'Checking')
GROUP BY customer_name
ORDER BY Total_balance DESC
LIMIT 1;
```

Customer_Name	Total_balance
Michael Lee	60000.00

INSIGHT: Michael Lee emerges as the customer with the highest total balance across all of their accounts, encompassing both savings and checking accounts, with a total of $60,000.

10. Which branch has the highest number of transactions in the Transactions table?

```
WITH Cte AS (
SELECT
b.city,
b.branchname,
count(transactionID) AS Transactions_count,
ROW_NUMBER() OVER (ORDER BY count(transactionID) DESC) AS Rnk
FROM branches b
JOIN accounts a ON b.branchID = a.branchID
JOIN transactions t ON a.accountID = t.accountID
GROUP BY b.city, b.branchname
)
SELECT
city, branchname,
Transactions_count
FROM cte
WHERE rnk=1;
```

INSIGHT: The Main Branch located in New York City records the highest number of transactions within the Transactions table, totaling 4 transactions.

city	branchname	Transactions_count
New York	Main	4

11. Find the customer who made the earliest transaction in January 2022.

```sql
SELECT
    CONCAT(c.firstname, ' ', c.lastname) AS Customer_Name,
    MIN(transactiondate) AS Earliest_transaction
FROM transactions t
JOIN accounts a ON a.accountID = t.accountID
JOIN customers1 c ON a.customerID = c.customerID
GROUP BY Customer_Name
LIMIT 1;
```

Customer_Name	Earliest_transaction
John Doe	2022-01-01

INSIGHT: john Doe is identified as the customer who initiated the earliest transaction in January 2022, which occurred on the 1st of January, 2022.

12. Find the customer who made the largest single transaction in January 2022.

```
WITH cte AS (
SELECT
concat(c.firstname, ' ', c.lastname) AS Customer_Name,
max(t.amount) AS Largest_transaction,
DENSE_RANK() OVER (ORDER BY max(t.amount) DESC) AS Rnk
FROM transactions t
JOIN accounts a ON a.accountID= t.accountID
JOIN customers1 c ON a.customerID = c.customerID
GROUP BY customer_name)

SELECT customer_name,
largest_transaction
FROM cte
WHERE rnk=1;
```

customer_name	largest_transaction
John Doe	1000.00
Jane Doe	1000.00
Alice Johnson	1000.00

INSIGHT: Each of the customers, John Doe, Jane Doe and Alice Johnson, made the largest single transaction of $1000 in January 2022.

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INSIGHTS AND SUGGESTIONS

INSIGHTS

1.New York city hosts prominent customers like John Doe and Jane Doe, indicating potential market segmentation opportunities.
2. The database records 15 individual accounts, reflecting a diverse customer base.
3. Michael Lee holds the highest balance of $60,000, suggesting targeted services for high-value customers in Los Angeles.
4.North Beach branch stands out with the highest average balance of $30,000, prompting analysis for replicating success strategies.

SUGGESTIONS

1. Tailor marketing efforts based on regional customer preferences.
2. Develop services for high-value customers like Michael Lee to enhance satisfaction.
3. Replicate successful strategies from North Beach branch to improve performance across branches.
4. Implement transaction monitoring systems to detect anomalies and ensure security.
5. Utilize transaction data to engage customers during key financial periods for increased loyalty.

Thankyou

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