CHALLENGE 4
FINANCE ANALYSIS

INTRODUCTION

1. The provided data needs to be analyzed by a Finance Analyst working for 'The Big Bank'.

2. The crucial insights gathered from the analysis will help understand about the customers and their banking behavior.

3. The following four tables will be used for the analysis :
   - Customers
   - Accounts
   - Transactions
   - Branches

TABLES USED FOR THE ANALYSIS

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	AccountID	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

Q1. What are the names of all the customers who live in New York?

```
5
6
7   -- 1. What are the names of all the customers who live in New York?
8•  select concat(firstname," ",lastname) as Customer_name from customers
9   where city = "New York";
10
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_name
John Doe
Jane Doe

Result Grid

Q2. What is the total number of accounts in the Accounts table?

```
15  -- 2. What is the total number of accounts in the Accounts table?
16  select count(distinct accountid) as total_accounts
17  from accounts;
```

Q3. What is the total balance of all checking accounts?

```
19  select sum(balance) as total_balance
20  from accounts
21  where accounttype = "checking";
22
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

total_balance
31000.00

Q4. What is the total balance of all accounts associated with customers who live in Los Angeles?

```
27 • select c.customerid as Customer_ID,concat(firstname," ",lastname) as Customer_Name,
28    sum(balance) as total_balance
29  from customers c
30  join accounts a
31  on c.customerid = a.customerid
32  where c.city = "Los Angeles"
33  group by c.customerid,Customer_Name;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_ID	Customer_Name	total_balance
5	Michael Lee	60000.00
6	Jennifer Wang	15000.00

Q5-Which branch has the highest average account balance?

```
35 • with branch_with_highest_average_balance as
36      (select branchname as Branch_Name , round(avg(balance),2) as avg_balance ,
37      rank() over(order by round(avg(balance),2) desc) as branch_rank
38      from branches b
39      join accounts a
40      on b.branchid = a.branchid
41      group by Branch_Name)
42  select Branch_Name,avg_balance
43  from branch_with_highest_average_balance
44  where branch_rank =1 ;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Branch_Name	avg_balance
North Beach	30000.00

Q6. Which customer has the highest current balance in their accounts?

```
47 • with customer_with_highest_currenct_balance_table as
48       (select c.customerid as Customer_ID , concat(firstname," ",lastname) as Customer_Name,
49       sum(a.balance) as total_balance ,
50       rank() over(order by  sum(a.balance) desc) as customer_rank_based_on_balance
51       from customers c
52       join accounts a
53       on c.customerid = a.customerid
54       group by c.customerid,Customer_Name)
55   select Customer_ID,Customer_Name,total_balance
56   from customer_with_highest_currenct_balance_table
57   where customer_rank_based_on_balance = 1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_ID	Customer_Name	total_balance
5	Michael Lee	60000.00

Q7. Which customer has made the most transactions in the Transactions table?

```sql
with transactions_table as(select a.customerid as Customer_ID , count(distinct t.transactionid) as total_transactions,
rank() over(order by count(distinct t.transactionid) desc ) as customer_rank_based_on_transactions
from accounts a
join transactions t
on a.accountid = t.accountid
group by a.customerid)
select Customer_ID,total_transactions
from transactions_table
where customer_rank_based_on_transactions = 1 ;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_ID	total_transactions
2	4
4	4

Q8. Which branch has the highest total balance across all of its accounts

```
69 •  with branch_with_maximum_total_balance as
70        (select b.branchid as Branch_ID,b.branchname as Branch_Name ,
71        sum(a.balance) as branch_total_balance,
72        rank() over(order by sum(balance) desc) as branch_rank
73        from branches b
74        join accounts a
75        on b.branchid = a.branchid
76        group by Branch_ID,Branch_Name)
77    select Branch_ID,Branch_Name,branch_total_balance
78    from branch_with_maximum_total_balance
79    where branch_rank = 1 ;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Branch_ID	Branch_Name	branch_total_balance
14	North Beach	60000.00

Q9. Which customer has the highest total balance across all of their accounts, including savings and checking accounts?

```
82 •  with customer_with_highest_total_balance_table as
83        (select c.customerid as Customer_ID , concat(firstname," ",lastname) as Customer_Name,
84        sum(a.balance) as total_balance ,
85        rank() over(order by  sum(a.balance) desc) as customer_rank_based_on_balance
86        from customers c
87        join accounts a
88        on c.customerid = a.customerid
89        group by c.customerid,Customer_Name)
90    select Customer_ID,Customer_Name,total_balance
91    from customer_with_highest_total_balance_table
92    where customer rank based on balance = 1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_ID	Customer_Name	total_balance
5	Michael Lee	60000.00

Q10. Which branch has the highest number of transactions in the Transactions table?

```sql
SELECT t1.Branch_ID, b.branchname AS Branch_Name, t1.total_transactions
FROM (
    SELECT a.branchid AS Branch_ID,
           COUNT(DISTINCT transactionid) AS total_transactions,
           DENSE_RANK() OVER (ORDER BY COUNT(DISTINCT transactionid) DESC) AS trans_rank
    FROM accounts a
    JOIN transactions t ON a.accountid = t.accountid
    GROUP BY Branch_ID
) t1
JOIN branches b ON t1.Branch_ID = b.branchid
where t1.trans_rank = 1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Branch_ID	Branch_Name	total_transactions
1	Main	4
8	South Bay	4