

Challenge 4 – Finance Analysis



<https://steeldata.org.uk/SQL4.html>

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.

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

Problem Statement

Key datasets for this case study:

- accounts
- branches
- customers
- transactions

Tables Used

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

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

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

Case Study Questions

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

The screenshot shows a SQL IDE with a query editor and a result grid. The query editor contains the following SQL code:

```
1 • select concat(FirstName, ' ', LastName) as name
2   from customers
3  where City='New York';
4
```

The result grid shows the following data:

name
John Doe
Jane Doe

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

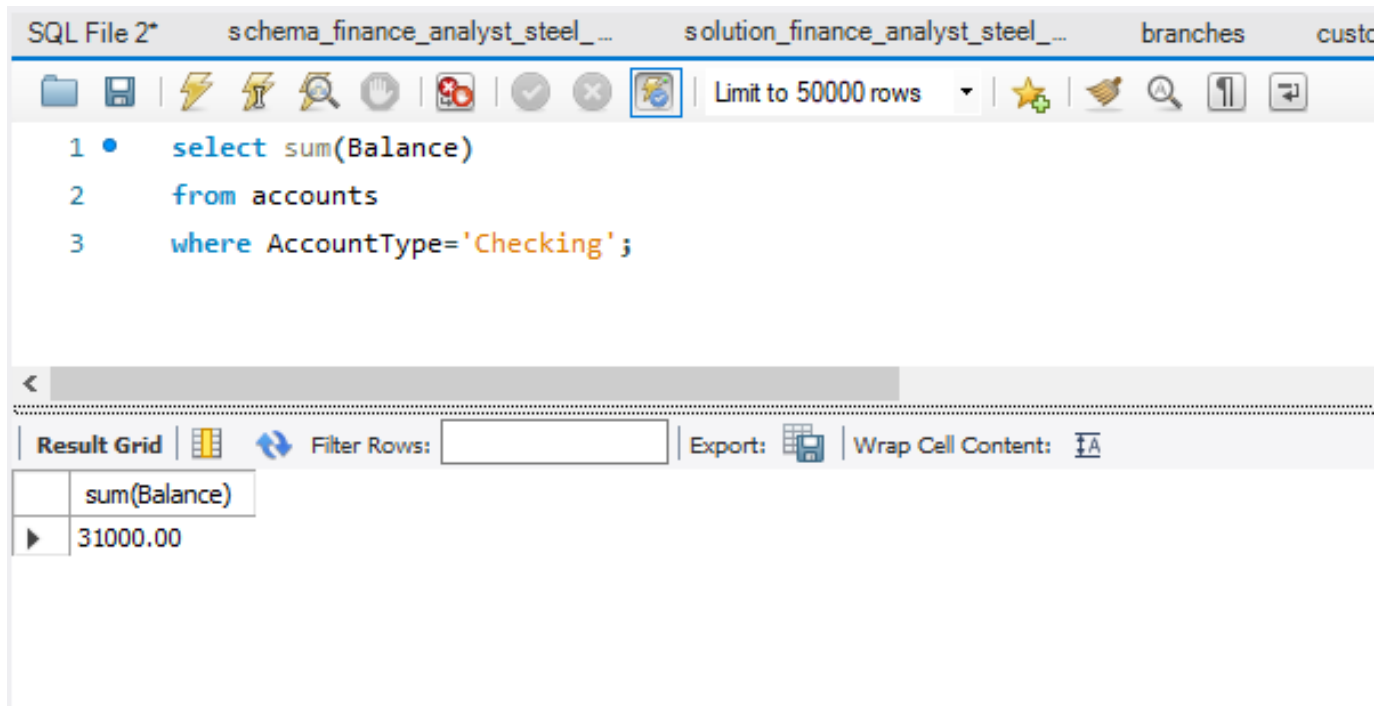
The screenshot shows a SQL IDE with a query editor and a result grid. The query editor contains the following SQL code:

```
1 • select count(distinct AccountID)
2   from accounts;
```

The result grid shows the following data:

count(distinct AccountID)
15

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



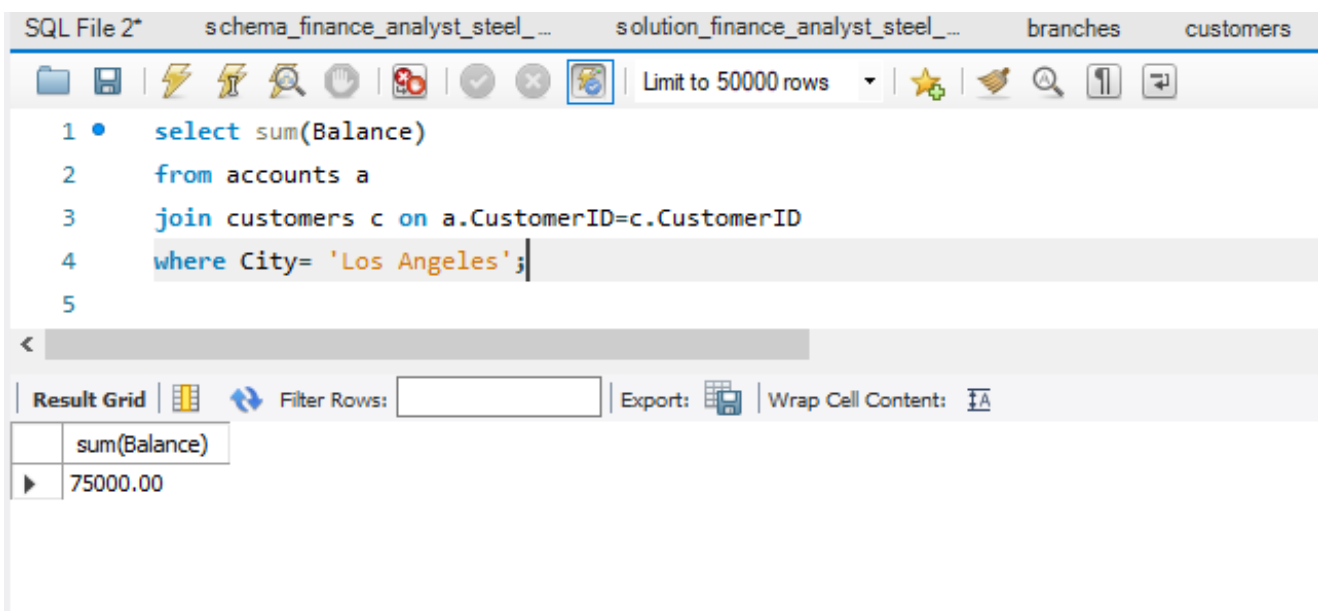
The screenshot shows a SQL IDE interface with a query editor and a result grid. The query editor contains the following SQL code:

```
1 • select sum(Balance)
2   from accounts
3   where AccountType='Checking';
```

The result grid displays the following data:

sum(Balance)
31000.00

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



The screenshot shows a SQL IDE interface with a query editor and a result grid. The query editor contains the following SQL code:

```
1 • select sum(Balance)
2   from accounts a
3   join customers c on a.CustomerID=c.CustomerID
4   where City= 'Los Angeles';
5
```

The result grid displays the following data:

sum(Balance)
75000.00

5. Which branch has the highest average account balance?

SQL File 2* schema_finance_analyst_steel_... solution_finance_analyst_steel_... branches cu

Limit to 50000 rows

```
1 • select BranchName, avg(Balance) as avg_bal
2   from accounts a
3  join branches b on a.BranchID=b.BranchID
4  group by BranchName
5  order by avg_bal desc
6  limit 1
```

Result Grid Filter Rows: Export: Wrap Cell Content: Fetch rows:

	BranchName	avg_bal
▶	North Beach	30000.000000

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

SQL File 2* schema_finance_analyst_steel_... solution_finance_analyst_steel_... branches customers

Limit to 50000 rows

```
1 • select a.CustomerID, concat(FirstName, ' ', LastName), sum(Balance) as total_bal
2   from accounts a
3  join customers c on a.CustomerID=c.CustomerID
4  group by a.CustomerID
5  order by total_bal desc
6  limit 1;
```

Result Grid Filter Rows: Export: Wrap Cell Content: Fetch rows:

	CustomerID	concat(FirstName, ' ', LastName)	total_bal
▶	5	Michael Lee	60000.00

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

SQL File 2* schema_finance_analyst_steel_... solution_finance_analyst_steel_... branches customers transaction

Limit to 50000 rows

```
1 • select FirstName, count(t.AccountID) as total_count
2 from accounts a
3 join customers c on a.CustomerID=c.CustomerID
4 join transactions t on a.AccountID=t.AccountID
5 group by FirstName
6 order by total_count desc;
7
8
```

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

	FirstName	total_count
▶	Jane	4
	Alice	4
	John	3
	Bob	3
	Michael	1

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

SQL File 2* schema_finance_analyst_steel_... solution_finance_analyst_steel_... branches customers

Limit to 50000 rows

```
1 • select a.BranchID, BranchName, sum(Balance) as total_bal
2 from accounts a
3 join branches b on a.BranchID=b.BranchID
4 group by 1, 2
5 order by total_bal desc
6 limit 1;
7
8
```

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

	BranchID	BranchName	total_bal
▶	14	North Beach	60000.00

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

SQL File 2* schema_finance_analyst_steel_... solution_finance_analyst_steel_... branches customer

Limit to 50000 rows

```
1 • select a.CustomerID, FirstName, sum(Balance) as total_bal
2   from accounts a
3  join customers c on a.CustomerID=c.CustomerID
4  where AccountType in ('Checking', 'Savings')
5  group by 1,2
6  order by total_bal desc
7  limit 1;
```

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

	CustomerID	FirstName	total_bal
▶	5	Michael	60000.00
	4	Alice	25000.00
	3	Bob	22500.00
	6	Jennifer	15000.00
	2	Jane	12500.00
	1	John	6000.00

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

SQL File 2* branches customers transactions accounts

Limit to 50000 rows

```
1 • select BranchName, count(TransactionID) total_count
2   from accounts a
3  join branches b on a.BranchID=b.BranchID
4  join transactions t on a.AccountID=t.AccountID
5  group by 1
6  order by total_count desc;
7
```

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

	BranchName	total_count
▶	Main	4
	South Bay	4
	Downtown	3
	Uptown	3
	North Beach	1

Insights

The following topics are completely covered in this case study:

- Joins in SQL
- Where clause
- Aggregate functions
- Group by clause
- Order by clause
- Limit in SQL
- Concatenate function

The following insights can be gathered for this case study:

- There are a total of 15 accounts which includes savings, credit card and checking account types.
- Michael has highest balance in all accounts and has made the lowest number of transactions.
- Main and South Bay branches has highest number of transactions.
- Out of the five branches North Beach has highest balance amount as well as highest average amount but it has the lowest number of transactions.
- Jane and Alice has made maximum number of transactions.