

An isometric illustration on a dark blue background featuring several digital devices. A central laptop displays a 3D bar chart with bars in shades of pink, orange, and yellow. To its left, another laptop shows a line graph with a red line and data points. Above the central laptop, a tablet displays a line graph with a red line and data points. To the right, a smartphone shows a bar chart. A red line with data points weaves through the scene, connecting the different devices. The overall theme is financial analysis and data visualization.

Challenge 4 - Finance Analysis

You are a Finance Analyst working for 'The Big Bank' You have been tasked with finding out about your customers and their banking behaviour. Examine the accounts they hold and the type of transactions they make to develop greater insight into your customers.

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

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

Ans:

```
select firstname, lastname from customers where  
city='new york';
```

Result Grid			Filter
	firstname	lastname	
▶	John	Doe	
	Jane	Doe	

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

Ans:

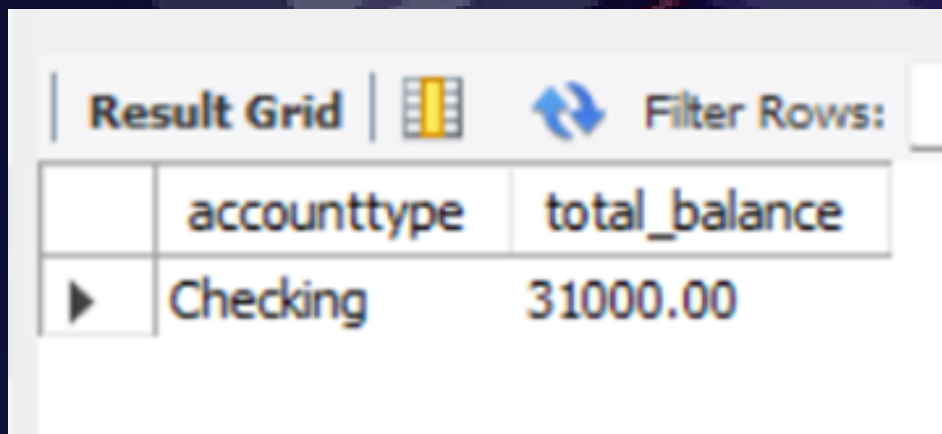
```
select count(accountid) as total_accounts from  
accounts;
```

Result Grid	
	total_accounts
▶	15

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

Ans:

```
select accounttype, sum(balance) as total_balance  
from accounts  
where accounttype='checking'  
group by accounttype;
```



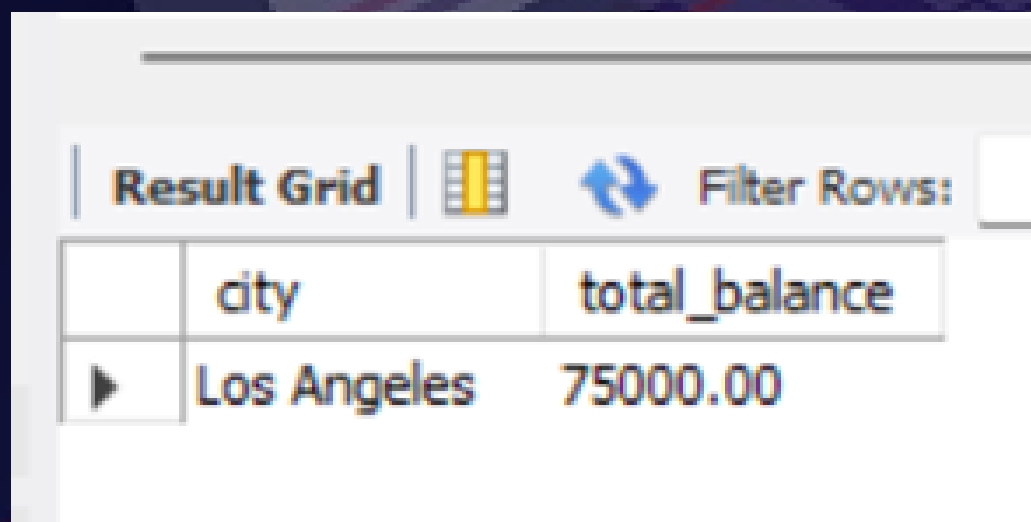
The screenshot shows a database query result grid. At the top, there is a tab labeled 'Result Grid' and a 'Filter Rows' button. The grid has two columns: 'accounttype' and 'total_balance'. There is one row of data showing 'Checking' with a total balance of 31000.00.

	accounttype	total_balance
▶	Checking	31000.00

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

Ans:

```
select c.city, sum(a.balance) as total_balance
from customers c
join accounts a on c.customerid=a.customerid
where city='los angeles' group by 1;
```



The screenshot shows a database interface with a 'Result Grid' tab. It contains a table with two columns: 'city' and 'total_balance'. The first row shows 'Los Angeles' with a total balance of '75000.00'. There is a blue double-headed arrow icon and a 'Filter Rows:' label above the table.

	city	total_balance
▶	Los Angeles	75000.00

5. Which branch has the highest average account balance?

Ans:

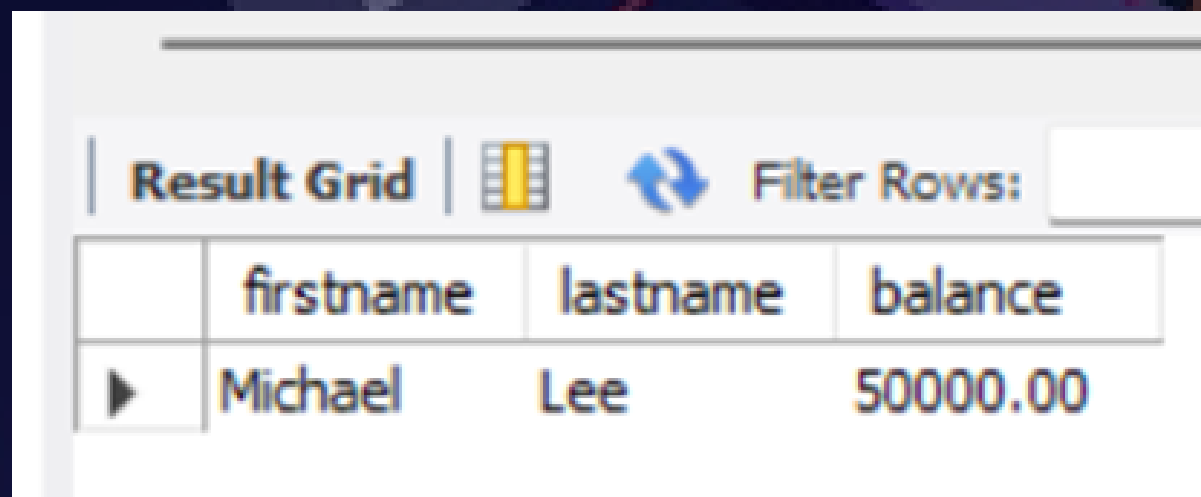
```
select b.branchname, avg(a.balance) as avg_balance
from branches b
join accounts a on b.branchid=a.branchid
group by 1
order by 2 desc
limit 1
```

Result Grid			Filter Rows:
	branchname	avg_balance	
▶	North Beach	30000.000000	

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

Ans:

```
select c.firstname, c.lastname, max(a.balance) as  
balance  
from customers c  
join accounts a on c.customerid=a.customerid  
group by 1,2  
order by 3 desc limit 1;
```



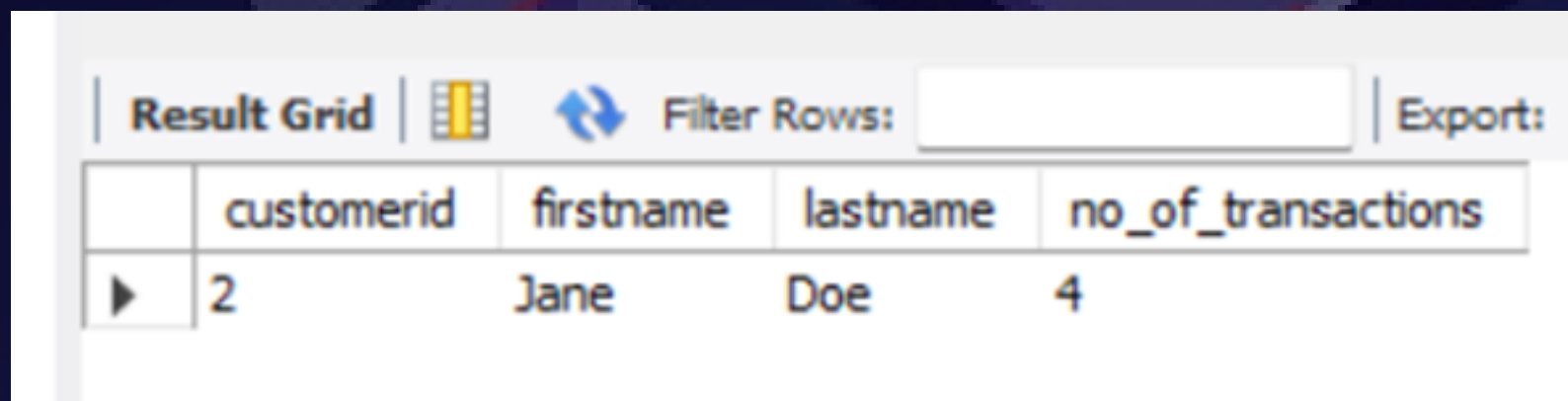
The screenshot shows a database interface with a 'Result Grid' tab. It contains a single row of data representing the customer with the highest balance. The columns are 'firstname', 'lastname', and 'balance'. The data row shows 'Michael' as the first name, 'Lee' as the last name, and a balance of '50000.00'. There is a small play button icon to the left of the data row.

	firstname	lastname	balance
▶	Michael	Lee	50000.00

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

Ans:

```
select a.customerid, c.firstname, c.lastname,  
count(t.transactionid) as no_of_transactions  
from customers c  
join accounts a on c.customerid=a.customerid  
join transactions t on a.accountid=t.accountid  
group by 1,2,3 order by 4 desc limit 1;
```



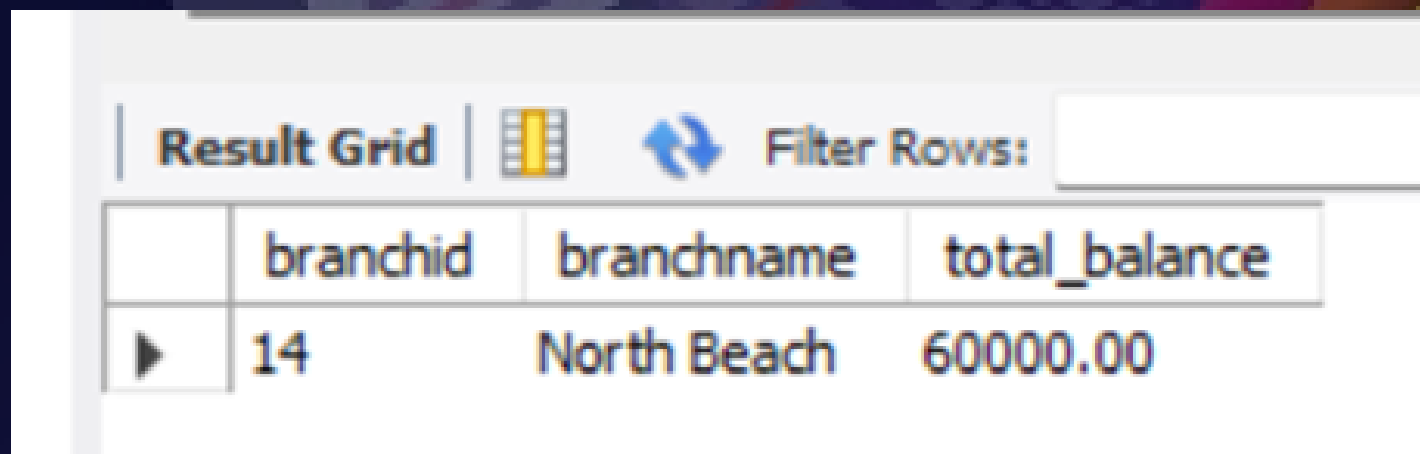
The screenshot shows a database interface with a 'Result Grid' tab. It includes a 'Filter Rows' input field and an 'Export' button. The result grid contains one row of data, representing the customer with the most transactions.

	customerid	firstname	lastname	no_of_transactions
▶	2	Jane	Doe	4

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

Ans:

```
select a.branchid, b.branchname, sum(a.balance) as  
total_balance  
from branches b join accounts a on  
b.branchid=a.branchid  
group by 1,2 order by 3 desc limit 1;
```



The screenshot shows a database interface with a 'Result Grid' tab. It includes a 'Filter Rows' search bar and a table with three columns: 'branchid', 'branchname', and 'total_balance'. The first row of data shows '14' for branchid, 'North Beach' for branchname, and '60000.00' for total_balance.

	branchid	branchname	total_balance
▶	14	North Beach	60000.00

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

Ans:

```
select a.customerid, c.firstname, c.lastname,  
sum(a.balance) as total_balance  
from customers c join accounts a on  
c.customerid=a.customerid  
group by 1,2,3 order by 4 desc limit 1;
```

Result Grid				
Filter Rows:				
	customerid	firstname	lastname	total_balance
▶	5	Michael	Lee	60000.00

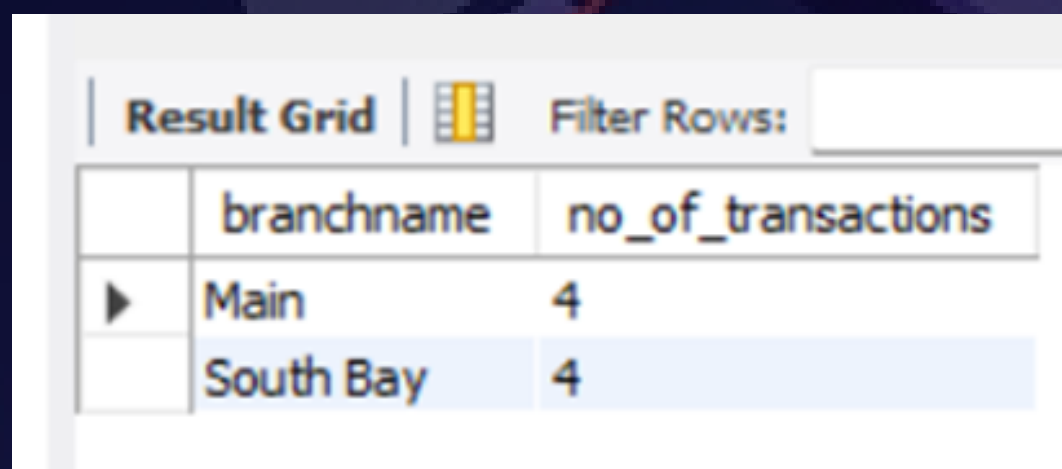
10. Which branch has the highest number of transactions in the Transactions table?

Ans:

with cte1 as (

```
    select a.branchid, b.branchname, count(t.transactionid) as  
no_of_transactions,  
dense_rank() over(order by count(t.transactionid) desc) as rn  
from branches b join accounts a on b.branchid=a.branchid  
join transactions t on a.accountid=t.accountid  
group by 1 )
```

```
select branchname, no_of_transactions from cte1  
where rn=1;
```



The screenshot shows a 'Result Grid' window with a 'Filter Rows' input field. The grid contains two columns: 'branchname' and 'no_of_transactions'. There are two rows of data: 'Main' with 4 transactions and 'South Bay' with 4 transactions. The 'South Bay' row is highlighted in blue.

	branchname	no_of_transactions
▶	Main	4
	South Bay	4