SQL QUERIES

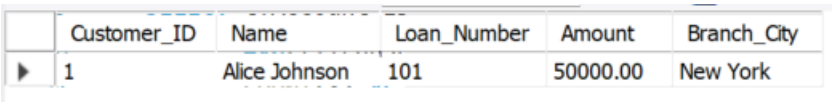
🔷 Query 1: Customers with Loans from a Specific Branch City

Query:

```
SELECT c.Customer_ID,
    c.Name,
    l.Loan_Number,
    l.Amount,
    br.Branch_City
FROM Customer c
JOIN Borrow b ON c.Customer_ID = b.Customer_ID
JOIN Loan l ON b.Loan_Number = l.Loan_Number
JOIN Branch br ON l.Branch_Name = br.Branch_Name
WHERE br.Branch_City = 'New York';
```

Explanation:

- This query retrieves all customers **who have taken loans from branches in New York**.
- It joins the **Customer, Borrow, Loan, and Branch** tables to filter loans **by branch city**.



Customer_ID	Name	Loan_Number	Amount	Branch_City
1	Alice Johnson	101	50000.00	New York

🔷 Query 2: Average Transaction Amount on Active Accounts

Query:

```
SELECT t.Account_ID,
    AVG(t.Transaction_Amount) AS avg_transaction,
    COUNT(*) AS transaction_count
FROM Transaction t
GROUP BY t.Account_ID
HAVING AVG(t.Transaction_Amount) > 100;
```

Explanation:

- This query finds accounts where the **average transaction amount is greater than $100**.
- It groups transactions by `Account_ID`, computes `AVG(Transaction_Amount)`, and applies a `HAVING` clause to filter out accounts that don't meet the criteria.

Account_ID	avg_transaction	transaction_count
1001	200.000000	1
1002	300.000000	1
1003	150.000000	1
1004	500.000000	1
1005	250.000000	1

🔷 Query 3: Employee Service Load (Number of Customers Served)

Query:

```
SELECT e.Employee_ID,
    e.Name,
    COUNT(b.Customer_ID) AS num_customers
FROM Employee e
JOIN Banker b ON e.Employee_ID = b.Employee_ID
GROUP BY e.Employee_ID, e.Name
ORDER BY num_customers DESC;
```

Explanation:

- This query identifies **employees who serve as bankers** and counts the number of customers they manage.
- Results are **sorted in descending order**, showing employees handling the highest number of customers first.

Employee_ID	Name	num_customers
2001	David White	1
2002	Emma Stone	1
2003	Frank Martin	1
2004	Grace Hall	1
2005	Hank Wilson	1
2006	Ivy Adams	1

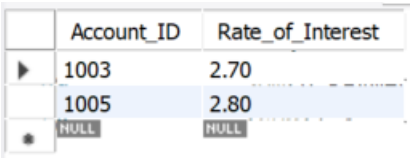
🔷 Query 4: Savings Accounts with Above-Average Interest Rates

Query:

```
SELECT sa.Account_ID,
    sa.Rate_of_Interest
FROM Savings_Acc sa
WHERE sa.Rate_of_Interest > (SELECT AVG(Rate_of_Interest) FROM Savings_Acc);
```

Explanation:

- This query finds **savings accounts** offering an **interest rate higher than the average interest rate** among all savings accounts.
- A **subquery** calculates the **average interest rate**, and the main query filters results based on that value.



Account_ID	Rate_of_Interest
1003	2.70
1005	2.80
NULL	NULL

🔷 Query 5: Branch Loan and Payment Summary

Query:

```
SELECT o.Branch_Name,
    SUM(l.Amount) AS total_loan,
    SUM(DISTINCT p.Payment_Amount) AS total_payment,
    (SUM(l.Amount) - SUM(p.Payment_Amount)) AS outstanding_amount
FROM Originated_By o
JOIN Loan l ON o.Loan_Number = l.Loan_Number
JOIN Payment p ON l.Loan_Number = p.Loan_Number
GROUP BY o.Branch_Name;
```

Explanation:

- This query provides a **financial summary for each bank branch**, showing:
  - **Total loans issued**
  - **Total payments received**
  - **Outstanding loan amount (loan amount - payments made)**

Branch_Name	total_loan	total_payment	outstanding_amount
Central	90000.00	900.00	89100.00
Downtown	50000.00	1000.00	49000.00
Eastside	55000.00	1100.00	53900.00
Midtown	60000.00	1300.00	58700.00
Uptown	75000.00	1200.00	73800.00
Westside	80000.00	1400.00	78600.00

🔷 Query 6: Top 3 Customers by Total Account Balance

Query:

```
SELECT d.Customer_ID,
    SUM(a.Balance) AS total_balance
FROM Deposit d
```

```
JOIN Account a ON d.Account_ID = a.Account_ID
GROUP BY d.Customer_ID
ORDER BY total_balance DESC
LIMIT 3;
```

Explanation:

- This query finds the **top 3 customers** who hold the highest total balances across all their accounts.
- It **aggregates balances per customer**, sorts them in descending order, and limits the results to **top 3 customers**.

Customer_ID	total_balance
6	4000.00
4	3000.00
3	2500.00

🔷 Query 7: Latest Transaction per Account

Query:

```
SELECT t.Account_ID,
       t.Transaction_Amount,
       t.Transaction_Date
FROM Transaction t
WHERE t.Transaction_Date = (
    SELECT MAX(t2.Transaction_Date)
    FROM Transaction t2
    WHERE t2.Account_ID = t.Account_ID
);
```

Explanation:

- This query retrieves **the most recent transaction for each account**.
- A **correlated subquery** finds the **maximum transaction date** for each account.

Account_ID	Transaction_Amount	Transaction_Date
1001	200.00	2024-02-10
1002	300.00	2024-02-11
1003	150.00	2024-02-12
1004	500.00	2024-02-13
1005	250.00	2024-02-14
1006	100.00	2024-02-15

🔷 Query 8: Counting Subordinates under Each Manager

Query:

```
SELECT m.Employee_ID,
    m.Name,
    COUNT(s.Employee_ID) AS subordinate_count
FROM Employee m
JOIN Employee s ON m.Employee_ID = s.Manager_ID
GROUP BY m.Employee_ID, m.Name;
```

Explanation:

- This query **identifies managers** and counts how many **subordinates** report to them.
- The Employee table **self-joins** on `Manager_ID` to track hierarchical relationships.

Employee_ID	Name	subordinate_count
2001	David White	2
2002	Emma Stone	1
2003	Frank Martin	1
2004	Grace Hall	1

🔷 Query 9: Cross-State Money Transfers

Query:

```
SELECT tm.From_Account_ID,
    tm.To_Account_ID
FROM Transfer_Money tm
JOIN Deposit d1 ON tm.From_Account_ID = d1.Account_ID
JOIN Customer c1 ON d1.Customer_ID = c1.Customer_ID
JOIN Deposit d2 ON tm.To_Account_ID = d2.Account_ID
JOIN Customer c2 ON d2.Customer_ID = c2.Customer_ID
WHERE c1.City = 'New York'
  AND c2.City = 'Los Angeles';
```

Explanation:

- This query finds **money transfers where the sender is from New York and the receiver is from Los Angeles**.
- It joins the **Transfer_Money, Deposit, and Customer tables** to filter accounts based on city.

From_Account_ID	To_Account_ID
1001	1002

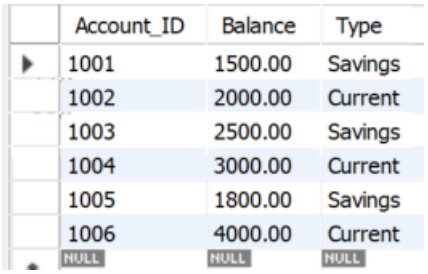
🔷 Query 10: Accounts with Transactions in Only a Specific Month

Query:

```
SELECT a.Account_ID,
       a.Balance,
       a.Type
FROM Account a
WHERE a.Account_ID IN (
    SELECT t.Account_ID
    FROM Transaction t
    GROUP BY t.Account_ID
    HAVING MAX(EXTRACT(MONTH FROM t.Transaction_Date)) = 2
);
```

Explanation:

- This query lists **accounts that had transactions exclusively in February** (`Month = 2`).
- It groups transactions by `Account_ID` and filters them using the **HAVING** clause to include only accounts where the most recent transaction is in February.



Account_ID	Balance	Type
1001	1500.00	Savings
1002	2000.00	Current
1003	2500.00	Savings
1004	3000.00	Current
1005	1800.00	Savings
1006	4000.00	Current
NULL	NULL	NULL

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