

Step-by-Step Explanation of SQL Queries

Step 1: Load the Database

1. Select the database

```
USE BankLoanDB;
```

This tells SQL which database you want to run queries on.

Step 2: Explore the Dataset

2. View the entire table

```
SELECT * FROM bank_loan_data;
```

Shows all rows and columns in the dataset.

Step 3: Basic KPIs (Key Performance Indicators)

3. Total number of loan applications

```
SELECT COUNT(id) AS Total_Loan_Applications FROM bank_loan_data;
```

4. MTD (Month-to-Date) loan applications for December 2021

```
WHERE MONTH(issue_date)=12 AND YEAR(issue_date)=2021;
```

5. MTD total funded amount

Uses:

```
SUM(loan_amount)
```

6. PMTD (Previous Month-to-Date) funded amount

Same as above, but for November.

7. MTD total amount received (payments)

Uses:

SUM(total_payment)

8. PMTD amount received

Same calculation for the previous month.

Step 4: Risk Analysis (Good vs Bad Loans)

9. Average DTI percentage (debt-to-income)

ROUND(AVG(dt),4) * 100

DTI is converted from decimal to percentage.

Good Loans

Loans that are:

- **Fully Paid**
- **Current**

10. % of good loans

COUNT(CASE WHEN loan_status IN ('Fully Paid','Current') THEN id END)*100 / COUNT(id)

11. Total amounts received from good loans

SUM(total_payment)

Bad Loans

Loans that are:

- **Charged Off**

12. Count of bad loans

COUNT(CASE WHEN loan_status='Charged Off' THEN id END)

13. % of bad loans

COUNT(ChargedOff) * 100 / total loans

Step 5: Loan Performance by Status

14. Summary of each loan status

Includes:

- **count of loans**
- **total amount received**
- **total funded amount**
- **average interest rate**
- **average DTI**

Using:

GROUP BY loan_status;

Step 6: Monthly Performance Summary

15. Summary per month

Groups by:

- **month number**
- **month name**
- **total applications**
- **total funded amount**
- **total received**

Using:

GROUP BY MONTH(issue_date), DATENAME(MONTH, issue_date)

Step 7: Loan Insights by Customer Segments

16. Summary by loan term (36, 60 months)

GROUP BY term

17. Summary by employment length

GROUP BY emp_length

18. Summary by home ownership

GROUP BY home_ownership

ORDER BY COUNT(id) DESC

Shows which home ownership groups apply the most.

19. Home ownership but only for Grade A loans

WHERE grade='A'

20. Summary by purpose (loan reason)

GROUP BY purpose Graduation Project