# Project Overview

* **Project Title:** Bank Loan Analysis

The objective of this project was to analyze a bank’s loan dataset using SQL and Power BI to uncover **key performance indicators (KPIs)** and identify trends in lending and repayments. Specifically, the analysis aimed to:

* Determine overall **loan portfolio performance**:
  + Total Loan Applications
  + Total Funded Amount
  + Total Amount Received (repayments)
  + Average Interest Rate
  + Average Debt-to-Income Ratio (DTI)
* Identify **trends and patterns** in lending:
  + Loan status distribution (Fully Paid, Current, Charged Off, etc.)
  + Monthly trend of loan applications, funded amounts, and repayments
  + Loan performance by **term** (36 months vs 60 months)
* Understand **borrower and loan characteristics**:
  + Loan distribution by **purpose** (e.g., debt consolidation, small business, credit card, etc.)
  + Loan performance by **home ownership status**
  + Loan grade/subgrade distribution and performance
* Provide **insightful comparisons**:
  + Geographic distribution of loans

This analysis helps stakeholders evaluate the **credit risk profile**, optimize **loan approval strategies**, and improve **collections and recovery processes**.

# Data Description

**Database Name:** coffee\_shop\_sales\_db

**Tables Used:** coffee\_shop\_sales

* Id→ Unique identifier
* address\_state→ State of location
* Application\_type→ Type of the application
* emp\_length→ Amount of time the applicant is employed
* emp\_title→ Title of the employment of the applicant
* grade→ Grade of the application
* home\_ownership→ Status of the applicants accomodation
* issue\_date→ Date of the loan issued
* last\_credit\_pull\_date→ Last date of the credit pull of the applicant
* last\_payment\_date→ Last date of the payment done by the applicant
* loan\_status→ Status of the loan(Charged off, Current, Fully paid)
* next\_payment\_date→ Next date of payment
* member\_id→ Unique member identification of the applicant
* purpose→ Purpose of taking the loan
* sub\_grade→ Sub division of the grade of the loan
* term→ Term of repay(36 months, 60 months)
* verification\_status→ (Not verified, Source verified, Verified)
* annual\_income→ Annual income of the applicant
* dti→ Debt to income ratio
* installment→ Number of installments
* int\_rate→ Interest Rate
* loan\_amount→ Amount of loan issued to the applicant
* total\_payment→ Total amount repaid by the applicant

**Time Period Covered:** 1st January 2021 - 12 December 2021

**Number of Records:** 38576 Records

# Data Preparation

**Data Cleaning Steps:**

* Checked for missing values where necessary (NULL).
* Removed duplicate records.
* Converted date formats using STR\_TO\_DATE().

# SQL Analysis Queries

### KPI’s:

#### Total Loan Applications

SELECT COUNT(id) AS Total\_Applications FROM bank\_loan\_data



#### MTD Loan Applications

SELECT COUNT(id) AS Total\_Applications FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### **PMTD Loan Applications** SELECT COUNT(id) AS Total\_Applications FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



#### Total Funded Amount

SELECT SUM(loan\_amount) AS Total\_Funded\_Amount FROM bank\_loan\_data



#### MTD Total Funded Amount

SELECT SUM(loan\_amount) AS Total\_Funded\_Amount FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### PMTD Total Funded Amount

SELECT SUM(loan\_amount) AS Total\_Funded\_Amount FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



#### Total Amount Received

SELECT SUM(total\_payment) AS Total\_Amount\_Collected FROM bank\_loan\_data



#### MTD Total Amount Received

SELECT SUM(total\_payment) AS Total\_Amount\_Collected FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### PMTD Total Amount Received

SELECT SUM(total\_payment) AS Total\_Amount\_Collected FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



#### Average Interest Rate

SELECT AVG(int\_rate)\*100 AS Avg\_Int\_Rate FROM bank\_loan\_data



#### MTD Average Interest

SELECT AVG(int\_rate)\*100 AS MTD\_Avg\_Int\_Rate FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### PMTD Average Interest

SELECT AVG(int\_rate)\*100 AS PMTD\_Avg\_Int\_Rate FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



#### Avg DTI

SELECT AVG(dti)\*100 AS Avg\_DTI FROM bank\_loan\_data



#### MTD Avg DTI

SELECT AVG(dti)\*100 AS MTD\_Avg\_DTI FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12



#### PMTD Avg DTI

SELECT AVG(dti)\*100 AS PMTD\_Avg\_DTI FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 11



### GOOD LOAN ISSUED

#### Good Loan Percentage

SELECT

(COUNT(CASE WHEN loan\_status = 'Fully Paid' OR loan\_status = 'Current' THEN id END) \* 100.0) /

COUNT(id) AS Good\_Loan\_Percentage

FROM bank\_loan\_data

****

#### Good Loan Applications

SELECT COUNT(id) AS Good\_Loan\_Applications FROM bank\_loan\_data

WHERE loan\_status = 'Fully Paid' OR loan\_status = 'Current'

****

#### Good Loan Funded Amount

SELECT SUM(loan\_amount) AS Good\_Loan\_Funded\_amount FROM bank\_loan\_data

WHERE loan\_status = 'Fully Paid' OR loan\_status = 'Current'

****

#### Good Loan Amount Received

SELECT SUM(total\_payment) AS Good\_Loan\_amount\_received FROM bank\_loan\_data

WHERE loan\_status = 'Fully Paid' OR loan\_status = 'Current'

****

### BAD LOAN ISSUED

#### Bad Loan Percentage

SELECT

(COUNT(CASE WHEN loan\_status = 'Charged Off' THEN id END) \* 100.0) /

COUNT(id) AS Bad\_Loan\_Percentage

FROM bank\_loan\_data

****

#### Bad Loan Applications

SELECT COUNT(id) AS Bad\_Loan\_Applications FROM bank\_loan\_data

WHERE loan\_status = 'Charged Off'

****

#### Bad Loan Funded Amount

SELECT SUM(loan\_amount) AS Bad\_Loan\_Funded\_amount FROM bank\_loan\_data

WHERE loan\_status = 'Charged Off'

****

#### Bad Loan Amount Received

SELECT SUM(total\_payment) AS Bad\_Loan\_amount\_received FROM bank\_loan\_data

WHERE loan\_status = 'Charged Off'

****

### LOAN STATUS

SELECT

loan\_status,

COUNT(id) AS LoanCount,

SUM(total\_payment) AS Total\_Amount\_Received,

SUM(loan\_amount) AS Total\_Funded\_Amount,

AVG(int\_rate \* 100) AS Interest\_Rate,

AVG(dti \* 100) AS DTI

FROM

bank\_loan\_data

GROUP BY

loan\_status

****

SELECT

loan\_status,

SUM(total\_payment) AS MTD\_Total\_Amount\_Received,

SUM(loan\_amount) AS MTD\_Total\_Funded\_Amount

FROM bank\_loan\_data

WHERE MONTH(issue\_date) = 12

GROUP BY loan\_status

****

### MONTH

SELECT

MONTH(issue\_date) AS Month\_Munber,

DATENAME(MONTH, issue\_date) AS Month\_name,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY MONTH(issue\_date), DATENAME(MONTH, issue\_date)

ORDER BY MONTH(issue\_date)

****

### STATE

SELECT

address\_state AS State,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY address\_state

ORDER BY address\_state

****

### TERM

SELECT

term AS Term,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY term

ORDER BY term

****

### EMPLOYEE LENGTH

SELECT

emp\_length AS Employee\_Length,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY emp\_length

ORDER BY emp\_length

****

### PURPOSE

SELECT

purpose AS PURPOSE,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY purpose

ORDER BY purpose

****

### HOME OWNERSHIP

SELECT

home\_ownership AS Home\_Ownership,

COUNT(id) AS Total\_Loan\_Applications,

SUM(loan\_amount) AS Total\_Funded\_Amount,

SUM(total\_payment) AS Total\_Amount\_Received

FROM bank\_loan\_data

GROUP BY home\_ownership

ORDER BY home\_ownership

****

# Key Findings & Insights

* More than 85% loans issued were considered “Good Loan” and generating profit for the bank.
* Highest amount of loans issued to people who were 10+ years employed.
* The top reason for taking a loan was “Debt Consolidation”.
* Most applicants are from the state of California.