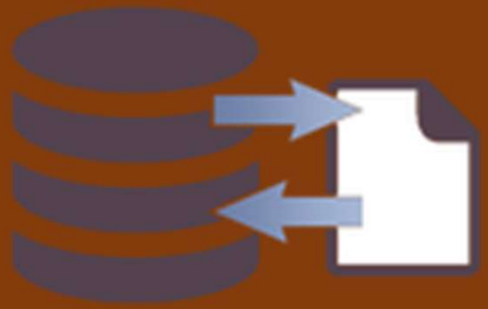
# BANK LOAN ANALYSIS

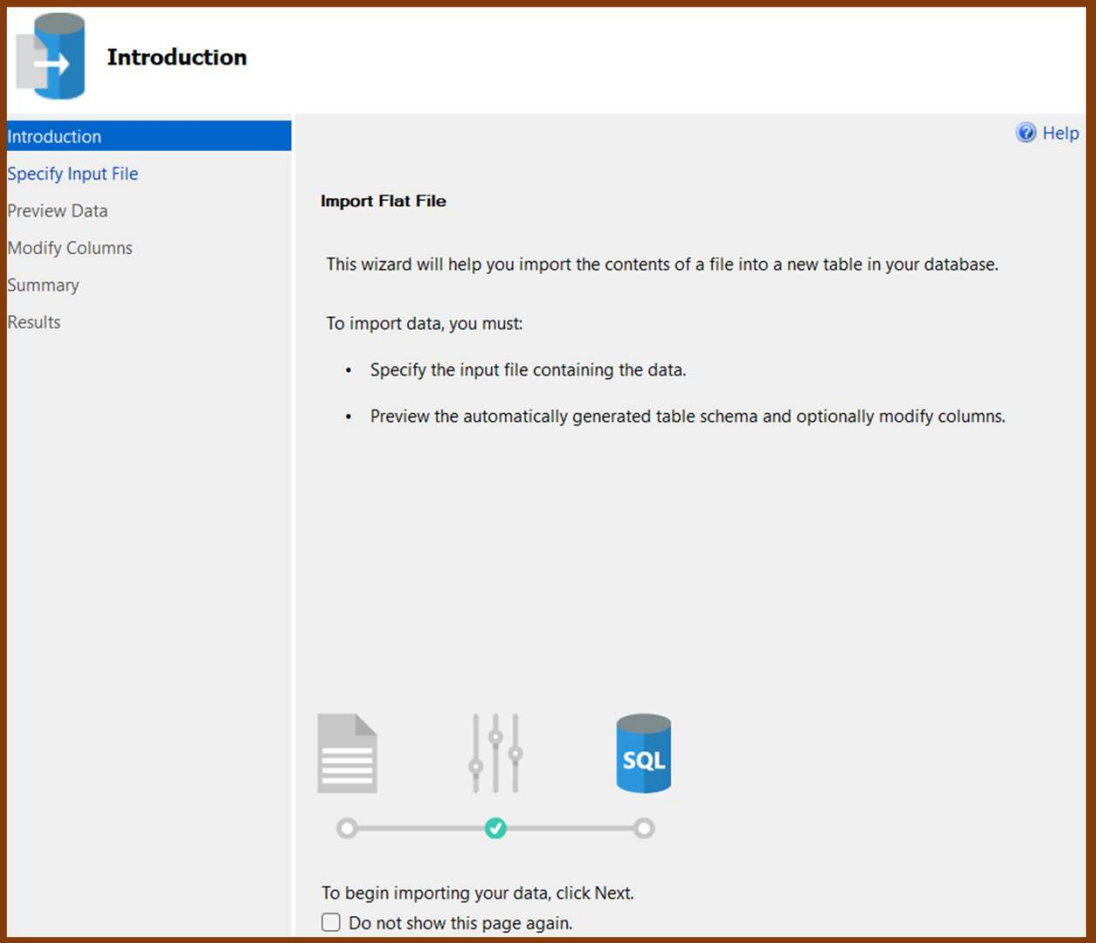
## PART - 1

## MS SQL SERVER


# MS SQL SERVER

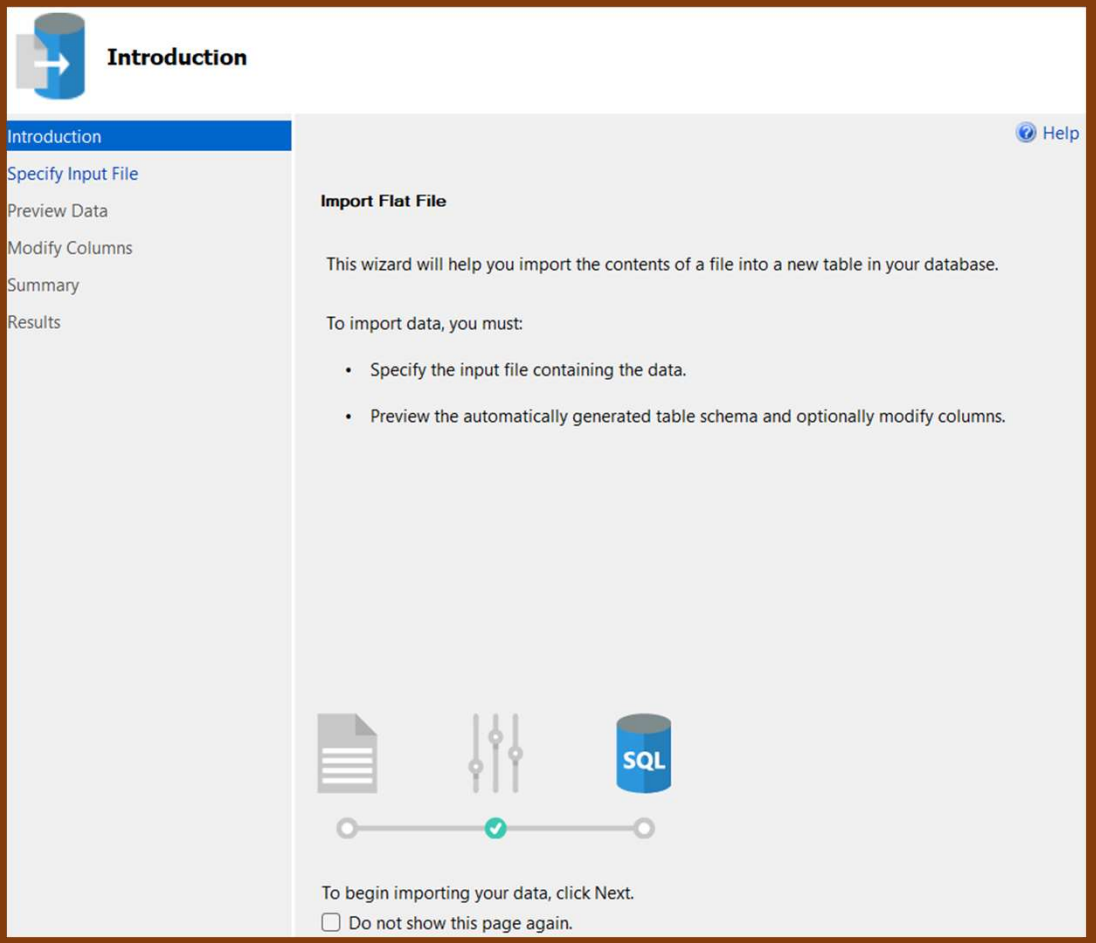
## IMPORT DATA





# MS SQL SERVER

## CREATING DB



# MS SQL SERVER

## WRITING QUERIES

```
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
```

149 %

Results | Messages

| | loan_status | LoanCount | Total_Amount_Received | Total_Funded_Amount | Interest_Rate | DTI |
|---|---|---|---|---|---|---|
| 1 | Fully Paid | 32145 | 411586256 | 351358350 | 11.6410707918092 | 13.1673507557434 |
| 2 | Charged Off | 5333 | 37284763 | 65532225 | 13.8785749318289 | 14.0047328005517 |
| 3 | Current | 1098 | 24199914 | 18866500 | 15.0993260800947 | 14.7243442736843 |

SQL

# FIRING SQL QUERIES TO SOLVE THE BUSINESS PROBLEMS

## COMPARING RESULTS WITH POWER BI, TABLEAU and EXCEL

```
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
```

149 %

Results | Messages

| | loan_status | LoanCount | Total_Amount_Received | Total_Funded_Amount | Interest_Rate | DTI |
|---|---|---|---|---|---|---|
| 1 | Fully Paid | 32145 | 411586256 | 351358350 | 11.6410707918092 | 13.1673507557434 |
| 2 | Charged Off | 5333 | 37284763 | 65532225 | 13.8785749318289 | 14.0047328005517 |
| 3 | Current | 1098 | 24199914 | 18866500 | 15.0993260800947 | 14.7243442736843 |

*We can use the data in any DB to fire queries. Queries used will remain same*

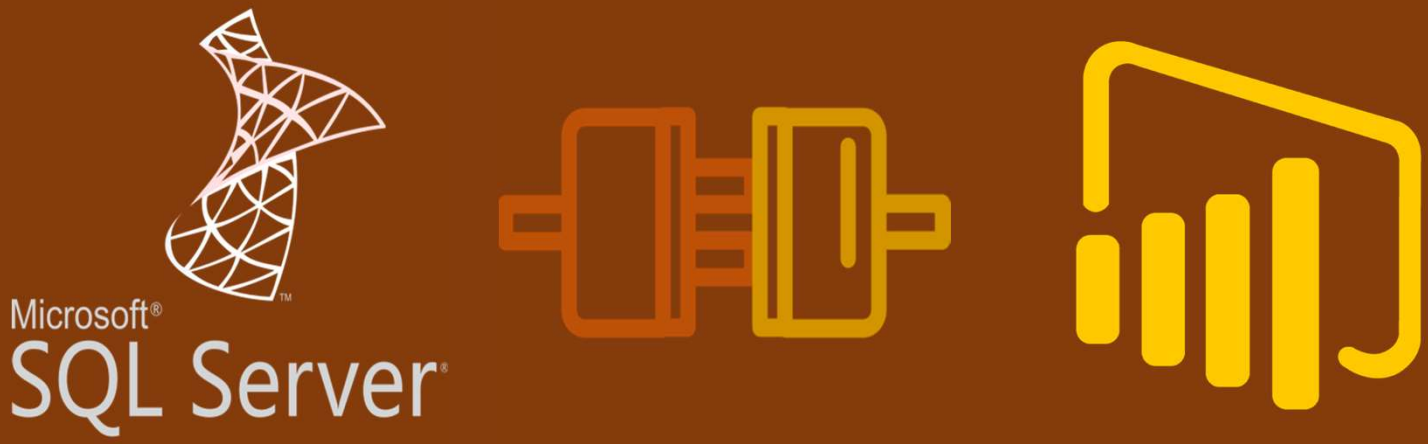
# BANK LOAN ANALYSIS

## PART - 2

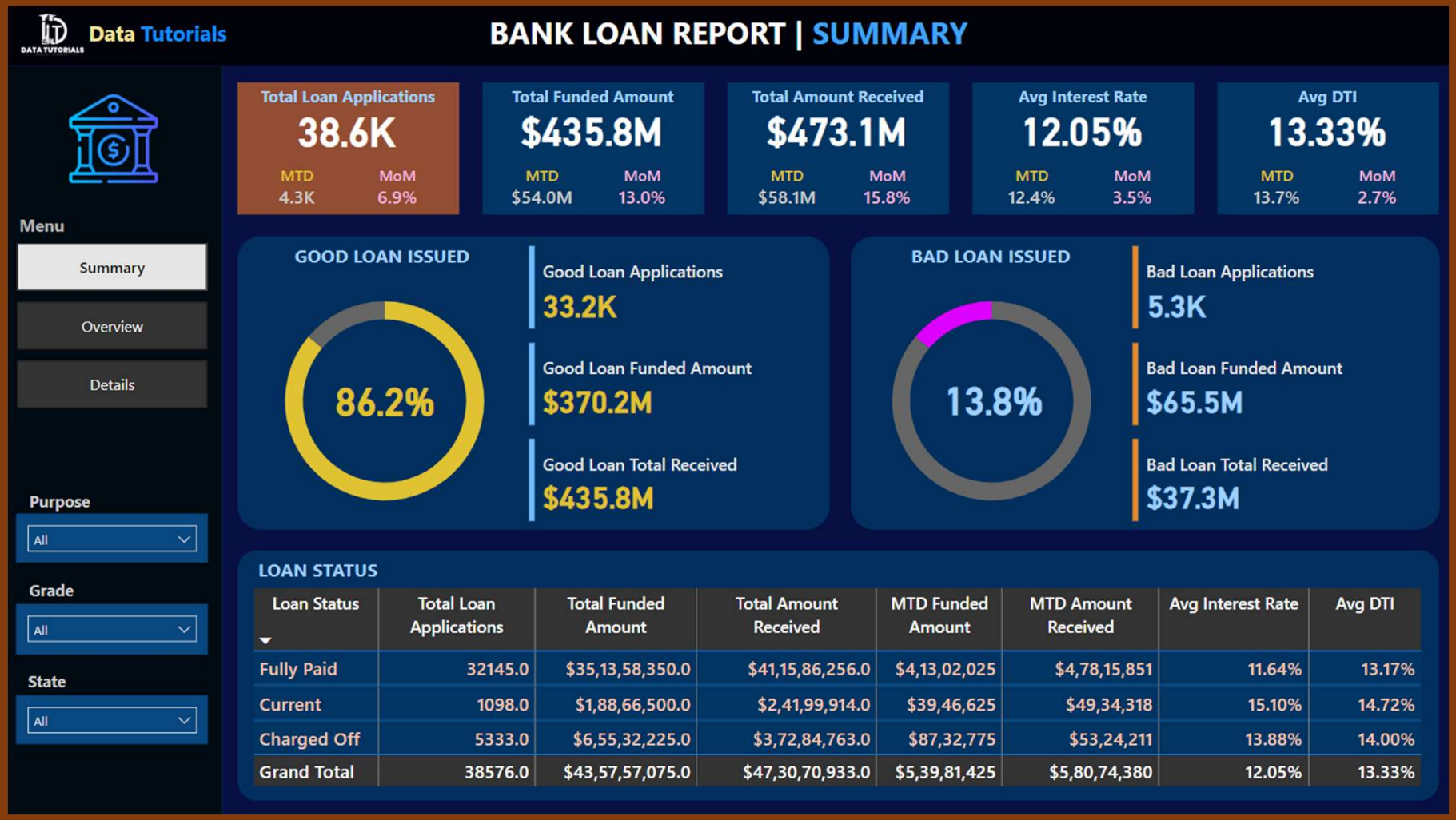
## POWER BI

# POWER BI

## CONNECTING TO MS SQL SERVER

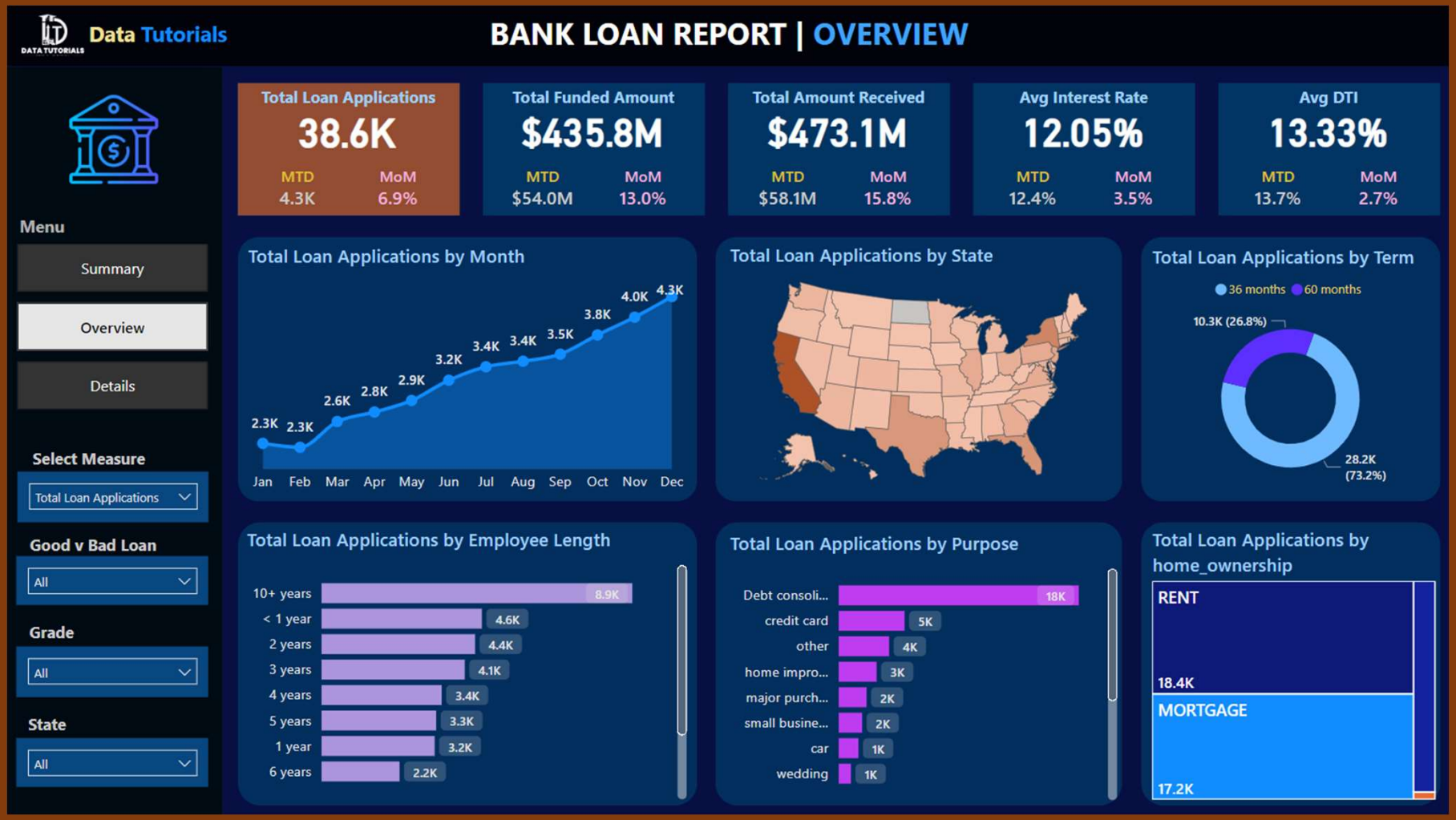


**POWER BI**

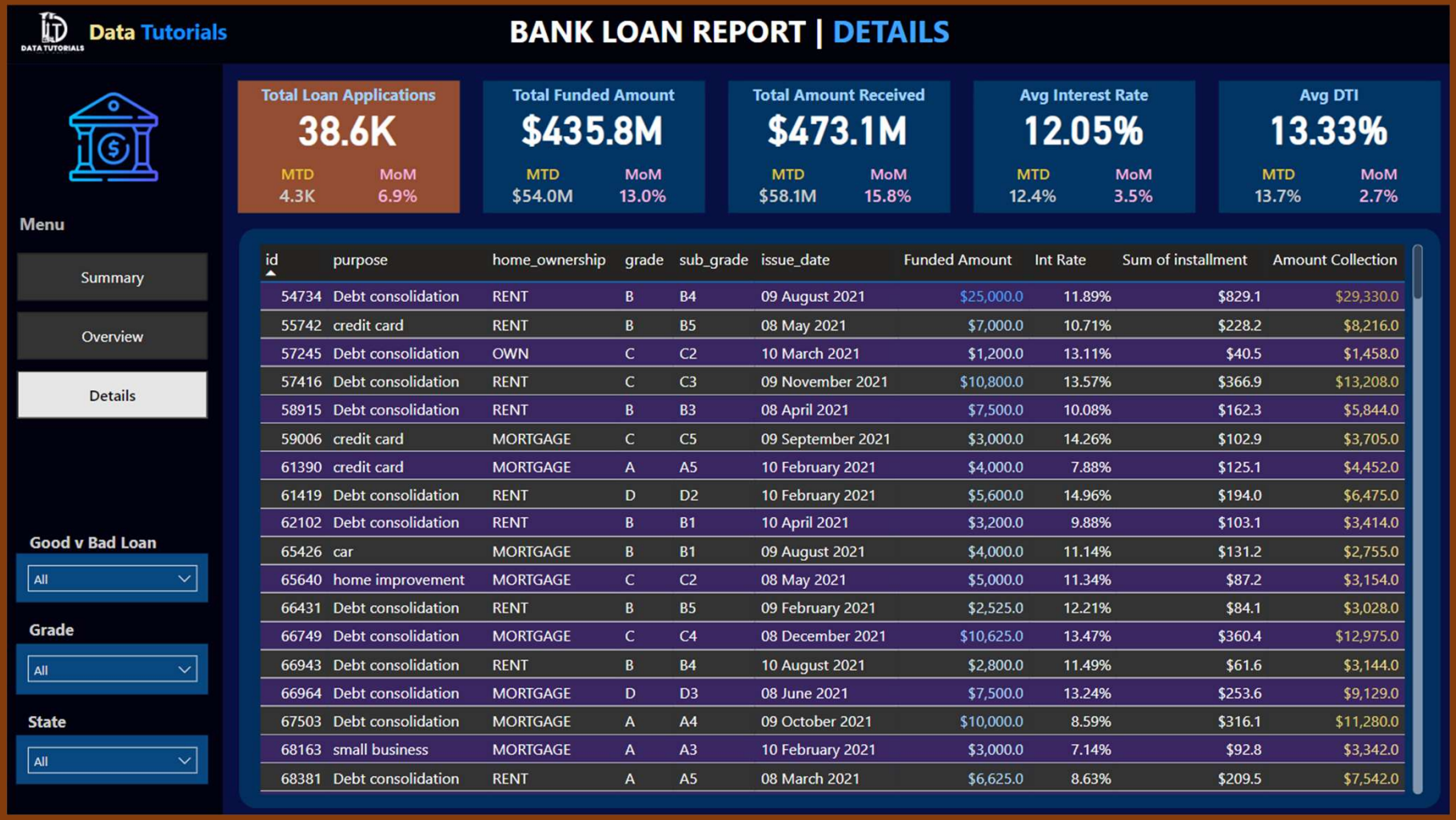



| Loan Status | Total Loan Applications | Total Funded Amount | Total Amount Received | MTD Funded Amount | MTD Amount Received | Avg Interest Rate | Avg DTI |
|---|---|---|---|---|---|---|---|
| Fully Paid | 32145.0 | $35,13,58,350.0 | $41,15,86,256.0 | $4,13,02,025 | $4,78,15,851 | 11.64% | 13.17% |
| Current | 1098.0 | $1,88,66,500.0 | $2,41,99,914.0 | $39,46,625 | $49,34,318 | 15.10% | 14.72% |
| Charged Off | 5333.0 | $6,55,32,225.0 | $3,72,84,763.0 | $87,32,775 | $53,24,211 | 13.88% | 14.00% |
| Grand Total | 38576.0 | $43,57,57,075.0 | $47,30,70,933.0 | $5,39,81,425 | $5,80,74,380 | 12.05% | 13.33% |

# POWER BI


Data Tutorials
BANK LOAN REPORT | OVERVIEW
Total Loan Applications
38.6K
MTD 4.3K
MoM 6.9%
Total Funded Amount
$435.8M
MTD $54.0M
MoM 13.0%
Total Amount Received
$473.1M
MTD $58.1M
MoM 15.8%
Avg Interest Rate
12.05%
MTD 12.4%
MoM 3.5%
Avg DTI
13.33%
MTD 13.7%
MoM 2.7%
Menu
Summary
Overview
Details
Select Measure
Total Loan Applications
Good v Bad Loan
All
Grade
All
State
All
Total Loan Applications by Month
2.3K 2.3K 2.6K 2.8K 2.9K 3.2K 3.4K 3.4K 3.5K 3.8K 4.0K 4.3K
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Total Loan Applications by State
Total Loan Applications by Term
36 months
60 months
10.3K (26.8%)
28.2K (73.2%)
Total Loan Applications by Employee Length
10+ years 8.9K
< 1 year 4.6K
2 years 4.4K
3 years 4.1K
4 years 3.4K
5 years 3.3K
1 year 3.2K
6 years 2.2K
Total Loan Applications by Purpose
Debt consoli... 18K
credit card 5K
other 4K
home impro... 3K
major purch... 2K
small busine... 2K
car 1K
wedding 1K
Total Loan Applications by home_ownership
RENT
18.4K
MORTGAGE
17.2K

# POWER BI




| id | purpose | home_ownership | grade | sub_grade | issue_date | Funded Amount | Int Rate | Sum of installment | Amount Collection |
|---|---|---|---|---|---|---|---|---|---|
| 54734 | Debt consolidation | RENT | B | B4 | 09 August 2021 | $25,000.0 | 11.89% | $829.1 | $29,330.0 |
| 55742 | credit card | RENT | B | B5 | 08 May 2021 | $7,000.0 | 10.71% | $228.2 | $8,216.0 |
| 57245 | Debt consolidation | OWN | C | C2 | 10 March 2021 | $1,200.0 | 13.11% | $40.5 | $1,458.0 |
| 57416 | Debt consolidation | RENT | C | C3 | 09 November 2021 | $10,800.0 | 13.57% | $366.9 | $13,208.0 |
| 58915 | Debt consolidation | RENT | B | B3 | 08 April 2021 | $7,500.0 | 10.08% | $162.3 | $5,844.0 |
| 59006 | credit card | MORTGAGE | C | C5 | 09 September 2021 | $3,000.0 | 14.26% | $102.9 | $3,705.0 |
| 61390 | credit card | MORTGAGE | A | A5 | 10 February 2021 | $4,000.0 | 7.88% | $125.1 | $4,452.0 |
| 61419 | Debt consolidation | RENT | D | D2 | 10 February 2021 | $5,600.0 | 14.96% | $194.0 | $6,475.0 |
| 62102 | Debt consolidation | RENT | B | B1 | 10 April 2021 | $3,200.0 | 9.88% | $103.1 | $3,414.0 |
| 65426 | car | MORTGAGE | B | B1 | 09 August 2021 | $4,000.0 | 11.14% | $131.2 | $2,755.0 |
| 65640 | home improvement | MORTGAGE | C | C2 | 08 May 2021 | $5,000.0 | 11.34% | $87.2 | $3,154.0 |
| 66431 | Debt consolidation | RENT | B | B5 | 09 February 2021 | $2,525.0 | 12.21% | $84.1 | $3,028.0 |
| 66749 | Debt consolidation | MORTGAGE | C | C4 | 08 December 2021 | $10,625.0 | 13.47% | $360.4 | $12,975.0 |
| 66943 | Debt consolidation | RENT | B | B4 | 10 August 2021 | $2,800.0 | 11.49% | $61.6 | $3,144.0 |
| 66964 | Debt consolidation | MORTGAGE | D | D3 | 08 June 2021 | $7,500.0 | 13.24% | $253.6 | $9,129.0 |
| 67503 | Debt consolidation | MORTGAGE | A | A4 | 09 October 2021 | $10,000.0 | 8.59% | $316.1 | $11,280.0 |
| 68163 | small business | MORTGAGE | A | A3 | 10 February 2021 | $3,000.0 | 7.14% | $92.8 | $3,342.0 |
| 68381 | Debt consolidation | RENT | A | A5 | 08 March 2021 | $6,625.0 | 8.63% | $209.5 | $7,542.0 |

# PROBLEM STATEMENT

## DASHBOARD 1: SUMMARY

### Key Performance Indicators (KPIs) Requirements:

1. **Total Loan Applications:** We need to calculate the total number of loan applications received during a specified period. Additionally, it is essential to monitor the Month-to-Date (MTD) Loan Applications and track changes Month-over-Month (MoM).
2. **Total Funded Amount:** Understanding the total amount of funds disbursed as loans is crucial. We also want to keep an eye on the MTD Total Funded Amount and analyse the Month-over-Month (MoM) changes in this metric.
3. **Total Amount Received:** Tracking the total amount received from borrowers is essential for assessing the bank's cash flow and loan repayment. We should analyse the Month-to-Date (MTD) Total Amount Received and observe the Month-over-Month (MoM) changes.
4. **Average Interest Rate:** Calculating the average interest rate across all loans, MTD, and monitoring the Month-over-Month (MoM) variations in interest rates will provide insights into our lending portfolio's overall cost.
5. **Average Debt-to-Income Ratio (DTI):** Evaluating the average DTI for our borrowers helps us gauge their financial health. We need to compute the average DTI for all loans, MTD, and track Month-over-Month (MoM) fluctuations.

# PROBLEM STATEMENT

## DASHBOARD 1: SUMMARY

### Good Loan v Bad Loan KPI's

**Good Loan:**

1. **Good Loan Application Percentage**
2. **Good Loan Applications**
3. **Good Loan Funded Amount**
4. **Good Loan Total Received Amount**

**Bad Loan**

1. **Bad Loan Application Percentage**
2. **Bad Loan Applications**
3. **Bad Loan Funded Amount**
4. **Bad Loan Total Received Amount**

### Loan Status Grid View

In order to gain a comprehensive overview of our lending operations and monitor the performance of loans, we aim to create a grid view report categorized by 'Loan Status.' By providing insights into metrics such as 'Total Loan Applications,' 'Total Funded Amount,' 'Total Amount Received,' 'Month-to-Date (MTD) Funded Amount,' 'MTD Amount Received,' 'Average Interest Rate,' and 'Average Debt-to-Income Ratio (DTI),' this grid view will empower us to make data-driven decisions and assess the health of our loan portfolio.

# PROBLEM STATEMENT

## DASHBOARD 2: OVERVIEW

## CHARTS

1. **Monthly Trends by Issue Date (Line Chart):** To identify seasonality and long-term trends in lending activities
2. **Regional Analysis by State (Filled Map):** To identify regions with significant lending activity and assess regional disparities
3. **Loan Term Analysis (Donut Chart):** To allow the client to understand the distribution of loans across various term lengths.
4. **Employee Length Analysis (Bar Chart):** How lending metrics are distributed among borrowers with different employment lengths, helping us assess the impact of employment history on loan applications.
5. **Loan Purpose Breakdown (Bar Chart):** **W**ill provide a visual breakdown of loan metrics based on the stated purposes of loans, aiding in the understanding of the primary reasons borrowers seek financing.
6. **Home Ownership Analysis (Tree Map):** For a hierarchical view of how home ownership impacts loan applications and disbursements.

***Metrics to be shown: 'Total Loan Applications,' 'Total Funded Amount,' and 'Total Amount Received'***

# PROBLEM STATEMENT

## DASHBOARD 3: DETAILS

### GRID

Need for a comprehensive 'Details Dashboard' that provides a consolidated view of all the essential information within our loan data. This Details Dashboard aims to offer a holistic snapshot of key loan-related metrics and data points, enabling users to access critical information efficiently.

***Objective:***

*The primary objective of the Details Dashboard is to provide a comprehensive and user-friendly interface for accessing vital loan data. It will serve as a one-stop solution for users seeking detailed insights into our loan portfolio, borrower profiles, and loan performance.*

# FUNCTIONALITIES

## SQL – MS SQL SERVER

- ✓ Creating Database
- ✓ Creating Table
- ✓ Select
- ✓ Datename
- ✓ Datepart
- ✓ Cast
- ✓ Decimal
- ✓ Month
- ✓ Hour
- ✓ Quarter
- ✓ Day
- ✓ Group by
- ✓ Order by
- ✓ Decimal
- ✓ Limit
- ✓ Count
- ✓ Distinct
- ✓ CTE
- ✓ Partition and so on…

## POWER BI

- ✓ Connecting to SQL Server
- ✓ Data Cleaning
- ✓ Data Modelling
- ✓ Data Processing
- ✓ Power Query
- ✓ Date Tables
- ✓ Time Intelligence Func
- ✓ DAX
- ✓ Date Function
- ✓ Text Function
- ✓ Filter Function
- ✓ Calculate
- ✓ SUM/ SUMX
- ✓ Creating KPI's
- ✓ New Card Visual
- ✓ Creating Charts
- ✓ Formatting visuals
- ✓ Creating Functions
- ✓ Navigations and so on…

# SOFTWARE USED

**MS OFFICE/ EXCEL:** VERSION 2024

**MS SQL SERVER:** 2022
**SQL SERVER MANAGEMENT STUDIO – 20.2**

**POWER BI**: JULY 2024 Version

# THANK YOU