**Bank Loan Dashboard – Problem Statement Document**

**Project Report**

This project focuses on analyzing and visualizing bank loan data to help understand how loans are performing. Using tools like SQL and Power BI, the goal is to give clear insights into how many people are applying for loans, how much is being lent out, how much is being repaid, and whether those loans are being paid back on time or not.

**Problem Statement**

The bank wants to track key loan-related details, such as:

* How many people applied for loans?
* How much money has been given out?
* How much money has been received back?
* What is the average interest rate being charged?
* Are most loans “good” (paid back) or “bad” (not paid)?

We built dashboards in Power BI to help answer these questions clearly.

**Dashboard 1 – KPI Summary**

* Total Loan Applications – Number of applications received during a specific time period. We also track Month-to-Date (MTD) and Month-over-Month (MoM) changes.
* Total Funded Amount – Total money the bank has given out in loans.
* Total Amount Received – Amount paid back by borrowers so far.
* Average Interest Rate – The average yearly interest rate charged on the loans.
* Average Debt-to-Income (DTI) Ratio – This shows if borrowers can afford to repay.
* Good Loans vs Bad Loans – We separate loans that are being paid on time vs those that aren’t.
* Loan Status Grid View – A table view showing key metrics based on loan status**.**

**Dashboard 2 – Loan Insights Overview**

* Monthly Trends by Issue Date – To see if loans go up or down over time.
* Regional Analysis by State – To see which states have more or fewer loans.
* Loan Term Analysis – To show how many loans are 36 months vs 60 months.
* Employee Length Analysis – To see if job stability affects loans.
* Loan Purpose Breakdown – To show why people are taking loans (like debt or home improvement).
* Home Ownership Analysis – To understand how owning a home affects loan applications.

**Dashboard 3 – Detailed View**

* Loan Data Grid – A detailed table showing all key information in one place.
* Snapshot of Metrics – Easy access to all important numbers related to loans and borrowers.

**Terminologies / Metadata Used in Data**

* Loan ID – Unique identifier for each loan
* Address State – Shows borrower location for regional analysis
* Employee Length – Duration of borrower’s employment
* Employee Title – Borrower’s job title
* Grade & Sub Grade – Risk categories assigned to the loan
* Home Ownership – Indicates borrower’s housing status
* Issue Date – Loan start date
* Last Credit Pull Date – Last time credit report was checked
* Last Payment Date – Most recent payment made
* Loan Status – Current condition (paid, default, etc.)
* Next Payment Date – When next payment is due
* Purpose – Reason for taking the loan
* Term – Loan duration (e.g., 36 months)
* Verification Status – If income and info were verified
* Annual Income – Borrower’s yearly earnings
* DTI (Debt-to-Income Ratio) – Shows financial load vs income
* Instalment – Monthly payment including interest + principal
* Interest Rate – Cost of borrowing
* Loan Amount – Total amount borrowed

**Functionalities Used**

**SQL (for data preparation):**

* Creating and managing the database
* Writing queries to pull and filter data
* Using functions like DATEPART, CAST, CTE, and PARTITION for better analysis

**Power BI (for visual reports):**

* Connecting to the SQL Server data
* Cleaning and preparing the data using Power Query
* Building visual charts and cards
* Creating KPIs and using DAX formulas for calculations
* Designing easy navigation between dashboard pages

**Software Used**

* Excel – For initial data review
* MS SQL Server + SSMS – For database and query work
* Power BI – For building dashboards and visuals