

## **Project Overview: Banking Customer Loan & Repayment Analysis**

### **Project Title**

#### **Bank Loan Customer Profile and Repayment Behavior Analysis**

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### **1. Project Objective**

The main goal of this project is to:

- Analyze **banking customers' loan data**
- Understand **credit scores, loan status, and repayment behavior**
- Identify **risk patterns** (good vs bad borrowers)
- Provide **data-driven insights** using visualization

This helps banks:

- Reduce loan default risk
  - Improve customer segmentation
  - Make better lending decisions
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### **2. Tools & Technologies Used**

#### **Python**

Used for:

- Data cleaning and preprocessing
- Exploratory Data Analysis (EDA)
- Handling missing values and outliers
- Feature understanding (credit score, income, loan amount, etc.)

Libraries typically used:

- pandas
  - numpy
  - matplotlib / seaborn
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#### **MySQL**

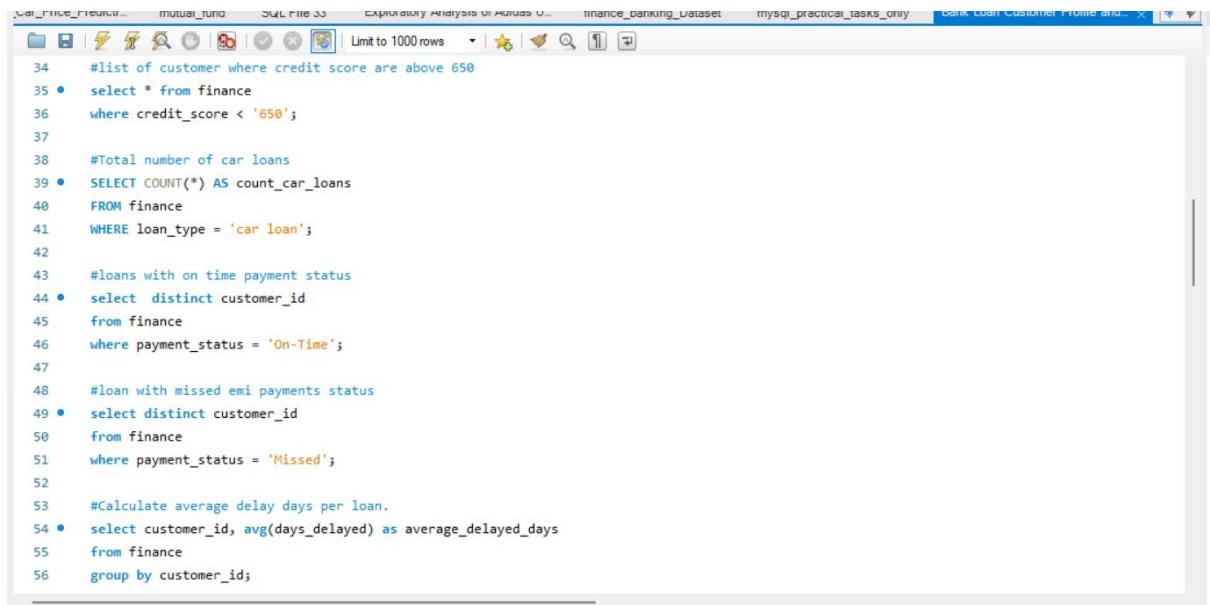
Used for:

- Storing structured banking data
- Writing SQL queries for analysis

- Filtering, aggregating, and joining tables
- Preparing clean datasets for visualization

Key SQL concepts used:

- SELECT, WHERE
- GROUP BY
- ORDER BY
- Aggregate functions (COUNT, AVG, SUM)



```

34  #list of customer where credit score are above 650
35 • select * from finance
36  where credit_score < '650';
37
38  #Total number of car loans
39 • SELECT COUNT(*) AS count_car_loans
40  FROM finance
41  WHERE loan_type = 'car loan';
42
43  #loans with on time payment status
44 • select distinct customer_id
45  from finance
46  where payment_status = 'On-Time';
47
48  #loan with missed emi payments status
49 • select distinct customer_id
50  from finance
51  where payment_status = 'Missed';
52
53  #Calculate average delay days per loan.
54 • select customer_id, avg(days_delayed) as average_delayed_days
55  from finance
56  group by customer_id;

```

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## Power BI

Used for:

- Interactive dashboards
- Visual analysis of loan performance
- Trend identification and decision support

Power BI features:

- KPI cards
- Bar charts & pie charts
- Filters and slicers
- Customer segmentation visuals

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## 3. Dataset Description

The dataset contains banking customer information such as:

- Customer demographics
- Loan amount and loan type
- Credit score
- Payment status
- Loan repayment behavior

This data is analyzed to identify **patterns between customer profiles and loan outcomes.**

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#### **4. Project Workflow (End-to-End)**

##### **Step 1: Data Collection**

- Raw banking data imported from CSV / SQL files
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##### **Step 2: Data Cleaning (Python)**

- Removed duplicates
  - Handled missing values
  - Corrected data types
  - Verified data consistency
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##### **Step 3: Data Storage (MySQL)**

- Cleaned data stored in MySQL tables
  - SQL queries used to:
    - Analyze loan distribution
    - Calculate average credit scores
    - Identify default vs non-default customers
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##### **Step 4: Data Analysis**

Performed analysis such as:

- Credit score vs loan repayment
  - Income vs loan approval
  - Default rate by loan type
  - Customer risk segmentation
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## **Step 5: Visualization (Power BI)**

- Created dashboards showing:
    - Total loans issued
    - Repayment status
    - High-risk customers
    - Credit score distribution
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## **5. Key Insights (Example)**

You can explain insights like:

- Customers with **higher credit scores** have better repayment rates
  - Certain loan categories show **higher default risk**
  - Income level impacts loan approval and repayment behavior
  - A small percentage of customers contribute to most defaults
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## **6. Business Impact**

This project helps banks:

- Improve loan approval strategies
  - Minimize financial risk
  - Target reliable customers
  - Enhance decision-making using data
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## **7. Dashboard Highlights (Power BI)**

- Loan status overview (Paid / Unpaid / Default)
- Credit score distribution
- Customer segmentation by risk
- Interactive filters for deep analysis



## 8. Conclusion

This project demonstrates:

- End-to-end data analysis skills
- Strong understanding of SQL, Python, and Power BI
- Ability to convert raw data into meaningful business insights

It is a **real-world banking analytics project** suitable for:

- Placements
- Interviews
- Academic presentations

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## 9. Future Enhancements

- Add machine learning for loan default prediction
- Automate data updates
- Include more customer behavioral features
- Improve dashboard interactivity