Coding Challenge – Banking Sector

Analyze customer behavior, transactions, and loan performance

Problem Statement

A leading bank wants to **analyze customer behavior, transactions, and loan performance**. Your task is to use **Power BI** to clean, model, and visualize the data, and then create an **interactive dashboard** with advanced features for management insights.

Dataset Description

Dataset: Banking_Data.csv

Column Name	Description
Customer_ID	Unique ID for each customer
Customer_Name	Full name of the customer
Age	Age of the customer
Gender	Male/Female
Account_Type	Savings, Current, Fixed Deposit, Loan
Balance	Current balance in the account
Transaction_Date	Date of transaction
Transaction_Type	Credit/Debit
Transaction_Amount	Amount credited or debited
Loan_Status	Active, Closed, Default

Tasks

1. Data Cleaning & Transformation

- Remove duplicates & handle missing values.
- Create **Net Transaction Impact** column (Credit = +, Debit = –).

- Create **Age Groups** (18–30, 31–50, 51+).
- Standardize Account_Type into short forms (e.g., SAV, CUR, FD, LN).

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2. Data Modeling

- Build relationships between **Customer_ID** and transactions.
- Create a **Calendar Table** for Transaction_Date.

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3. DAX Measures

- **Total Deposits**
- **Total Withdrawals**
- **Net Balance Growth** = Total Deposits – Total Withdrawals
- **Average Account Balance**
- **Loan Default Rate %**
- **Monthly Transaction Volume**
- **Customer Profitability Score** = Balance + Net Transaction Impact

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4. Visualizations & Features

Dashboard Pages

1. **Customer Overview**
    - Bar Chart: Customers by Age Group & Gender
    - Card: Total Customers
    - Conditional Formatting: Highlight customers with Balance < 5000 in red
2. **Transaction Analysis**
    - Line Chart: Monthly Transaction Trend
    - Heat Map: Transactions by Day of Week & Hour of Day
    - Drill-through: Right-click a customer to view their transaction history

3. **Loan Performance**
    - Pie Chart: Loan Status distribution
    - KPI Card: Loan Default Rate % (with traffic-light colors: Green <5%, Yellow 5–15%, Red >15%)
    - What-If Parameter: Simulate interest rate impact on revenue
4. **Top Customers**
    - Table: Top 10 Customers by Total Transactions
    - Conditional Formatting: Highlight Top 3 in gold, silver, bronze
    - Tooltip: Show customer’s average balance when hovering

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5. Advanced Power BI Concepts (must include)

✓ Conditional Formatting (Table/Matrix + KPI Cards)
✓ Drill-through Pages (Customer Transaction Details)
✓ Tooltips (Dynamic details on hover)
✓ Bookmarks (Switch between Loan View & Transaction View)
✓ Slicers (Filter by Age Group, Gender, Account Type)
✓ Hierarchy (Year > Quarter > Month for Transaction Date)

Deliverables

- A **.pbix dashboard** with all requirements.
- A **short insight summary (2–3 slides)** highlighting key findings.