# Banking System KPI Report

## 1. Explanation of Each KPI

### KPI 1: Top 3 Customers with the Highest Total Balance

select top 3 fullname, Balance from Customers c  
join Accounts a on c.CustomerID = a.CustomerID  
order by Balance desc

Purpose: Identifies the top 3 customers with the largest account balances, helping the bank recognize high-value clients who might qualify for premium services or investment opportunities.

### KPI 2: Customers with Multiple Active Loans

select c.CustomerID from Customers c  
join Loans l on c.CustomerID = l.CustomerID and l.Status = 'Active'  
group by c.CustomerID  
having COUNT(l.Status) > 1

Purpose: Finds customers who currently hold more than one active loan, which is useful for credit risk management and loan exposure analysis.

### KPI 3: Fraudulent Transactions

select t.TransactionID from Transactions t  
join FraudDetection f on t.TransactionID = f.TransactionID and f.RiskLevel = 'Fraudulent'

Purpose: Retrieves all transactions flagged as fraudulent, helping the compliance team quickly identify and investigate suspicious activities.

### KPI 4: Total Loan Amount Issued per Branch

select BranchName, SUM(Amount) total\_amount from Loans l  
join Accounts a on l.CustomerID = a.CustomerID  
join Branches b on a.BranchID = b.BranchID  
group by BranchName

Purpose: Shows the total loan value distributed by each branch, helping management compare branch performance and lending activity geographically.

### KPI 5: Customers with Multiple Large Transactions

select a.CustomerID from Accounts a  
join Transactions t on a.AccountID = t.AccountID and t.Amount>10000  
group by a.CustomerID  
having COUNT(t.TransactionID) > 1

Purpose: Highlights customers who make multiple large transactions (>$10,000) — a common indicator for money laundering or financial irregularities.

### KPI 6: Accounts and Their Transactions

select \* from Accounts a  
join Transactions t on a.AccountID = t.AccountID

Purpose: Provides a complete view of all accounts and their related transactions — used as a base dataset for further KPI development or dashboard insights.

### Note on Database Errors

Some KPIs might not return accurate results or fail to execute if certain tables have missing or inconsistent data, foreign keys between tables are not properly linked, or test data generation produced null or duplicate entries. These issues stem from database-level inconsistencies that cannot be manually corrected through queries. Such cases are common when migrating from Excel-based systems to relational databases, and require data cleaning or normalization rather than query adjustments.

## 2. Usefulness of the Project & Organizational Impact

This project is designed to transform a traditional, spreadsheet-driven banking system into a data-driven analytical model. By centralizing all operations — customers, accounts, loans, transactions, and fraud detection — the bank gains several advantages:

✅ Operational Efficiency: Automated KPIs allow employees to quickly answer complex questions without manual lookups. Reduces reliance on Excel sheets, eliminating duplication and human error.

✅ Risk & Fraud Management: Detects fraudulent or suspicious activities in real-time. Enables faster decision-making for compliance teams and auditors.

✅ Customer Insights: Identifies high-value customers and their financial patterns. Helps create personalized financial products or credit offers.

✅ Branch Performance Tracking: Compares loan distribution and performance across branches. Supports data-driven management decisions for resource allocation.

✅ Strategic Value: This system modernizes the organization’s data infrastructure, paving the way for dashboards and BI tools (e.g., Power BI, Tableau), machine learning for fraud prediction, and regulatory compliance through structured and auditable data.