CLASS PROJECT

Project Title:

Bank Management System (BMS)

Date:

28 November 2025

1. Introduction

The Bank Management System (BMS) is designed to simplify and speed up the essential operations of a bank using Java (Eclipse) and MySQL.
The system manages customer registration, account creation, transactions, and a special "Student Account Mode" with yearly spending limits.
This digital platform removes the delays of manual banking and provides a clean, user-friendly experience for both staff and customers.

2. Major Problems in Existing Banking Apps

(a) Slow Performance During Peak Hours

Many bank apps become sluggish when traffic increases. Users often face delays while checking balance or making transactions.

(b) No Special Support for Students

Most apps treat students like normal users. There is **no feature to control expenses**, no yearly cap on spending, and no separate tracking for college-related payments.

(c) Lack of Spending Control or Limit Management

Existing banking systems do not provide automatic limit monitoring. Users cannot set yearly or monthly limits.
As a result, students often overspend or fail to track where their money goes.

3. Add-On Features in This Project

Easy Account Creation

Savings, Current, and Student Accounts can be created within seconds.

✓ Student Spending Limit – ₹4,00,000 per Year

A dedicated feature for students:

- Maximum annual transaction limit: **₹4 lakh**
- The system tracks how much amount is used
- Sends alerts when usage crosses 70%, 90%, or full limit
- Designed to help students manage education-related expenses

iii) Auto-Stored Transaction History

Every deposit, withdrawal, and balance check is stored in the Transactions table so the user can see past activities anytime.

ii) Simple and Beginner-Friendly Console UI

Instead of a complex app, the project uses a very simple **menu-based console interface** that even a beginner can use easily.

4. System Modules

1. **Customer Registration**
2. **Account Creation (Savings / Current / Student)**
3. **Deposit Amount**
4. **Withdraw Amount**
5. **Balance Enquiry**
6. **Transaction History Viewing**
7. **Student Account Annual Limit Checking**

5. Database Design (4 Beginner-Friendly Tables)

Below are the tables in the exact simple format you asked for.

TABLE 1: Customer

Field	Type	Description
customer_id	VARCHAR (30) (PK)	Unique ID of customer
name	VARCHAR (50)	Customer full name
phone	VARCHAR (15)	Contact number
address	VARCHAR (100)	Customer address
email	VARCHAR (40)	Email ID
created_at	DATETIME	Registration timestamp

TABLE 2: Account

Field	Type	Description
account_no	VARCHAR (30) (PK)	Unique account number
customer_id	VARCHAR (30) (FK)	Linked to customer table
account_type	VARCHAR (20)	Savings/Current/Student
balance	DOUBLE	Current account balance
created_at	DATETIME	Account creation date

TABLE 3: Transaction

Field	Type	Description
transaction_id	INT AUTO_INCREMENT (PK)	Unique transaction ID
account_no	VARCHAR (30) (FK)	Account on which transaction happened
type	VARCHAR (20)	Deposit / Withdraw
amount	DOUBLE	Amount processed

TABLE 4: Student Limit

Field	Type	Description
account_no	VARCHAR (30) (FK)	Student account number
yearly_limit	DOUBLE	Fixed at ₹4,00,000
amount_used	DOUBLE	Total amount withdrawn in current year

ER DIAGRAM (Bank Management System)

Entities & Attributes

1) CUSTOMER

- customer_id (PK)
- name
- phone
- address
- email
- created_at

2) ACCOUNT

- account_no (PK)
- customer_id (FK)
- account_type
- balance
- created_at

3) TRANSACTION

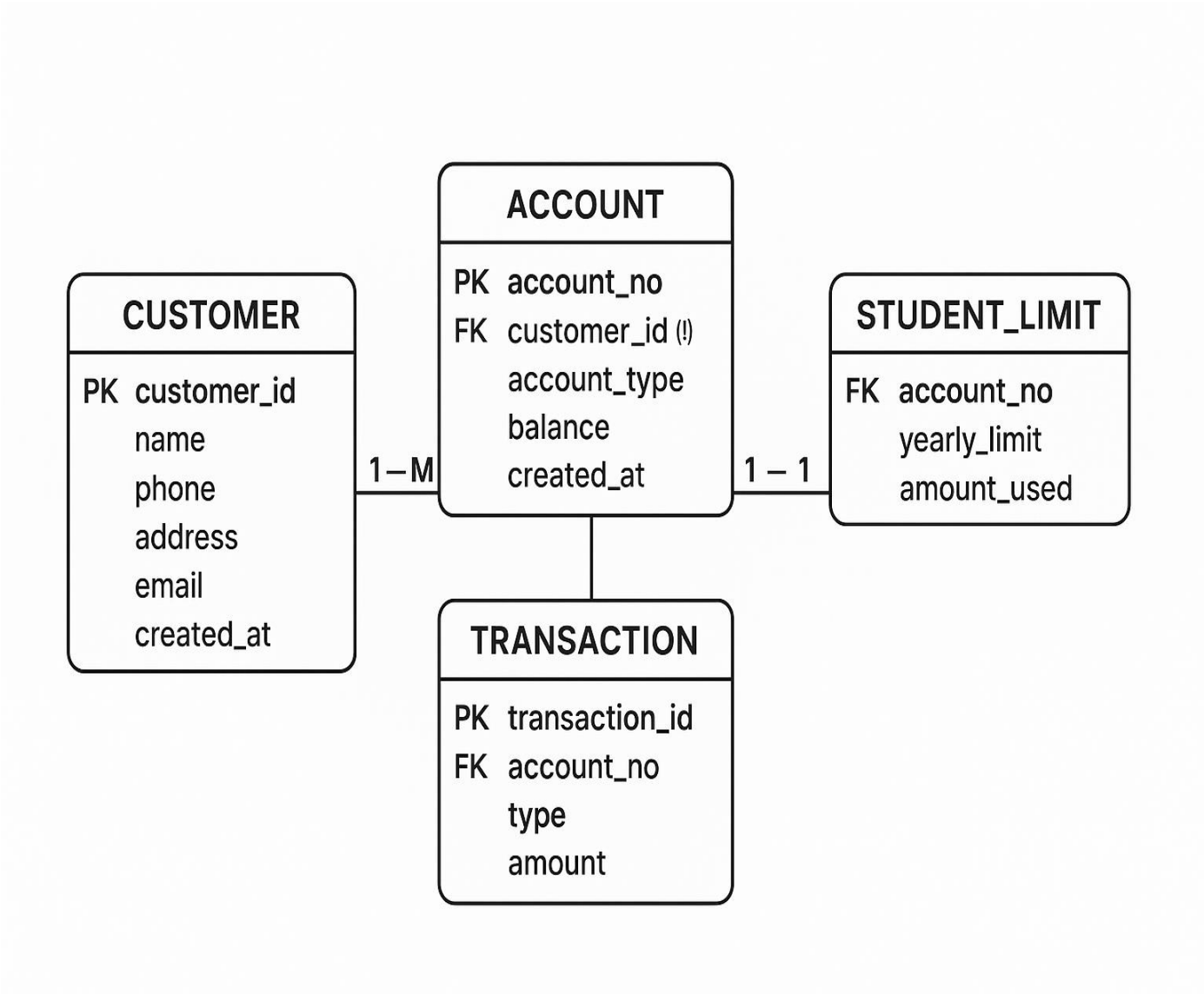
- transaction_id (PK)
- account_no (FK)
- type (Deposit/Withdraw)
- amount

4) STUDENT_LIMIT

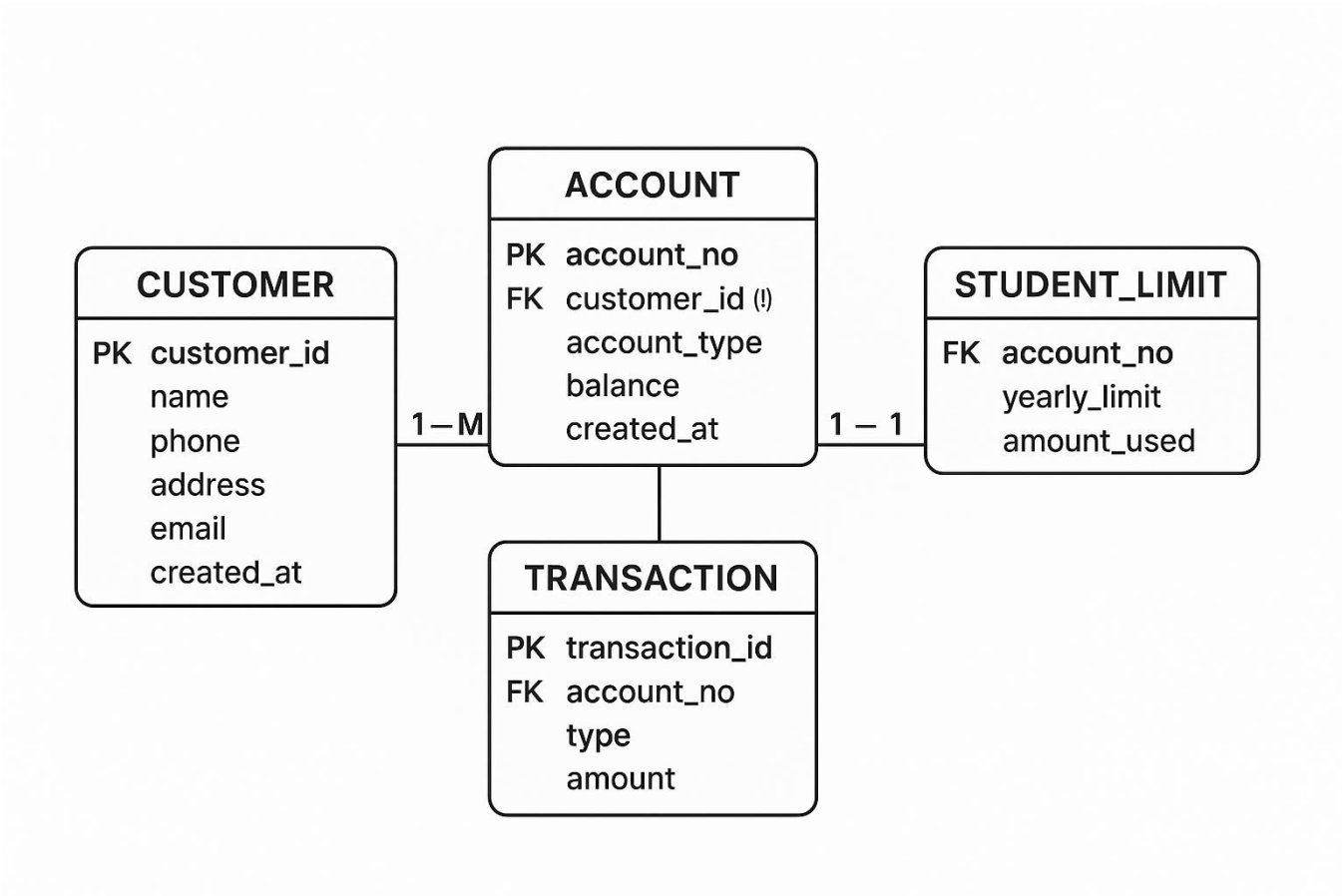
- account_no (FK)
- yearly_limit (₹4,00,000)
- amount_used

Relationships

- **Customer → Account**
  1-to-Many (One customer can have multiple accounts)
- **Account → Transaction**
  1-to-Many (One account can have many transactions)
- **Account → Student_Limit**
  1-to-1 (Only student accounts have limit record)



DATA FLOW DIAGRAM (DFD)



1. The Data Flow Diagram illustrates how information moves between the customer and the main Bank Management System through various processes such as registration, account creation, and transactions.

2. Each process is clearly numbered and shows how input data is transformed into output information within the system.

3. The diagram also highlights the interaction with data stores like the Transaction Table and Student Limit Table for recording and retrieving essential records.

4. Overall, the DFD provides a structured and systematic view of the system's workflow, ensuring clarity in understanding data movement and system functionalities.

Conclusion

The Bank Management System (BMS) successfully provides a simplified, efficient, and reliable solution for managing essential banking operations. By integrating customer registration, account handling, transaction management, and a special student-account spending limit, the system removes the delays and errors associated with manual banking. The use of Java and MySQL ensures security, accuracy, and smooth processing of data. Overall, the project demonstrates how a beginner-friendly, console-based application can automate core banking tasks while improving user convenience, performance, and financial control.