

**TITLE:**  
Banking Management  
System

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# Introduction

- The **Banking Management System (BMS)** is a Java-based application that enables banks to automate and manage their daily operations effectively.
- The system handles customer records, account details, transaction management, and loan processing, all while maintaining a high level of security and efficiency.
- The application is developed using **Java** and **Hibernate ORM** and interacts with a **MySQL** database for data persistence.
- The system improves efficiency by replacing manual processes with a centralized, automated solution.

# Problem Statement

The banking industry handles vast amounts of customer data, account transactions, loans, and other financial services daily. Traditional banking systems often rely on manual processes, which are inefficient, time-consuming, and prone to errors. Current systems struggle with fragmented data management, slow transaction processing, and security concerns. Banks need a centralized and automated solution to manage accounts, transactions, loans, and branches efficiently, while ensuring data security and providing real-time insights for better decision-making. The system provides the access to the customer to create an account, deposit/withdraw the cash from his/her account.

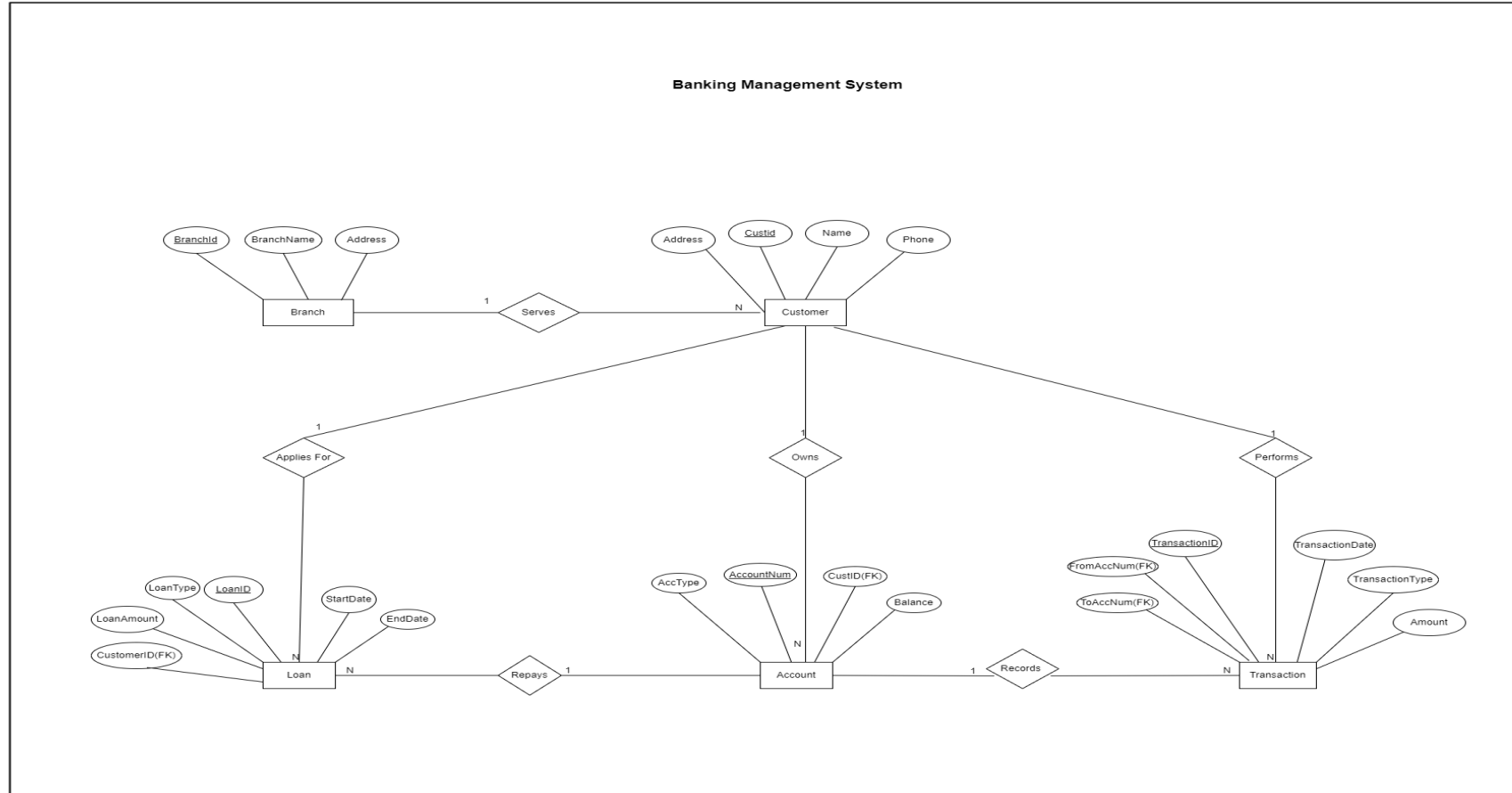
# Objectives

- **Automate banking operations** such as account management and transaction processing.
- **Centralize data** for easier access and consistency.
- Ensure **secure transactions** and data management.
- Provide **real-time reporting** for accounts, transactions, and loans.
- Enable seamless management of **branches**, **customers**, and **accounts**.
- Versatile system for savings accounts transactions.

# Features

- **Account Management:** Open, close, and update accounts.
- **Transaction Management:** Process deposits, withdrawals, and transfers.
- **Loan Management:** Manage loan applications and repayment schedules.
- **Branch Management:** Handle branch related operations.
- **Interest Calculation:** Calculate interest on accounts, loans, and other financial products.
- **Real-Time Reporting:** Generate reports for transactions and loans.

# ER Diagram



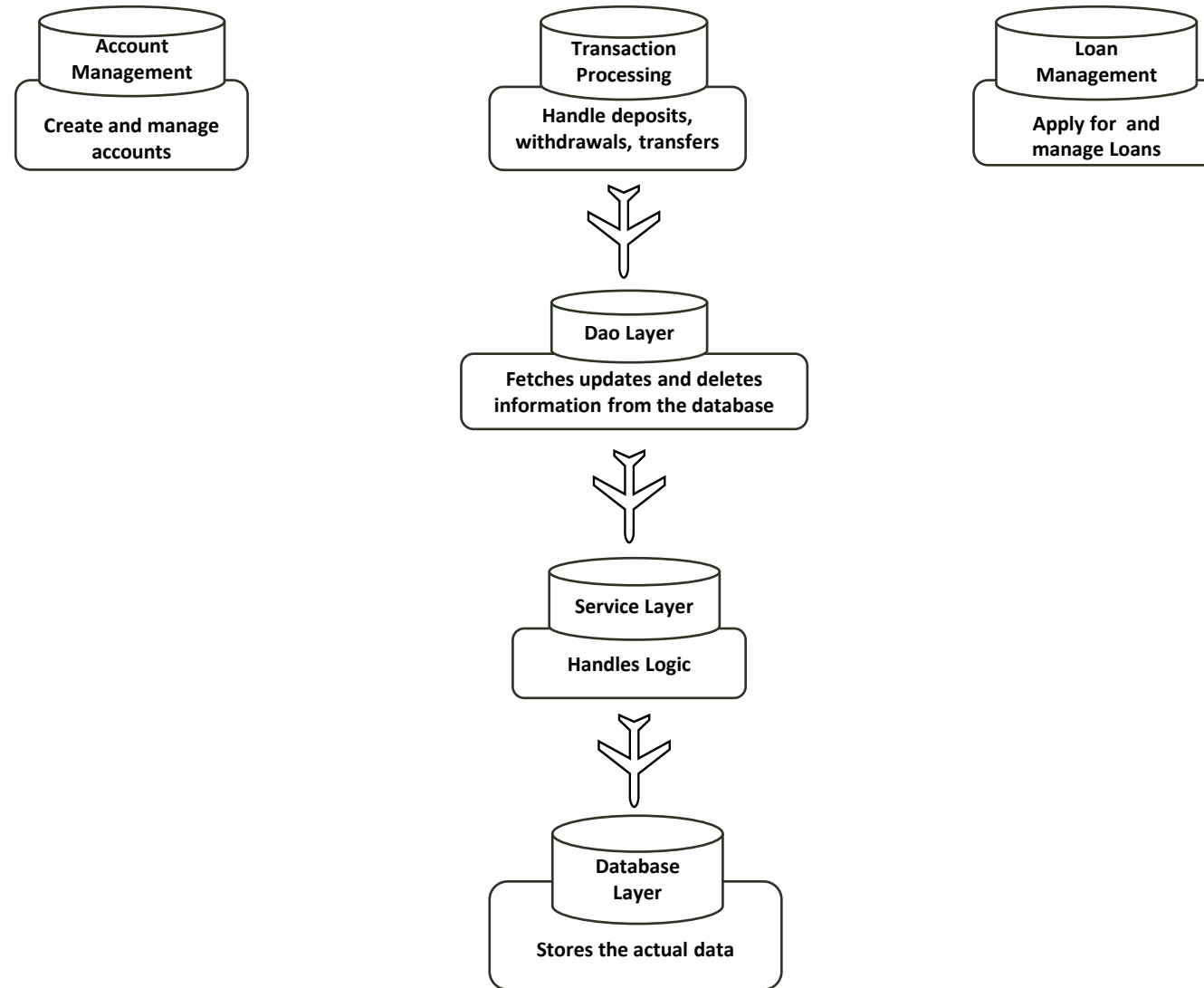
# Module Description

<b>MODULE</b>	<b>DESCRIPTION</b>
Create File	Selecting this creates a new file for the user by accepting input such as account number, name and amount
Open account	Opens a new account for the user by accepting input such as account number, name and minimum balance
Search	Enables to search for the details of the given account number. Displays only one account detail at a time

Deposit	<b>Provides options to deposit amount from the given account number</b>
Withdraw	<b>Provides options to withdraw amount from the given account number</b>
Cancel Account	<b>Cancels the selected account from the bank.</b>
Report	<b>Displays the list of all account Details comprising of account number, name and balance amount</b>



# System Architecture



# Workflow

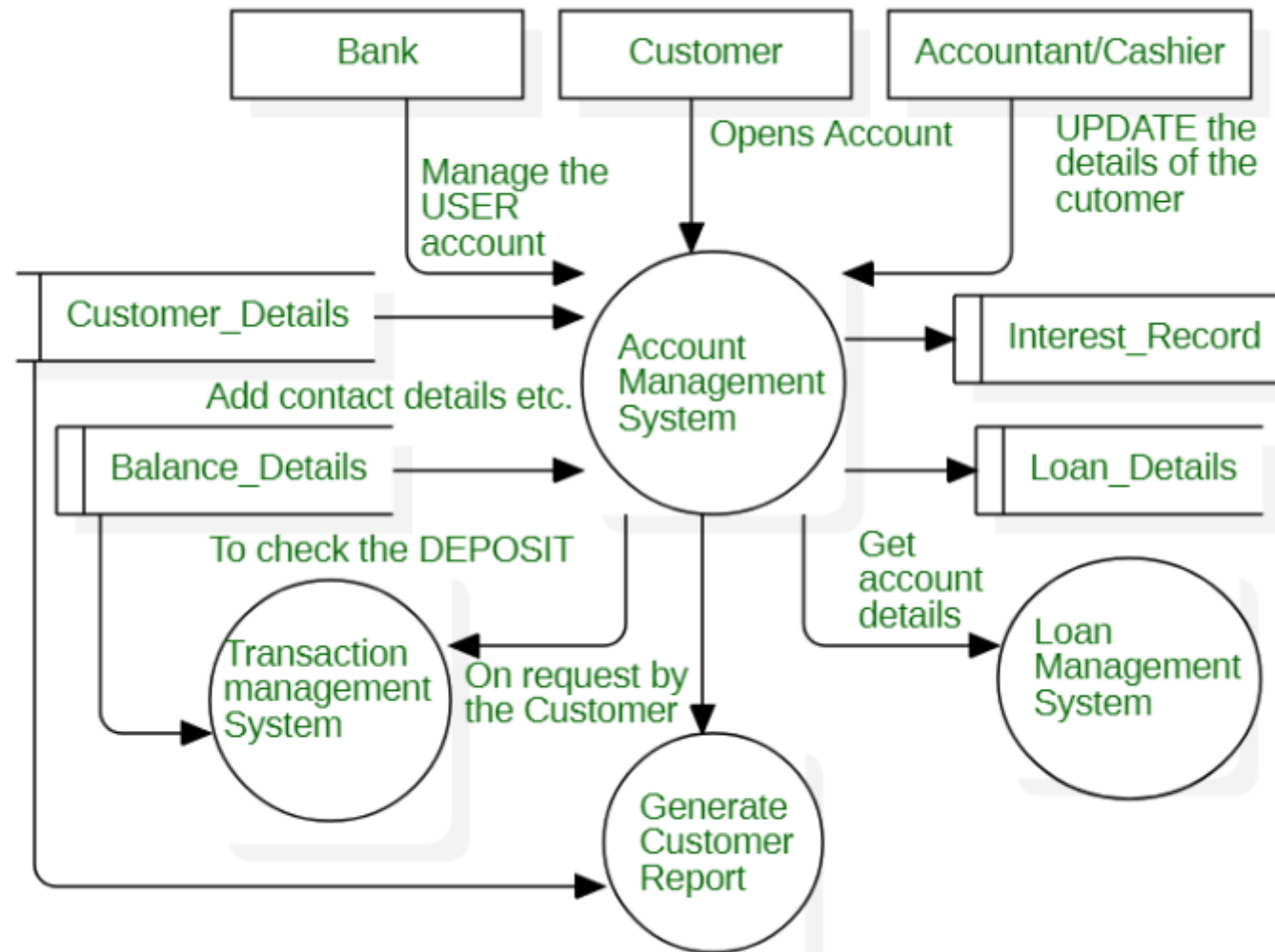
**Step 1:** Customer or staff creates an account.

**Step 2:** Transactions are processed in real-time (deposits, withdrawals, transfers).

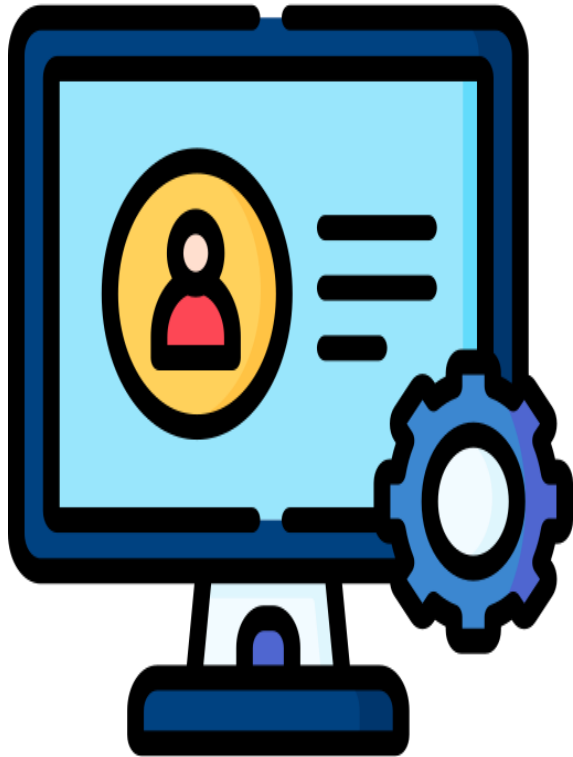
**Step 3:** Loans are applied, tracked, and managed.

**Step 4:** Branch-specific operations are handled, and reports are generated.

# Workflow – Account Management System



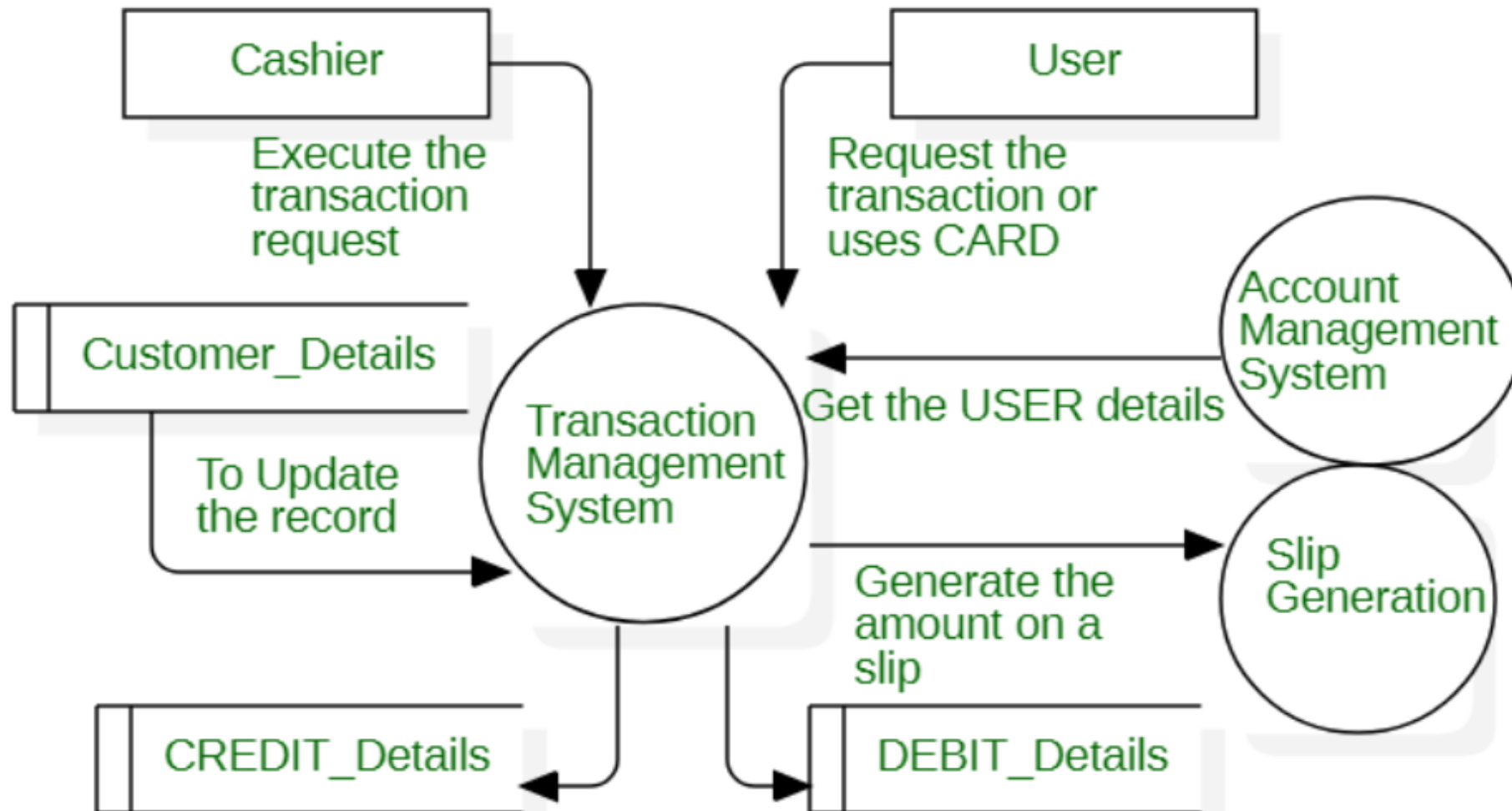
# Account Management System :



In this Customer can access all the services offered by the Bank by adding his details.

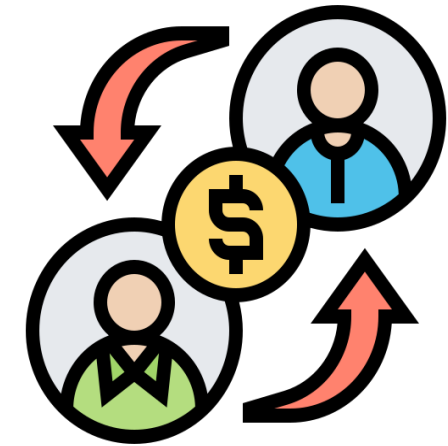
- The account management system processes the customer's request, creating a new account record and assigning a unique account number.
- The customer's personal and contact information is captured and stored within the system.
- The system manages the account's balance, transactions, and interest calculations.
- As the Customer avails any services as a transaction or a loan, then the required data flows to Transaction Management System or the Loan Management System respectively.

# Workflow – Transaction Management System

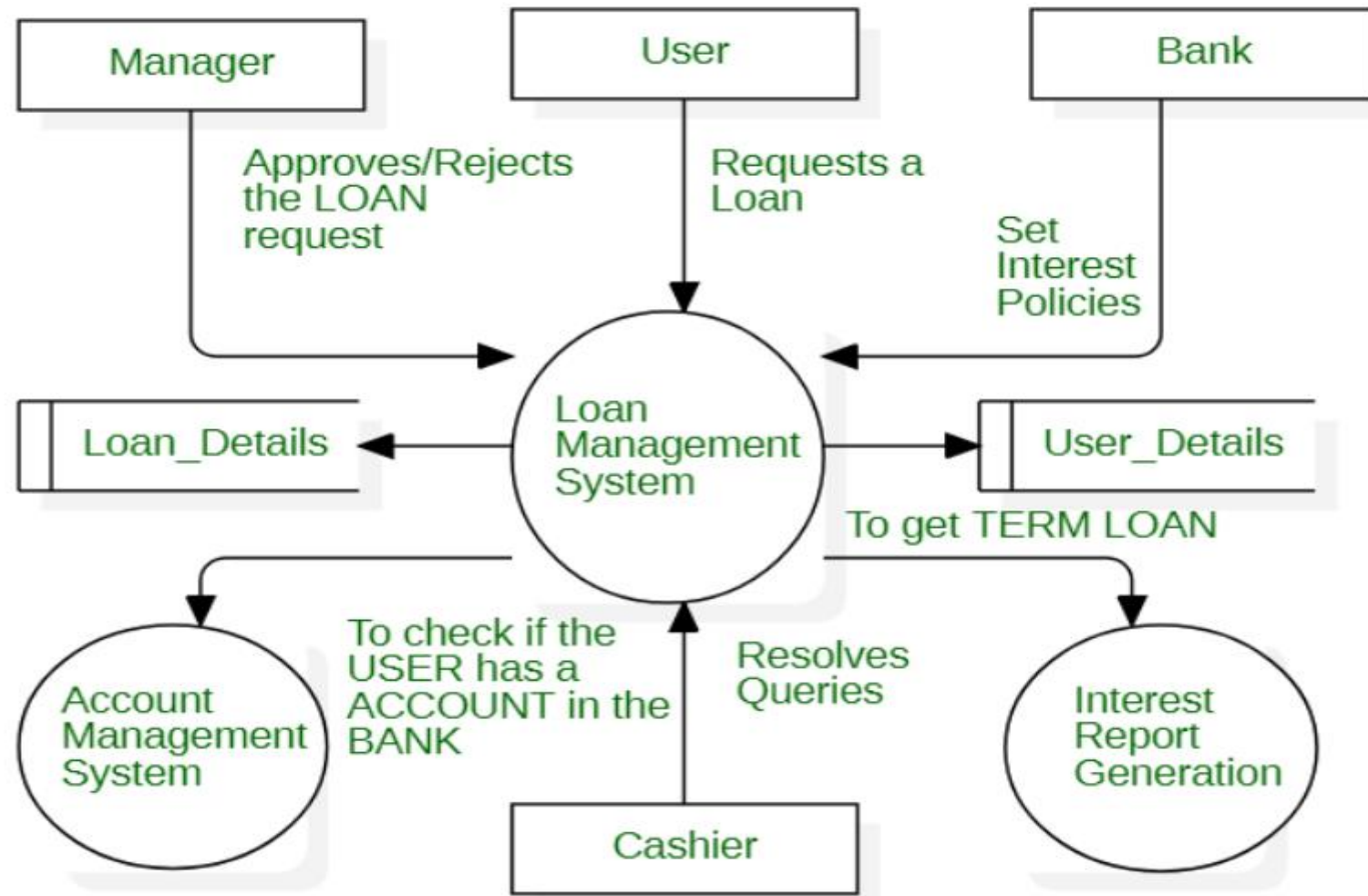


# Transaction Management System

- The customer initiates a transaction request .
- The customer specifies the type of transaction (e.g., deposit, withdrawal, transfer) and the relevant details (amount, account numbers, etc.).
- The transaction request is routed to the account management system, which retrieves the necessary account information.
- The transaction management system processes the request, validating the account details, checking for sufficient funds (if applicable), and updating the account balance.
- If the transaction is approved, the system executes it, recording the transaction details and updating the account balance.
- The system provides a confirmation to the user, indicating the success or failure of the transaction.



# Workflow – Loan Management System



# Loan Management System



- The customer initiates a loan request .
- A customer providing details such as the loan amount, purpose, and repayment terms.
- The system processes the loan request, creating a new loan application.
- The system retrieves the user's account information to assess their creditworthiness.
- A manager or loan officer reviews the application, evaluates the user's creditworthiness, and decides whether to approve or reject the loan.
- If approved, the system generates the loan agreement, outlining the terms and conditions.
- The loan amount is disbursed to the user's account.
- The system calculates interest based on the loan amount, interest rate, and repayment schedule.



# Benefits

- **Efficiency:** Automation of manual tasks, reducing time and errors.
- **Centralization:** Single source of truth for all customer and transaction data.
- **Real-time Processing:** Instant transaction updates.
- **Enhanced Security:** Protection of sensitive data.
- **Scalability:** Can be scaled to handle multiple branches and customers.

# Challenges

- Ensuring **data security** and preventing breaches.
- Handling large volumes of **transactions** efficiently.
- **Integration** with legacy banking systems.
- **Maintaining data integrity** during high-volume operations.
- **Scalability**: Can be scaled to handle multiple branches and customers.

# Conclusion

The Banking Management System is designed to streamline core banking operations like account management, transaction processing, and loan management. With its modular architecture and efficient use of Hibernate ORM, the system is highly maintainable, scalable, and adaptable for future enhancements. Custom exception handling and layered architecture further ensure robustness and reliability.

THANK YOU

