

Technical Report #3

Noun Technique

STEP 1 – Identify ALL nouns from use cases, actors, inputs, outputs

Sources used:

- Use cases (Account management, Loan approval, Transaction processing...)
- Actors: Customer, Teller, Admin
- Inputs & Outputs: Loan applications, approvals, transfers, statements, etc.

Table 1 – Raw Nouns Extracted (unfiltered)

Category Raw Nouns Identified

Actors	Customer, Admin, Teller, Employee, User
Banking Entities	Account, Loan, Loan Application, Transaction, Transfer, Statement, Interest Posting, Overdraft Event, Balance, Fee, Account Type, Currency

Internal System Entities	Role, Permission, Schedule, Repayment Schedule, Approval Decision
Inputs (from use cases)	Deposit, Withdrawal, Payment, Internal Transfer, Loan Request, Interest Rate, Account Opening Form
Outputs (reports/forms)	Account Statement, Transaction Summary, Loan Decision, Customer Report
Miscellaneous	Timestamp, Amount, Personal Information, Address, Email, Phone Number, National ID

STEP 2 – Add nouns from external documentation (existing procedures, reports, domain knowledge)

These nouns come from:

- Existing banking processes
- Reports typically generated in banks
- Additional attributes found in documents

Table 2 – Additional Nouns Identified

Additional Nouns	Reason Added
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Overdraft Limit	Attribute of account
Interest Rate	Attribute of loans/accounts
Installment	Part of loan repayment schedule
Transaction ID	Required unique identifier
Customer Profile	Used in all account operations
Account Status	Needed for freeze/close operations
Loan Status	Needed for approval & tracking
Approval Workflow	Exists in loan approval use case
Account Ownership	Relationship used in all use cases

STEP 3 – Refine the noun list

We classify each noun following the textbook questions:

Table 3 – Refinement Decision Table

Noun Include? Reason (Using Step 3 Questions)

Customer	Include	Unique entity, system must store many customers
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Admin	Include (as Role/Employee)	System stores multiple admins
Teller	Include (as Role/Employee)	Unique staff type
Employee	Include	Parent entity for staff
User	Exclude (synonym)	Synonym for Customer/Employee
Account	Include	Core banking entity
Loan	Include	System tracks issued loans
Loan Application	Include	Required for loan process
Transaction	Include	Every banking action generates one
Transfer	Include (Subtype of Transaction)	Needs separate fields (from-to)
Statement	Include	System generates multiple statements
Interest Posting	Exclude (Subtype of Transaction)	This is a transaction type
Overdraft Event	Include	System must detect & record these
Fee	Exclude (Subtype of	Represented as transaction type

	Transaction)	
Balance	Exclude (Attribute)	Attribute of Account
Account Type	Exclude (Attribute)	Attribute of Account
Currency	Exclude (Attribute)	Attribute of Account/Transaction
Schedule	Exclude (Ambiguous)	Not unique; refine to repayment schedule
Repayment Schedule	Include	Needed for loan instalments
Approval Decision	Exclude (Attribute)	Part of Loan Application
Deposit	Exclude (Transaction Type)	Represented as a Transaction
Withdrawal	Exclude (Transaction Type)	Represented as a Transaction
Payment	Exclude (Transaction Type)	Represented as a Transaction
Interest Rate	Exclude (Attribute)	Attribute of Loan/Account
Transaction Summary	Exclude (Output)	Generated report
Customer Report	Exclude (Output)	Not a “thing” stored

Personal Information	Exclude (Attribute)	Attributes of Customer
Address, Email, Phone	Exclude (Attributes)	Attributes of Customer
National ID	Exclude (Attribute)	Attribute of Customer
Installment	Exclude (Attribute)	Part of repayment schedule
Payment Method	Exclude (Attribute)	Transaction attribute
Approval Workflow	Exclude (Process)	Not a stored entity
Account Ownership	Exclude (Relationship)	Not a separate entity

STEP 4 – Create Master List of Nouns + Status (Include / Exclude / Research)

Table 4 – Master Noun List

Noun	Status	Notes
Customer	Include	Core domain entity
Employee	Include	Staff members
Admin	Include (Role)	Subtype of Employee

Teller	Include (Role)	Subtype of Employee
Account	Include	Core entity
Loan	Include	Core entity
Loan Application	Include	Lifecycle separate from Loan
Transaction	Include	Core entity
Transfer	Include	Special Transaction
Interest Posting	Include	Special Transaction
Statement	Include	System output but stored
Overdraft Event	Include	Required auditing entity
Role	Research	Might be attribute of Employee or entity

EXCLUDED (attributes/processes/outputs):

Balance, Interest Rate, Fee, Deposit, Withdrawal, Payment, Customer Report, Approval Decision, Installment, Address, Phone, Email, Personal Details, Account Status, Loan Status, Payment Method, Transaction Summary.

STEP 5 – Review & finalize list (final domain classes)

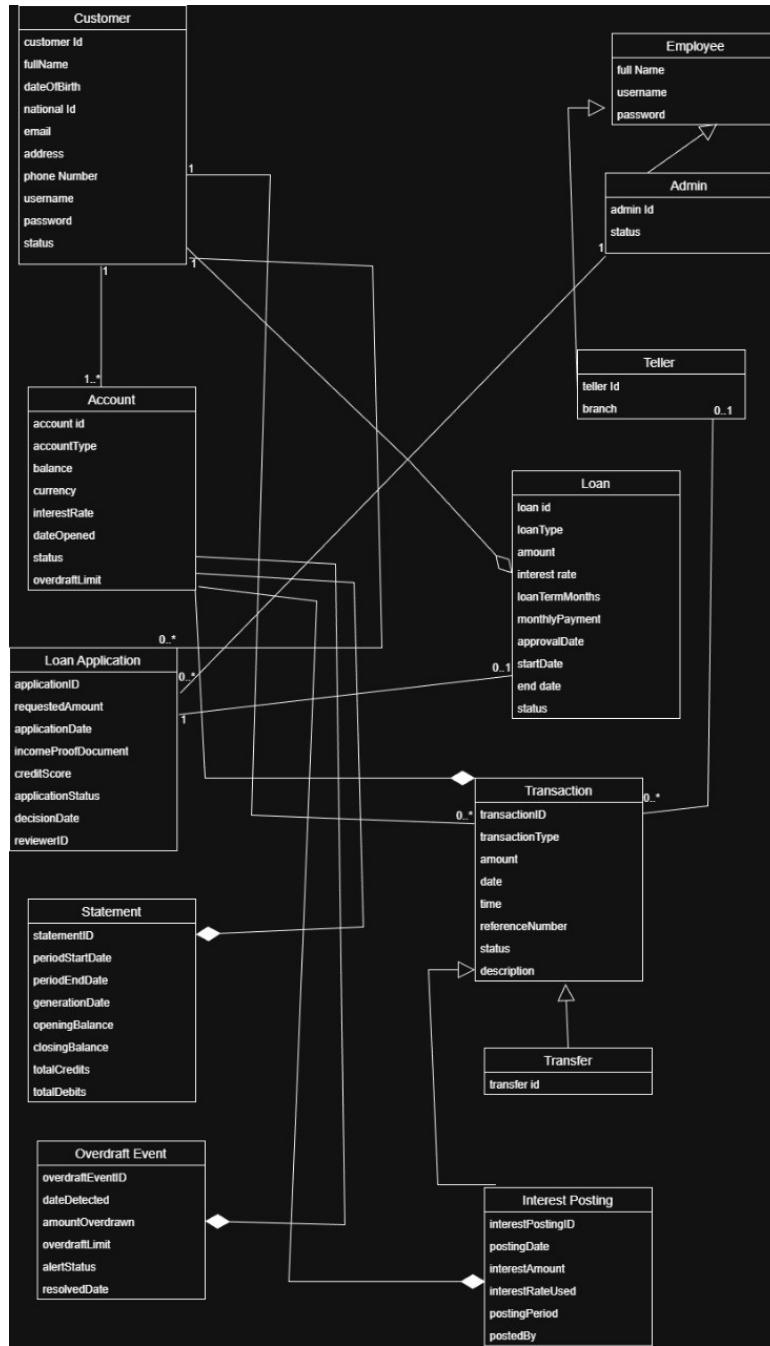
After removing attributes, synonyms, outputs, and processes, the **final domain classes** for the BMS are:

📌 FINAL DOMAIN CLASS LIST (per textbook noun technique)

Final Domain Class	Reason
Customer	The system must store customer personal information, account details, loan applications, and transaction history
Employee	A staff member responsible for performing daily banking tasks, assisting customers, and ensuring operations run smoothly and follow bank regulations
Admin	Admins manage system configurations, user roles, and approval tasks, so their identities and permissions must be stored.
Teller	Tellers perform cash transactions, internal transfers, and customer service tasks, so the system must record their profiles and activities.
Account	Every banking activity (balance, transactions, overdraft status, interest posting) depends on accounts, so they must be stored as primary entities.

Loan	The bank must store details about issued loans, including loan amount, interest rate, payments, and loan status.
Loan Application	The system must store loan applications submitted by customers so that tellers/admins can review, validate, approve, or reject them.
Transaction	All banking operations (cash deposits, withdrawals, internal transfers, interest posting) generate transactions that must be recorded for auditing and statements.
Transfer	Internal transfers between accounts need to be individually tracked with details such as source account, destination account, amount, and timestamp.
Statement	The system generates account statements, so it must store or be able to reconstruct statement information (transaction summaries, dates, balances).
Overdraft Event	When an account balance falls below zero, the system must detect and record overdraft events for notifications, fees, and tracking.
Interest Posting	Monthly interest calculations and postings to accounts must be stored as system-generated entries for auditing and customer transparency.

These are the “**things in the problem domain**” according to Noun Technique rules.

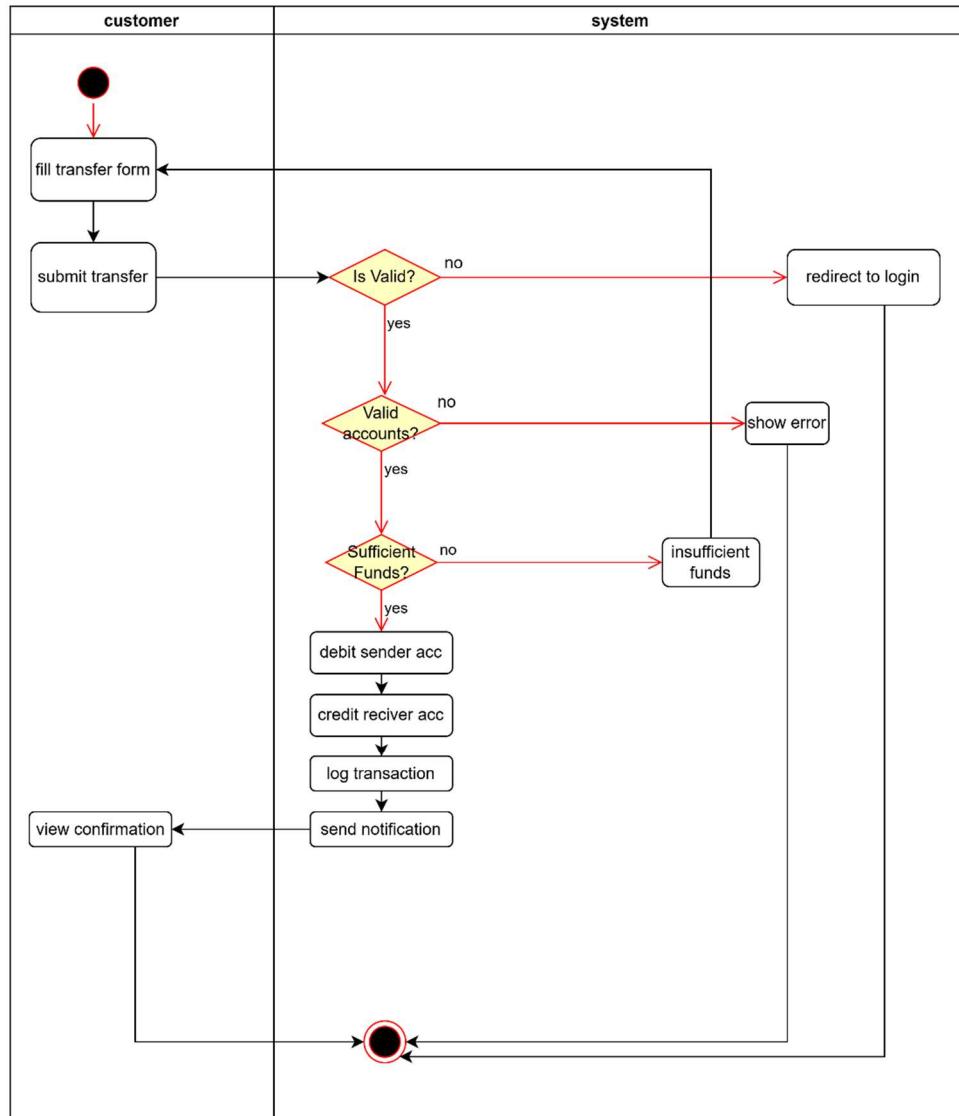


CRUD Technique

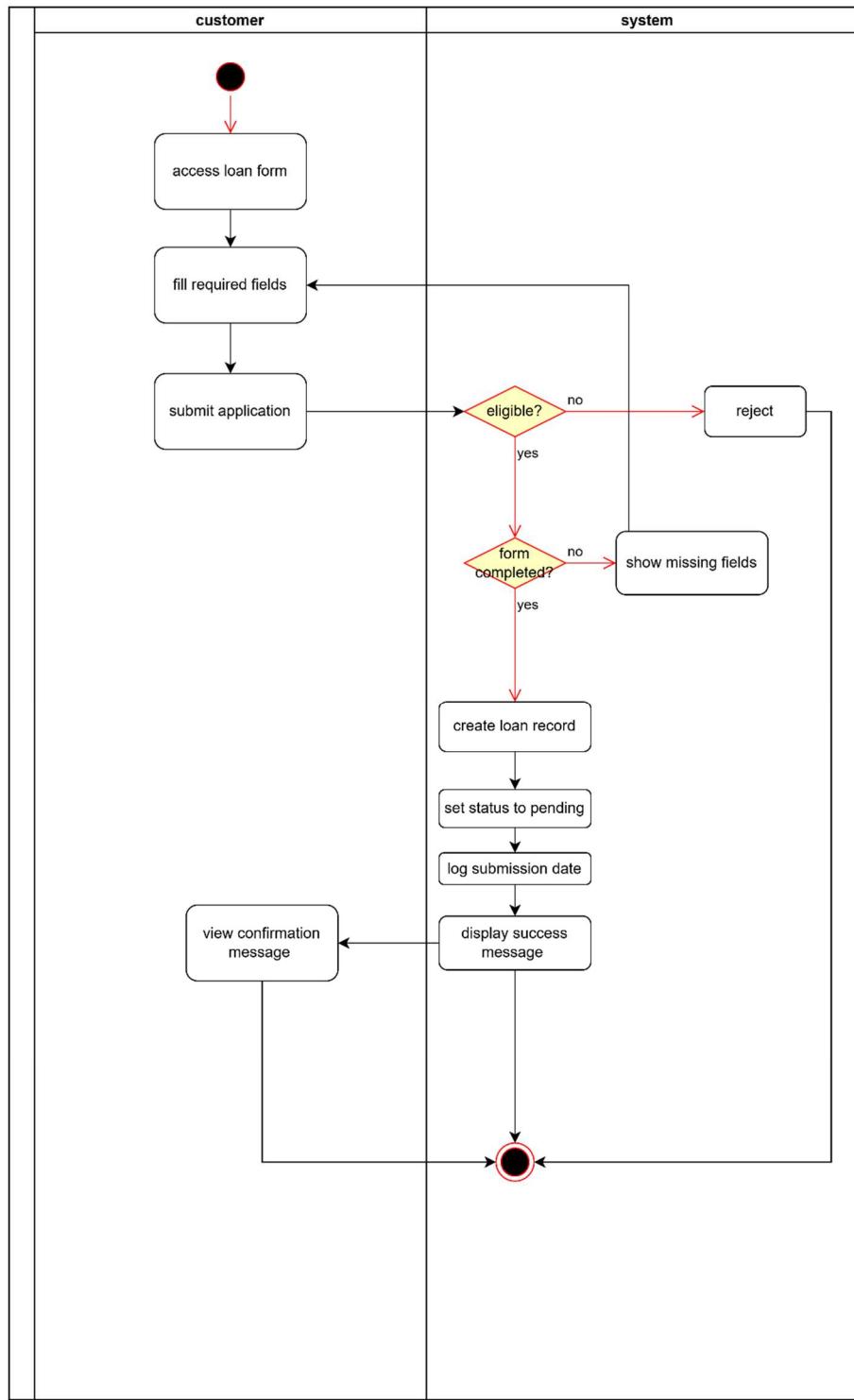
Use Case / Domain Class	Customer	Employee	Account	Loan	Loan Application	Transaction	Transfer	Interest Posting	Statement	Overdraft Event
UC-1 Create & Manage Customer Profile	C, R, U	R	R	-	-	-	-	-	-	-
UC-2 Process Cash Transaction (Deposit / Withdraw)	R	R	R, U	-	-	C	-	-	-	-
UC-3 Transfer Funds Between Accounts	R	R	R, U	-	-	C	C	-	-	-
UC-4 Apply for Loan	R	R	R	-	C	-	-	-	-	-
UC-5 Review & Decide Loan Application	R	R	-	C	R, U	-	-	-	-	-
UC-6 View Transaction History & Generate	R	R	R	-	-	R	R	-	C, R	-

Statement										
UC-7 Accrue & Post Monthly Interest	-	-	R, U	-	-	C		C, U	-	-
UC-8 Overdraft Detection & Alert	-	-	R	-	-	R	-	-	-	C, R, D

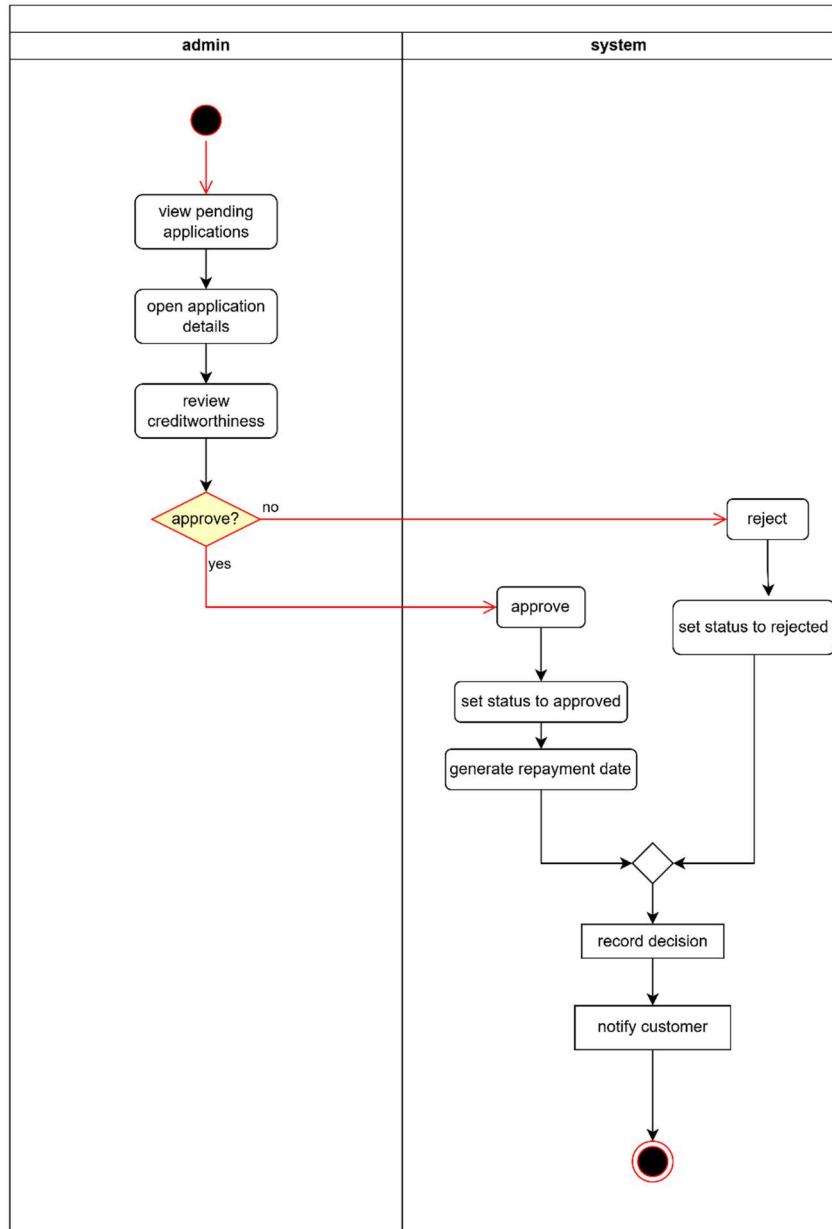
3. Activity, System Sequence and state machine diagrams



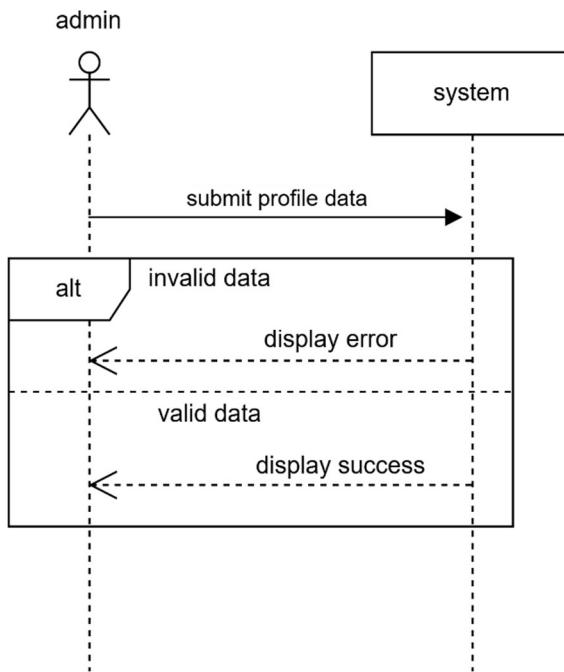
Use Case 3 – Activity Diagram



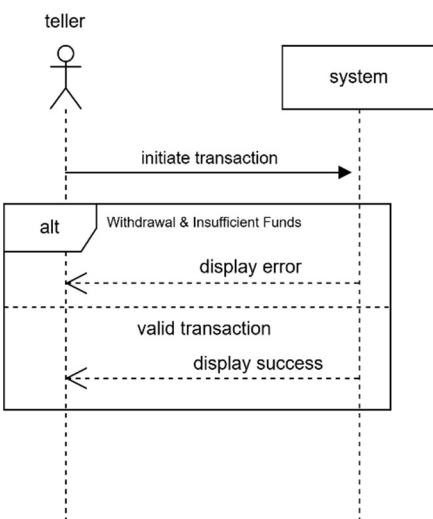
Use Case 4 – Activity Diagram



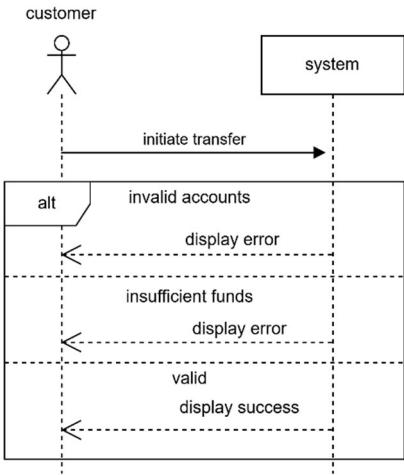
Use Case 5 – Activity Diagram



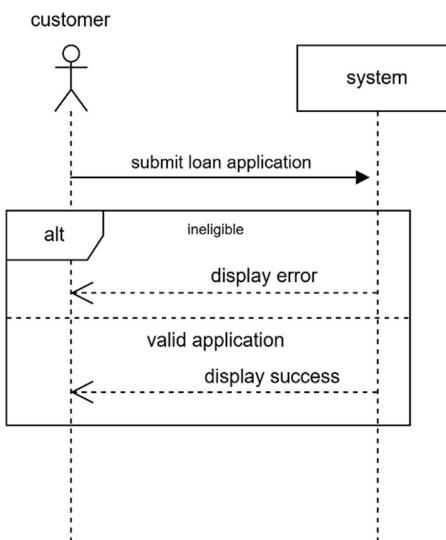
Use Case 1 - SSD



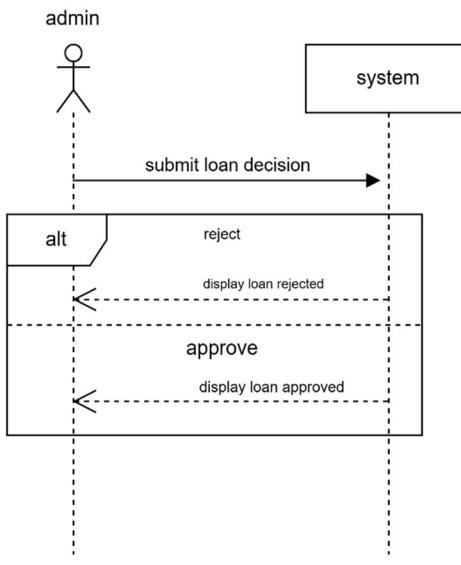
Use Case 2 - SSD



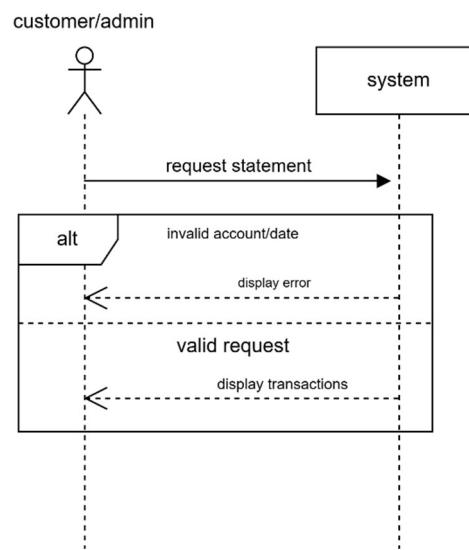
Use Case 3 - SSD



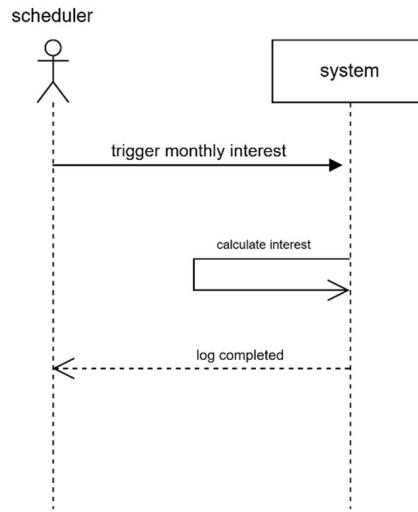
Use Case 4 - SSD



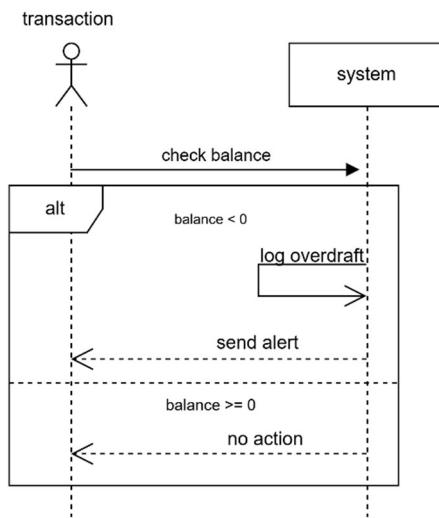
Use Case 5 - SSD



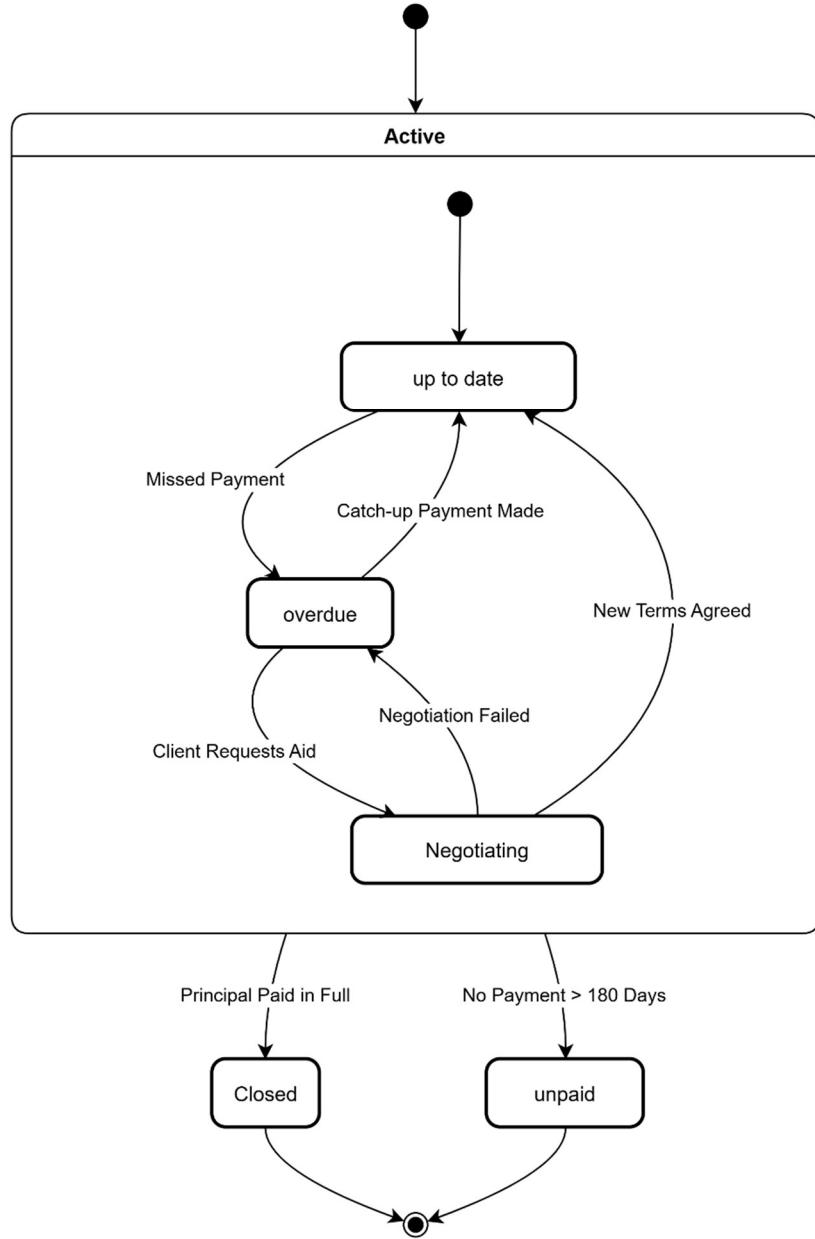
Use Case 6 - SSD



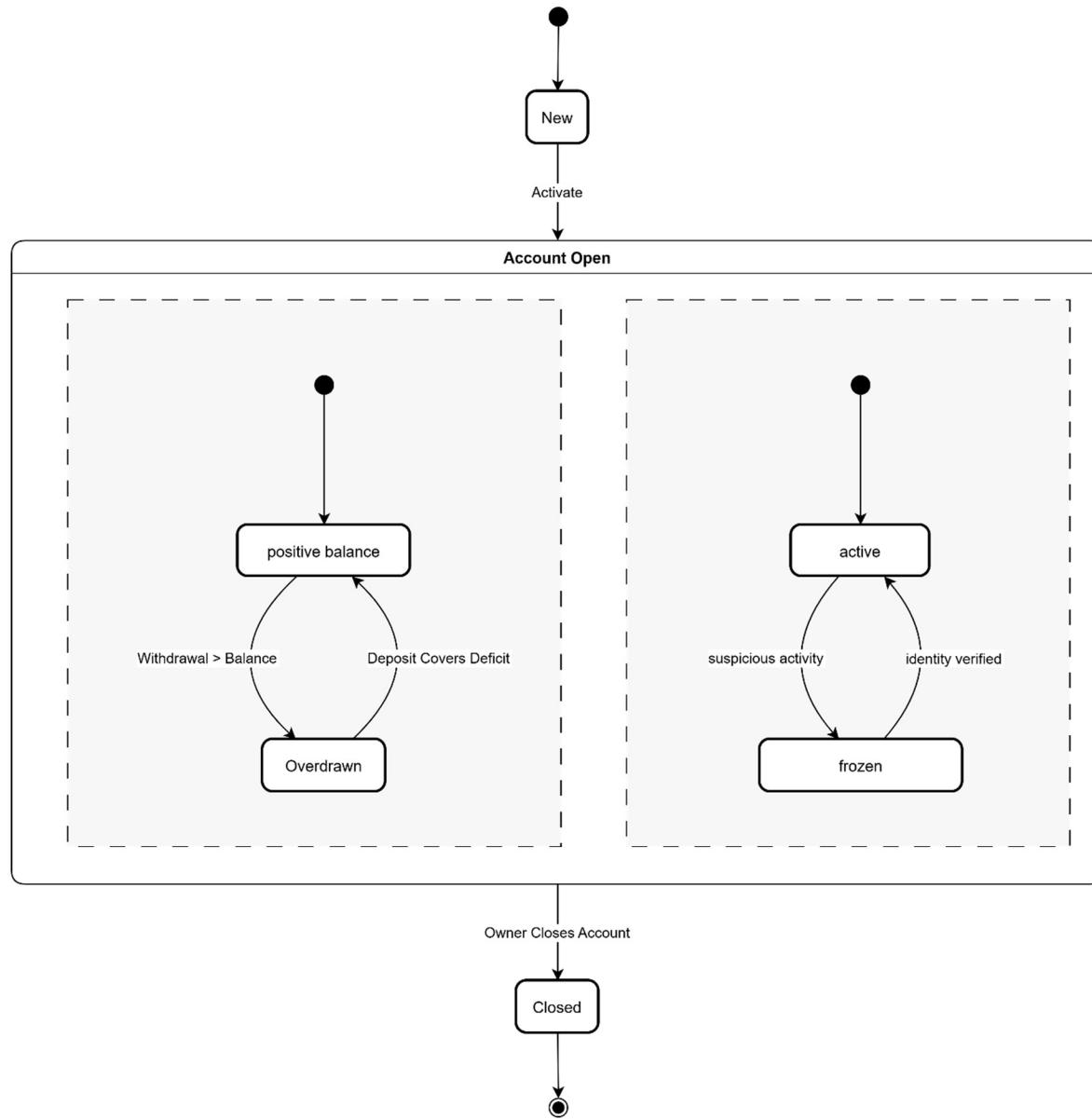
Use Case 7 - SSD



Use Case 8 - SSD

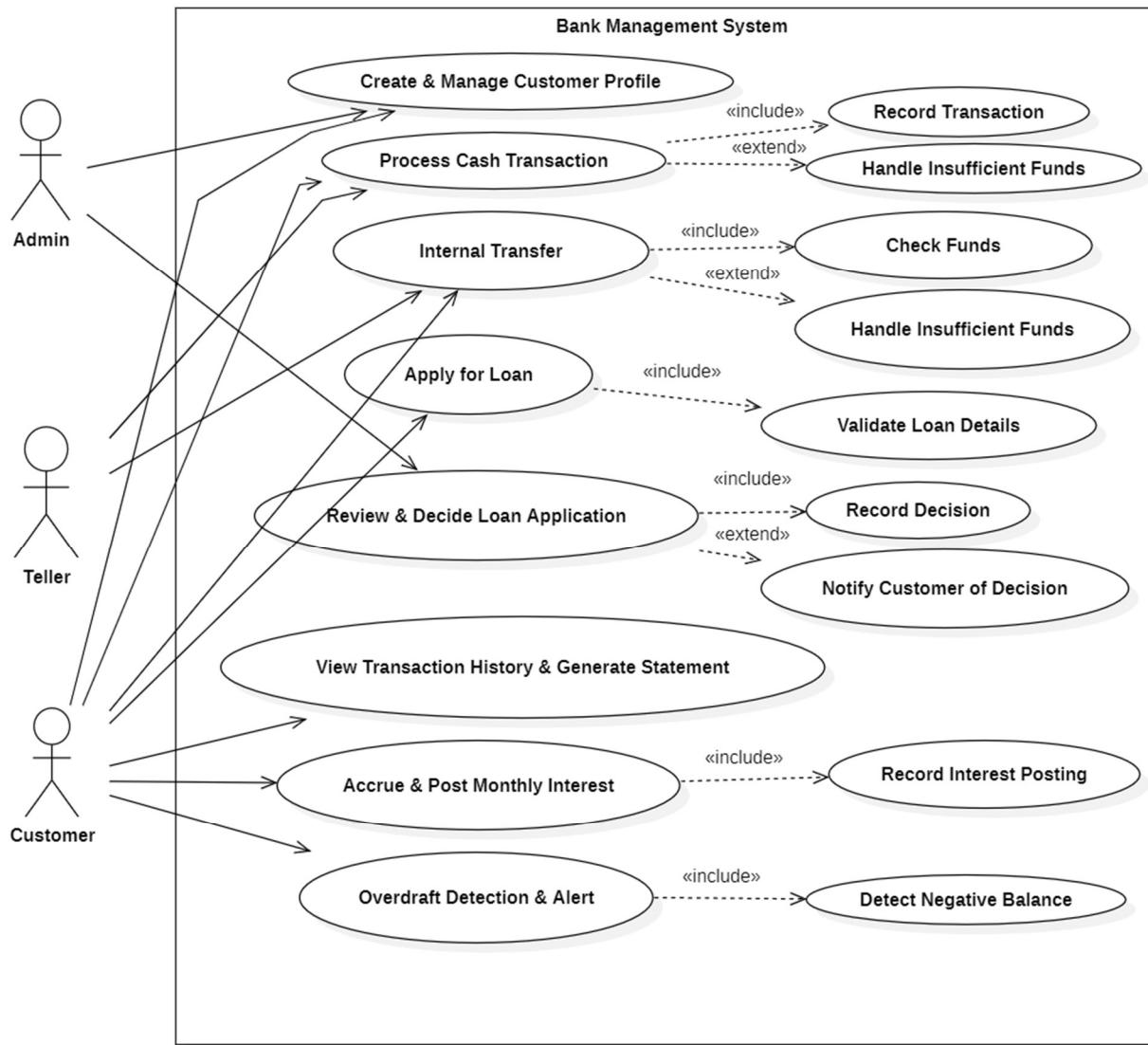


State Diagram 1



State Diagram 2

Refined Use Case Diagram:



Jira Timeline:

The screenshot shows the Jira Board view for the 'PIB' space. The board is divided into three columns: TO DO, IN PROGRESS, and DONE.

- TO DO (1 item):**
 - technical report
- IN PROGRESS (2 items):**
 - Nov 30, 2025: PIB-18 (status: YI)
 - Nov 30, 2025: PIB-17 (status: HM)
- DONE (9 items):**
 - class diagram
 - Nov 30, 2025: PIB-13 (status: OA)
 - crud technique
 - Nov 30, 2025: PIB-14 (status: YA)

The sidebar on the left shows recent activity and navigation links. The top right corner indicates 6 notifications.