

# **Bank Management System Requirements Specification**

**Version 2.0**

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# Executive Summary

## **Project Overview**

This project involves the development of a comprehensive bank management software designed to enhance the efficiency of banking operations and improve customer experience. The product serves a wide range of users, including customers, bank staff, and administrators.

The software is intended to support critical banking processes such as account management, transaction handling and loan approvals. By integrating with existing infrastructure and providing robust security measures, the system seeks to deliver reliable banking services.

## Product/Service Description

### **Product Context**

This bank management software integrates seamlessly with a variety of related systems, forming part of a broader ecosystem of financial products and services.

Relationships to Other Systems:

1. ATMs: Facilitate real-time balance inquiries and cash withdrawals.
2. Payment Processors: Facilitate debit/credit card transactions at POS (Points-of-Sale)
3. Wire Transfer Network System: Facilitate secure transfers to external bank accounts.

### **User Characteristics**

#### Internal Users:

- **System Administrators**
  - Responsible for managing employee profiles and role assignments
  - Moderate technical expertise
  - Require access control
- **Bank Tellers, Loan Officers**
  - Responsible for handling customer requests such as account creation, transactions, and loan approvals
  - Low technical expertise
  - Need for intuitive UI and quick access to transactions
- **Bank Managers, Fraud Analysts, Auditors**
  - Responsible for reviewing customer, fraud detection, and audit analytics.
  - Low to moderate technical expertise
  - Require dashboards, audit logs, and exportable reports

#### External Users:

- **Customers**
  - Use online banking to manage personal or business accounts, perform transactions, apply for loans, and access customer services
  - Basic computer skills
  - Need for intuitive UI

***Assumptions***

- Customers and employees will have stable internet access to access the system.
- Basic familiarity with banking operations is assumed for all users.
- The bank will keep the system updated with evolving regulatory requirements.
- The bank will provide secure hosting, firewalls, and encryption measures.
- A secure, centralized database is available.
- Data backup systems are reliable to ensure continuity during outages.

***Constraints and Dependencies***

- The system must operate alongside existing legacy banking systems until full migration is complete.
- **User Management** module must be completed before access to any other banking functionalities.
- **Funds Management, Audit & Reporting, and Fraud Detection** modules must be implemented before account-related operations can be processed.

## Requirements

<b>Functional Requirements</b>			
<b>Req#</b>	<b>Requirement</b>	<b>Business Process</b>	<b>Priority</b>
<b>BR_UM_01</b>	System administrator shall be able to maintain system profiles for bank employees.	User Management ▾	1
<b>BR_UM_02</b>	Bank employees / customers shall be able to log into the system.	User Management ▾	1
<b>BR_UM_03</b>	Customers shall be able to create an online account.	User Management ▾	2
<b>BR_FM_01</b>	Bank managers shall be able to view funds information about their assigned financial units (branches, ATMs).	Funds Management ▾	1
<b>BR_FM_02</b>	Bank managers shall be able to allocate funds to their assigned financial units.	Funds Management ▾	1
<b>BR_AM_01</b>	Bank tellers shall be able to open a new bank account for a customer.	Account Management ▾	1
<b>BR_AM_02</b>	Bank tellers shall be able to close an existing bank account upon customer request.	Account Management ▾	1
<b>BR_AM_03</b>	Bank tellers shall be able to modify account details.	Account Management ▾	1
<b>BR_AM_04</b>	Customers shall be able to access their bank account details and transaction history.	Account Management ▾	2
<b>BR_TM_01</b>	Customers shall be able to deposit money into their accounts.	Transaction Management ▾	1
<b>BR_TM_02</b>	Customers shall be able to withdraw money.	Transaction Management ▾	1
<b>BR_TM_02A</b>	Customers shall be able to withdraw money at a bank branch.	Transaction Management ▾	1
<b>BR_TM_02B</b>	Customers shall be able to withdraw money at an ATM.	Transaction Management ▾	2
<b>BR_TM_03</b>	Customers shall be able to make transfers.	Transaction Management ▾	1

**Functional Requirements**

Req#	Requirement	Business Process	Priority
BR_TM_03A	Customers shall be able to make transfers to accounts within the same bank.	Transaction Management ▾	1
BR_TM_03B	Customers shall be able to make transfers to external bank accounts via wire transfer.	Transaction Management ▾	1
BR_TM_03C	Customers shall be able to set up automated recurring transfers.	Transaction Management ▾	1
BR_TM_04	Customers shall be able to make card payments.	Transaction Management ▾	1
BR_LM_01	Customers shall be able to apply for and be granted loans.	Loan Management ▾	1
BR_LM_02	Customers shall be able to repay their loans.	Loan Management ▾	1
BR_CM_01	Customers shall be able to apply for cards for their bank account online.	Card Management ▾	1
BR_CM_02	Customers shall be able to request checkbooks for their checking accounts.	Card Management ▾	1
BR_CM_03	Customers shall be able to set spending limits on their cards.	Card Management ▾	2
BR_FD_01	Fraud analysts shall be able to review and take action on suspicious banking activities.	Fraud Detection ▾	1
BR_FD_02	Customers shall be able to report fraudulent activities related to their account.	Fraud Detection ▾	1
BR_CS_01	Customers shall be able to access real-time information about ATMs and branches.	Customer Services ▾	3
BR_CS_02	Customers shall be able to schedule in-branch appointments online.	Customer Services ▾	3
BR_CS_03	Customers shall be able to submit feedback and complaints about their banking experience online.	Customer Services ▾	3

## **Functional Requirements**

<b>Req#</b>	<b>Requirement</b>	<b>Business Process</b>	<b>Priority</b>
<b>BR_CS_04</b>	Customers shall be able to request official account-related documents.	Customer Services ▾	1
<b>BR_AR_01</b>	Auditors shall be able to view audit trails to ensure compliance with banking regulations.	Audit & Reporting ▾	1
<b>BR_AR_02</b>	Bank managers shall be able to access customer analytics.	Audit & Reporting ▾	2
<b>BR_AR_03</b>	Bank managers shall be able to access fraud detection analytics.	Audit & Reporting ▾	2

## **Non-Functional Requirements**

### **1. Usability Requirements**

- 1.1. The system shall have a user-friendly interface.
- 1.2. The system shall support multilingual interfaces (Albanian, English).
- 1.3. The user documentation and help shall be comprehensive and easy to understand.

### **2. Performance Requirements**

- 2.1. The system shall support at least 50,000 active online banking users at any given time.
- 2.2. The system shall support up to 300 concurrent bank employees.
- 2.3. 95% of transactions shall be processed within 1 second.
- 2.4. 99.9% of transactions shall be processed within 3 seconds, even under peak load.
- 2.5. The system shall sustain peak loads of 10 times the normal transaction volume without downtime or performance degradation.

### **3. Availability Requirements**

- 3.1. Critical banking operations (e.g., transactions, account management) shall be available 24/7, v during scheduled maintenance windows.
- 3.2. Mobile and online banking services must be available to customers in all regions with internet access.
- 3.3. Downtime exceeding 15 minutes during business hours shall trigger an automatic failover to a backup server.
- 3.4. Scheduled maintenance shall be conducted between 12 AM - 4 AM to minimize user impact.
- 3.5. The maximum number of failures shall not exceed 1 per 10,000 transactions.
- 3.6. Automated failover mechanisms must be in place to switch to backup infrastructure in case of failures.
- 3.7. The system shall have an MTBF (Mean Time Between Failures) of at least 10,000 hours.

**4. Security Requirements**

- 4.1. The system shall maintain logs of all user actions for at least 5 years.
- 4.2. Only authorized modules shall have access to sensitive banking functions.
- 4.3. Logs shall be immutable and protected from unauthorized modifications.
- 4.4. All failed login attempts shall trigger alerts.
- 4.5. Database consistency checks shall be conducted daily and any anomalies shall trigger alerts.
- 4.6. All sensitive customer and transaction data must be encrypted both at rest and in transit using industry-standard encryption algorithms.

**5. Organizational Requirements**

- 5.1. All software must be developed following bank-approved coding and security guidelines.
- 5.2. The system shall support biometric authentication (fingerprint) and multi-factor authentication.
- 5.3. The system shall be accessible on Windows and macOS for employees.
- 5.4. The system shall have role-based access control (RBAC) to restrict functions based on user roles.

**6. External Requirements**

- 6.1. The system must adhere to Basel III and Anti-Money Laundering (AML) regulations to prevent fraud and financial crimes.
- 6.2. The system must comply with the General Data Protection Regulation (GDPR) to protect customer data.
- 6.3. The system must comply with the Payment Card Industry Data Security Standard (PCI-DSS) to secure transactions and prevent credit card fraud.
- 6.4. The system must support secure API integration with payment processors (Visa, MasterCard, PayPal).
- 6.5. Customers must be able to access the system via web, mobile apps (Android, iOS), and ATMs.



## User Scenarios/Use Cases

### User Management

<b>UC Name</b>	<b>UC_UM_01</b> Maintain Employee Profiles
<b>Summary</b>	The system administrator maintains system profiles for bank employees.
<b>Dependency</b>	None
<b>Actors</b>	Administrator
<b>Preconditions</b>	Administrator has access to the system.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. System administrator navigates to the “Manage Employees” section.</li> <li>2. System retrieves and displays a list of current employees.</li> <li>3. Administrator selects an action: create, modify or delete an employee profile.</li> <li>4. If creating a profile: <ol style="list-style-type: none"> <li>a. Administrator enters the following information: full name, employee ID, date of birth, SSN, phone number, email, address, and employment start date.</li> <li>b. Administrator assigns a role: teller, manager, loan officer, auditor, fraud analyst.</li> <li>c. System saves the profile and grants the permissions based on the role.</li> </ol> </li> <li>5. If modifying a profile: <ol style="list-style-type: none"> <li>a. Administrator selects an existing employee profile.</li> <li>b. Administrator updates the personal details, roles or permissions.</li> <li>c. System saves the updated information.</li> </ol> </li> <li>6. If deleting a profile: <ol style="list-style-type: none"> <li>a. Administrator selects an employee profile to delete.</li> <li>b. System removes the profile from active employees.</li> </ol> </li> <li>7. System confirms the action to the administrator.</li> </ol>
<b>Description of the Alternative Sequence</b>	<b>Step 4b, 5b:</b> If required fields are missing, the system prompts the administrator to complete all mandatory fields.
<b>Non-Functional Requirements</b>	<p>Employee data must be securely stored.</p> <p>System must retrieve employee details within 3 seconds.</p> <p>System must log all changes made to employee profiles.</p>
<b>Postconditions</b>	<p>Employee profile is successfully created, updated or deleted.</p> <p>Administrator receives confirmation of changes.</p>

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_UM_02</b> Login
<b>Summary</b>	Bank employees / Customers log into the system.
<b>Dependency</b>	None
<b>Actors</b>	Bank Employee / Customer
<b>Preconditions</b>	Bank employee / Customer must have an active profile in the system.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Employee / Customer navigates to the login page.</li><li>2. Employee / Customer enters password and username.</li><li>3. System verifies credentials.</li><li>4. System prompts for multi-factor authentication.</li><li>5. Employee / Customer provides the required authentication.</li><li>6. System validates authentication.</li><li>7. If authentication is successful, access is granted.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 3:</b> If credentials are incorrect or incomplete, the system displays an error message: "Invalid Credentials".</p> <p><b>Step 6:</b> If authentication fails, the system prompts the employee to retry.</p> <p>After four failed login attempts, the system temporarily locks the account and reports the unauthorized attempts for fraud detection handling.</p>
<b>Non-Functional Requirements</b>	System shall support biometric authentication (fingerprint) and multi-factor authentication. System must log all authentication attempts for audit purposes.
<b>Postconditions</b>	Employee / Customer gains system access.

### ***Bank Management System Requirements Specification***

<b>UC Name</b>	<b>UC_UM_03</b> Create Online Account
<b>Summary</b>	Customers create their online banking accounts.
<b>Dependency</b>	None
<b>Actors</b>	Customer
<b>Preconditions</b>	None
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Customer navigates to the “Create Account” page</li><li>2. Customer provides full name, SSN, email address, and password.</li><li>3. System validates the information provided against customer information associated with the bank account.</li><li>4. System sends a verification email or SMS with a verification link.</li><li>5. Customer verifies the account by clicking the verification link.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 2:</b> If required fields are missing, the system prompts the customer to complete all fields.</p> <p><b>Step 3:</b> If information provided by the customer is not valid, the system displays an error message: “Invalid credentials.”</p> <p><b>Step 4:</b> If the verification is not completed within 10 minutes, the verification link expires and the customer must request a new one.</p>
<b>Non-Functional Requirements</b>	System must securely encrypt and store customer credentials.
<b>Postconditions</b>	Customer account is successfully created.

### ***Funds Management***

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_FM_01</b> View Funds
<b>Summary</b>	Bank managers view data about funds in their assigned bank units (branches/ATMs).
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Bank Manager
<b>Preconditions</b>	Funds data is available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Bank manager navigates to the “Funds” section.</li><li>3. Bank manager selects a specific branch/ATM from the available list.</li><li>4. Bank managers may choose to filter data according to the following categories:<ol style="list-style-type: none"><li>a. Unit (branch, ATM)</li><li>b. Incoming/Outgoing funds</li><li>c. Deposits/Withdrawals/Transfers</li><li>d. Time period</li></ol></li><li>5. System retrieves and displays current financial information, including:<ol style="list-style-type: none"><li>a. Deposits</li><li>b. Withdrawals</li><li>c. Transfers</li><li>d. Current liquidity</li></ol></li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 5:</b> If the system is unable to retrieve fund details, the system displays an error message: “Unable to retrieve fund details at the moment. Please try again later.”</p> <p><b>Step 5d:</b> System displays an alert if current liquidity is below a predefined threshold.</p>
<b>Non-Functional Requirements</b>	The system should retrieve fund details within 3 seconds. Secure encryption should be used for data transmission. The interface should be user-friendly and provide filter options for better navigation.
<b>Postconditions</b>	Bank manager views fund details about selected units and is alerted of shortfalls.

<b>UC Name</b>	<b>UC_FM_02</b> Allocate Funds
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### ***Bank Management System Requirements Specification***

<b>Summary</b>	Bank managers allocate operational funds to bank units (branches/ATMs).
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login), <i>UC_FM_01</i> (View Funds)
<b>Actors</b>	Bank Manager
<b>Preconditions</b>	Sufficient funds are available for allocation.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Include <i>UC_FM_01</i> (View Funds)</li><li>3. Bank manager selects a financial unit from the list.</li><li>4. Bank manager selects the "Allocate Funds" option.</li><li>5. Bank manager enters the amount of funds to be allocated.</li><li>6. System checks if the entered amount is available for allocation.</li><li>7. If funds are available, system updates the financial unit's available funds.</li><li>8. System displays a confirmation message indicating successful allocation.</li><li>9. System generates an allocation information document available for download/print.</li><li>10. Bank manager provides their signature.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 6:</b> If the funds are not available, the system displays an error message: "Insufficient funds available for allocation."
<b>Non-Functional Requirements</b>	The system should complete the fund allocation within 3 seconds. Secure encryption should be applied to all financial transactions. The system should log all actions for auditing purposes.
<b>Postconditions</b>	Funds are allocated to the selected financial unit. Confirmation of the allocation is issued to the bank manager.

## ***Account Management***

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_AM_01</b> Open Bank Account
<b>Summary</b>	Bank tellers open a new account by selecting account type, currency, and providing customer details.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Bank Teller, Customer
<b>Preconditions</b>	Customer details are available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Bank teller selects "Open New Account" in the system.</li><li>3. Bank teller selects account type (savings, checking, fixed deposit, business, joint), currency (Lek, Euro, USD), interest rate, and maintenance fees.</li><li>4. Bank teller enters customer details (full name, SSN, phone, email, address).</li><li>5. System validates the information.</li><li>6. If validation is successful, the system creates a new bank account with a unique account number and associates it with the customer.</li><li>7. System confirms account creation and displays account details.</li><li>8. System generates an account opening document for download/print.</li><li>9. Bank teller and customer provide their signature.</li><li>10. System periodically applies interest/maintenance fees, which are reflected in the account's balance and transaction history.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 6:</b> If validation fails (missing/invalid data), system prompts for correction.
<b>Non-Functional Requirements</b>	The system should process account creation within 3 seconds. Secure data encryption should be applied to customer information. The system should provide a user-friendly interface for data entry. The system should log all actions for auditing purposes.
<b>Postconditions</b>	A new bank account is created and linked to the customer. Confirmation of the account opening is provided to the bank teller. Interest is applied periodically and balance is updated.

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**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_AM_02</b> Close Bank Account
<b>Summary</b>	Bank tellers close existing accounts upon customer request.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login), <i>UC_TM_02A</i> (Withdraw Money at Branch)
<b>Actors</b>	Bank Teller, Customer
<b>Preconditions</b>	Account that is being processed for closure already exists. Account balance is settled (no pending transactions or negative balance).
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Bank teller navigates to the "Account Closure" section.</li><li>3. Bank teller searches for the customer's account using the account number or customer details.</li><li>4. System retrieves and displays account details.</li><li>5. If the account has an outstanding balance, include <i>UC_TM_02A</i> (Withdraw Money at Branch).</li><li>6. Bank teller confirms closure alongside justification for closure.</li><li>7. System updates account status to "Closed".</li><li>8. System deactivates linked cards.</li><li>9. System generates a closure confirmation document for download/print.</li><li>10. Bank teller and customer provide their signature.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 4:</b> If the system is unable to retrieve account details, the system displays an error message: "Unable to retrieve account details at the moment. Please try again later."
<b>Non-Functional Requirements</b>	The system should process account closure within 3 seconds. Secure encryption should be used for customer and transaction data. The system should log all actions for auditing purposes.
<b>Postconditions</b>	Account is successfully closed. Account balance is withdrawn. Linked cards are deactivated.

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_AM_03</b> Modify Bank Account
<b>Summary</b>	Bank teller modifies account details, such as owner's personal information, account currency, and applicable interest rates.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Bank Teller, Customer
<b>Preconditions</b>	Customer has an active bank account.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Bank teller navigates to the "Account Management" section.</li><li>3. Bank teller searches for the customer's account by entering account details.</li><li>4. System retrieves and displays current account details.</li><li>5. Bank teller enters updated information, such as:<ol style="list-style-type: none"><li>a. Owner's personal details (e.g., address, phone number)</li><li>b. Authorized users</li><li>c. Account currency</li><li>d. Applicable interest rate</li></ol></li><li>6. System validates the modifications.</li><li>7. System displays a confirmation message to the bank teller.</li><li>8. System sends notification to the customer concerning the changes.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 3:</b> If the account is not found, the system displays an error: "No matching account found. Please verify the details and try again."</p> <p><b>Step 5c:</b> If currency conversion is requested, system applies current exchange rate.</p>
<b>Non-Functional Requirements</b>	Updates should be processed within 3 seconds. System must log all modifications for audit purposes.
<b>Postconditions</b>	Account details are updated. Customer is notified of the changes.



### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_AM_04</b> View Bank Account Information
<b>Summary</b>	Customers access their bank account details and transaction history.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account)
<b>Actors</b>	Customer
<b>Preconditions</b>	Customer has an active bank account.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the "Accounts" section.</li><li>3. System retrieves and displays a list of the customer's accounts.</li><li>4. Customer selects an account to view details.</li><li>5. System displays the following account details:<ol style="list-style-type: none"><li>a. Account number</li><li>b. Account type and currency</li><li>c. Balance</li><li>d. Interest rate</li></ol></li><li>6. System retrieves and displays chronologically all transactions associated with the account.</li><li>7. Customer can filter transactions by:<ol style="list-style-type: none"><li>a. Date range</li><li>b. Type (deposits, withdrawals, transfers, application of interest/maintenance fees, recurring transfers)</li><li>c. Amount</li></ol></li><li>8. Customer can download/print an unofficial account statement document.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 5 &amp; 6:</b> If the system is unable to retrieve account information, the system displays an error message: "Unable to retrieve account information at the moment. Please try again later."</p> <p><b>Step 7:</b> If no transactions are found after application of filters, the system displays: "No transactions found for this criteria."</p>
<b>Non-Functional Requirements</b>	System should retrieve account information within 3 seconds. Transaction history should be retrievable for at least the past 12 months. Secure encryption should protect customer and account data.
<b>Postconditions</b>	The customer successfully views account details and transaction history. The customer may download or print statements as needed.

**Transaction Management**

<b>UC Name</b>	<b>UC_TM_01</b> Deposit Money
<b>Summary</b>	Customers deposit money into their accounts upon bank teller approval.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Bank Teller, Customer
<b>Preconditions</b>	Customer has an active bank account. Customer possesses cash or check for deposit.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. Customer requests a deposit at a branch.</li> <li>2. Include <i>UC_UM_02</i> (Login)</li> <li>3. Bank teller navigates to the “Deposits” section.</li> <li>4. Bank teller searches for the customer’s account by entering account details.</li> <li>5. System retrieves and displays account details.</li> <li>6. Bank teller enters deposit details (amount, deposit type: cash/check).</li> <li>7. Bank teller verifies cash or check authenticity.</li> <li>8. Bank teller confirms the deposit.</li> <li>9. System updates account balance and transaction history after approval.</li> <li>10. System generates a deposit confirmation receipt for download/print.</li> <li>11. Bank teller and customer provide their signature.</li> </ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 5:</b> If the account is not found, the system displays an error: "No matching account found. Please verify the details and try again."</p> <p><b>Step 7:</b> If cash/check is not valid, bank teller rejects the deposit.</p>
<b>Non-Functional Requirements</b>	<p>Deposits should be processed within 3 seconds.</p> <p>Cash and check authenticity should be verified according to bank policies.</p> <p>Secure encryption should be used for transaction data.</p> <p>System should log all actions for audit purposes.</p>
<b>Postconditions</b>	<p>The deposited amount is reflected in the customer’s account and transaction history.</p> <p>A deposit receipt is generated.</p>

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_TM_02</b> Withdraw Money
<b>Summary</b>	Customers withdraw money from their bank accounts.
<b>Dependency</b>	None
<b>Actors</b>	Customer
<b>Preconditions</b>	Customer has an active bank account. Account has sufficient funds.
<b>Description of the Main Sequence</b>	See <i>UC_TM_02A</i> , <i>UC_TM_02B</i>
<b>Description of the Alternative Sequence</b>	See <i>UC_TM_02A</i> , <i>UC_TM_02B</i>
<b>Non-Functional Requirements</b>	Withdrawals should be processed within 3 seconds. Secure authentication must be used before withdrawal. System should log all actions for audit purposes.
<b>Postconditions</b>	The withdrawn amount is reflected in the customer's account and transaction history. Customer receives cash and a withdrawal receipt.

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_TM_02A</b> Withdraw Money (Branch)
<b>Summary</b>	Customers withdraw money from their bank accounts at a physical bank branch with the help of a bank teller, subject to balance availability and withdrawal amount limits, with applicable penalties for certain account types.
<b>Dependency</b>	Inherit <i>UC_TM_02</i> (Withdraw Money) Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer (inherited), Bank Teller
<b>Preconditions</b>	Customer has an active bank account. Account has available funds.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Customer requests a withdrawal at a branch.</li><li>2. Include <i>UC_UM_02</i> (Login)</li><li>3. Bank teller navigates to the “Withdrawals” section.</li><li>4. Bank teller searches for the customer’s account by entering account details.</li><li>5. System retrieves and displays account details.</li><li>6. Bank teller enters the withdrawal amount.</li><li>7. System checks if the account has sufficient funds or if the withdrawal amount exceeds daily withdrawal limits.</li><li>8. Bank teller confirms the withdrawal.</li><li>9. System updates the account balance and transaction history.</li><li>10. System generates a withdrawal receipt for download/print.</li><li>11. Bank teller and customer provide their signature.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 5:</b> If the account is not found, the system displays an error: "No matching account found. Please verify the details and try again."</p> <p><b>Step 7:</b> If withdrawal conditions are not met, the system displays an error message: "Insufficient balance for withdrawal.", "Withdrawal amount exceeds daily withdrawal limit."</p> <p><b>Step 9:</b> The system applies an additional penalty fee for early withdrawals from fixed deposit or savings accounts.</p>
<b>Non-Functional Requirements</b>	Inherit <i>UC_TM_02</i> (Withdraw Money)
<b>Postconditions</b>	Inherit <i>UC_TM_02</i> (Withdraw Money)

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_TM_02B</b> Withdraw Money (ATM)
<b>Summary</b>	Customers make limited withdrawals from their bank accounts using an ATM.
<b>Dependency</b>	Inherit <i>UC_TM_02</i> (Withdraw Money)
<b>Actors</b>	Customer (inherited), ATM
<b>Preconditions</b>	Customer has an active card. ATM is operational and has sufficient cash. Account has available funds.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Customer inserts a card into the ATM machine.</li><li>2. ATM prompts for the PIN.</li><li>3. Customer provides PIN.</li><li>4. System verifies:<ol style="list-style-type: none"><li>a. PIN</li><li>b. Card expiration date</li><li>c. Card status (active/frozen/invalid).</li></ol></li><li>5. System displays current account balance.</li><li>6. Customer selects the "Withdraw" option.</li><li>7. ATM displays preset withdrawal amount options.</li><li>8. Customer selects withdrawal amount.</li><li>9. System checks if the account has sufficient funds or if the withdrawal amount exceeds daily withdrawal limits.</li><li>10. If funds are available, ATM dispenses cash.</li><li>11. ATM generates a withdrawal receipt.</li><li>12. System updates the customer's account balance and transaction history.</li><li>13. ATM returns the card.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 4a:</b> If the PIN is incorrect, the system displays an error message: "Incorrect PIN. Please try again." After four failed attempts, the ATM locks the card and the system updates its status to "Frozen".</p> <p><b>Step 4b:</b> If the card is past its expiration date, the system displays an error message: "Card expired. Please visit a branch to obtain a new card." and ATM ejects the card.</p> <p><b>Step 4c:</b> If the card is frozen or invalid, the system displays an error message: "Card not valid." and ATM ejects the card.</p> <p><b>Step 9:</b> If withdrawal conditions are not met, the system displays an error message: "Insufficient balance for withdrawal.", "Withdrawal amount exceeds daily withdrawal limit."</p>
<b>Non-Functional Requirements</b>	Inherit <i>UC_TM_02</i> (Withdraw Money) PIN authentication must be encrypted and secure.
<b>Postconditions</b>	Inherit <i>UC_TM_02</i> (Withdraw Money)

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_TM_03</b> Make Transfers
<b>Summary</b>	Customers transfer funds.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account)
<b>Actors</b>	Customer
<b>Preconditions</b>	Customer has an active bank account. Account has sufficient funds.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account).</li><li>2. Customer navigates to the “Transfer Funds” section.</li></ol>
<b>Description of the Alternative Sequence</b>	No alternative sequence
<b>Non-Functional Requirements</b>	Transfers should be processed within 3 seconds. Secure authentication must be used before transfer. Transaction logs should be maintained for audit purposes.
<b>Postconditions</b>	Funds are transferred successfully. Both accounts reflect updated balances and transaction histories. Confirmation is provided to the customer.

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_TM_03A</b> Make Internal Transfers
<b>Summary</b>	Customers transfer funds between accounts within the same bank.
<b>Dependency</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Actors</b>	Customer (inherited)
<b>Preconditions</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Inherit <i>UC_TM_03</i> (Make Transfers)</li><li>2. Customer selects the “Internal Transfer” option.</li><li>3. Customer enters recipient account details (name, account number).</li><li>4. System checks the validity of the recipient account.</li><li>5. Customer enters the transfer amount.</li><li>6. System checks if sufficient funds are available.</li><li>7. Customer confirms the transfer.</li><li>8. System updates both sender and recipient’s balance and transaction history.</li><li>9. System generates a transaction receipt for download.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 4:</b> If the recipient account details are incorrect, the system displays an error message: “Invalid recipient account.”</p> <p><b>Step 6:</b> If the transfer amount exceeds available funds, the system displays an error message: “Insufficient balance for transfer.”</p>
<b>Non-Functional Requirements</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Postconditions</b>	Inherit <i>UC_TM_03</i> (Make Transfers)

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_TM_03B</b> Make External Transfers
<b>Summary</b>	Customers transfer money to external bank accounts via wire transfer.
<b>Dependency</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Actors</b>	Customer (inherited), Wire Transfer Network System
<b>Preconditions</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Inherit <i>UC_TM_03</i> (Make Transfers)</li><li>2. Customer selects the “External Transfer” option.</li><li>3. Customer enters recipient account details (name, account number).</li><li>4. Wire Transfer Network System verifies the account.</li><li>5. Customer enters the transfer amount.</li><li>6. System checks if sufficient funds are available.</li><li>7. Customer confirms the transfer.</li><li>8. Wire Transfer Network System receives the transaction for processing.</li><li>9. System applies external transfer fees.</li><li>10. System updates the customer’s balance and transaction history.</li><li>11. System generates a transaction receipt for download.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 4:</b> If recipient account details are not validated by the wire transfer system, the system displays an error message: “Invalid recipient account.”</p> <p><b>Step 6:</b> If the transfer amount exceeds available funds, the system displays an error message: “Insufficient balance for transfer.”</p>
<b>Non-Functional Requirements</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Postconditions</b>	Inherit <i>UC_TM_03</i> (Make Transfers)



**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_TM_03C</b> Set Up Recurring Transfers
<b>Summary</b>	Customers can set up automated recurring transfers.
<b>Dependency</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Actors</b>	Customer (inherited)
<b>Preconditions</b>	Inherit <i>UC_TM_03</i> (Make Transfers)
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Inherit <i>UC_TM_03</i> (Make Transfers)</li><li>2. Customer selects the “Set Up Recurring Payments” option.</li><li>3. Customer enters recipient account details (name, account number).</li><li>4. System checks the validity of the recipient account.</li><li>5. Customer specifies payment frequency (daily, weekly, monthly, etc.), start date, end date, and transfer amount.</li><li>6. Customer confirms the recurring payment.</li><li>7. System generates a confirmation message and saves the recurring transaction.</li><li>8. System checks if sufficient funds are available before processing a scheduled transaction.</li><li>9. System updates the account balance and transaction history after every payment.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 4:</b> If the recipient account details are incorrect, the system displays an error message: “Invalid recipient account.”</p> <p><b>Step 8:</b> If the account has insufficient funds at the scheduled time, the system sends a notification: “Scheduled transfer failed due to insufficient funds.”</p> <p><b>Step 12:</b> If the customer cancels, system stops future payments.</p>
<b>Non-Functional Requirements</b>	Inherit <i>UC_TM_03</i> (Make Transfers) Notifications should be sent 24 hours before the scheduled transfer.
<b>Postconditions</b>	Inherit <i>UC_TM_03</i> (Make Transfers) Customer is notified before every payment.

### ***Bank Management System Requirements Specification***

<b>UC Name</b>	<b>UC_TM_04</b> Make Card Payments
<b>Summary</b>	Customers make payments using their debit or credit card for various services or purchases.
<b>Dependency</b>	None
<b>Actors</b>	Customer, Payment Processor
<b>Preconditions</b>	Customer has an active bank card. POS (Point of Sale) integrates with a payment processor that is recognized by the system.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Customer initiates a card payment at a POS (online website, payment terminal).</li><li>2. Customer provides card details (card number, expiry, security code).</li><li>3. Payment processor verifies card details and status with the system.</li><li>4. Customer selects the payment amount.</li><li>5. Payment processor queries the system for sufficient balance.</li><li>6. Upon successful validation, payment processor confirms payment to the customer and system.</li><li>7. System updates the customer's balance and transaction history.</li><li>8. Payment processor generates a payment receipt.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 3:</b> If card credentials are invalid or card is not active, payment processor displays an error message: "Invalid card credentials."</p> <p>After four failed attempts, the system blocks the card temporarily and flags the attempt.</p> <p><b>Step 5:</b> If payment exceeds available funds, payment processor displays an error message: "Insufficient balance for payment."</p>
<b>Non-Functional Requirements</b>	Payment transaction should complete within 3 seconds. System must comply with the Payment Card Industry Data Security Standard (PCI-DSS) System logs all transaction actions for audit purposes.
<b>Postconditions</b>	Account balance and transaction history is updated. A payment receipt is generated.

**Loan Management**

<b>UC Name</b>	<b>UC_LM_01</b> Apply for Loans
<b>Summary</b>	Customers apply for various types of loans, submit necessary documents, and receive approval or rejection from bank employees.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer, Loan Officer
<b>Preconditions</b>	Customer must have an active bank account.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. Include <i>UC_UM_03</i> (Access Online Account)</li> <li>2. Customer navigates to the “Loan Application” section.</li> <li>3. Customer selects one of the following loan types: personal, student, auto, home, payday, business.</li> <li>4. Customer chooses loan terms, including loan amount, repayment period and monthly installment amount.</li> <li>5. Customer provides supporting personal and financial documents.</li> <li>6. System validates the information.</li> <li>7. Customer submits the application.</li> <li>8. System saves the application with a status of “Pending”.</li> <li>9. Include <i>UC_UM_02</i> (Login)</li> <li>10. Loan officer reviews the application.</li> <li>11. Loan officer approves or rejects the application, providing justification.</li> <li>12. System updates the application status to “Approved” and notifies the customer.</li> <li>13. If approved, the system generates a loan confirmation document.</li> <li>14. Loan officer and customer provide their signature.</li> <li>15. System generates an overview of the loan repayment plan, including due dates, amounts, and remaining balance.</li> </ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 6:</b> If personal information or required documents are missing, the system prompts the customer to complete the application.</p> <p><b>Step 10:</b> If the application is rejected, system updates the application status to “Rejected” and notifies the customer.</p>
<b>Non-Functional Requirements</b>	<p>Loan applications should be processed within 3 seconds.</p> <p>Loan applications should be reviewed within 48 hours.</p> <p>The system must securely store personal and financial information.</p>
<b>Postconditions</b>	<p>Loan application is either stored in the system with a status of “Pending”, “Approved”, or “Rejected”.</p> <p>Customer is notified of changes to the loan application status.</p> <p>Customer receives loan details and repayment information.</p>

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_LM_02</b> Repay Loans
<b>Summary</b>	Customers repay their loans while the system tracks repayment schedules, outstanding balances, and penalties.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account)
<b>Actors</b>	Customer
<b>Preconditions</b>	Customer must have an active loan. Loan details are available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the “Loan Repayment” section.</li><li>3. System displays loan details, including payment schedule, outstanding balance and amount due.</li><li>4. Customer enters payment amount.</li><li>5. System checks if sufficient funds are available.</li><li>6. Customer confirms payment.</li><li>7. System processes the payment and updates the outstanding balance.</li><li>8. System generates a loan repayment receipt.</li><li>9. System updates the repayment schedule.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 5:</b> If the payment amount exceeds available funds, the system displays an error message: “Insufficient funds for loan repayment.” <b>Step 7:</b> If a payment is overdue, the system calculates and applies penalties as per bank policy.
<b>Non-Functional Requirements</b>	Customers should receive notifications for due payments at least 3 days in advance. Secure authentication must be used. Transaction logs should be maintained for audit purposes.
<b>Postconditions</b>	Loan balance is updated. Customers receive a confirmation of their payment. If overdue, penalties are applied.

**Card & Check Management**

<b>UC Name</b>	<b>UC_CM_01</b> Apply for Cards
<b>Summary</b>	Allows customers to apply for a debit or credit card online.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer, Bank Teller
<b>Preconditions</b>	Customer has an active bank account.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. Include <i>UC_UM_03</i> (Customer Login).</li> <li>2. Customer selects "Apply for a New Card".</li> <li>3. Customer selects from available card types: debit or credit.</li> <li>4. Customer enters required personal information.</li> <li>5. Customer selects a delivery method (pickup from branch, mail delivery).</li> <li>6. System validates the information.</li> <li>7. Customer submits the application.</li> <li>8. Include <i>UC_UM_02</i> (Login)</li> <li>9. Bank teller reviews the application.</li> <li>10. Bank teller approves or rejects the application.</li> <li>11. If approved, the system generates a unique card number, security code, and expiration date.</li> <li>12. System sends a notification to the customer once the card is issued.</li> </ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 6:</b> If validation fails (e.g., missing/incorrect information), the system prompts the customer for correction.</p> <p><b>Step 9:</b> If the bank employee rejects the application, the system notifies the customer.</p>
<b>Non-Functional Requirements</b>	<p>Card application should be processed within 3 seconds.</p> <p>Processing time for approval should be within 1 business day.</p> <p>Customer data must be securely stored and encrypted.</p>
<b>Postconditions</b>	<p>Approved customers receive a notification about their card issuance.</p> <p>Rejected customers are informed of the decision.</p>

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_CM_02</b> Request Checkbooks
<b>Summary</b>	Customers can request checkbooks for their checking accounts.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer, Bank Teller
<b>Preconditions</b>	Customer has an account eligible for check transactions.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the "Request Checkbook" section.</li><li>3. Customer selects the number of checks/pages needed.</li><li>4. Customer selects a delivery method (pickup from branch, mail delivery).</li><li>5. System validates the information.</li><li>6. Customer submits the application.</li><li>7. Include <i>UC_UM_02</i> (Login)</li><li>8. Bank teller reviews the application.</li><li>9. Bank teller approves or rejects the application.</li><li>10. If approved, the system generates unique serial numbers for the checks.</li><li>11. System sends a notification to the customer once the checkbook is issued.</li></ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 5:</b> If validation fails (e.g., missing/incorrect information), the system prompts the customer for correction.</p> <p><b>Step 9:</b> If the bank employee rejects the application, the system notifies the customer.</p>
<b>Non-Functional Requirements</b>	Checkbook applications should be processed within 3 seconds. Check requests should be processed within 2 business days. Customer data must be securely stored and encrypted.
<b>Postconditions</b>	A checkbook is issued to the customer. Rejected customers are informed of the decision.

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_CM_03</b> Set Card Limits
<b>Summary</b>	Customers set spending limits on their cards for better financial control.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account)
<b>Actors</b>	Customer
<b>Preconditions</b>	Customer has an active bank card. Card details are available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the “Manage Cards” section.</li><li>3. System retrieves and displays information on all cards associated with the customer.</li><li>4. Customer selects a card.</li><li>5. Customer selects “Set Spending Limits”.</li><li>6. Customer enters limit preferences (e.g., per transaction, per day).</li><li>7. System updates the settings and displays confirmation.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 6:</b> If validation fails (e.g., incorrect input format), the system prompts for correction.
<b>Non-Functional Requirements</b>	Spending limits should take effect immediately.
<b>Postconditions</b>	Card limits are updated. Card transactions are restricted based on the set limits.

**Fraud Detection**

<b>UC Name</b>	<b>UC_FD_01</b> Handle Fraudulent Activities
<b>Summary</b>	Fraud analysts review and take action on suspicious transactions or account access attempts.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Fraud Analyst
<b>Preconditions</b>	None
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. Include <i>UC_UM_02</i> (Login)</li> <li>2. Fraud analyst navigates to the "Flagged Activities" section.</li> <li>3. System retrieves and displays both system-flagged and customer-reported activities.</li> <li>4. Fraud analyst selects a flagged activity for review.</li> <li>5. System displays the following details: <ol style="list-style-type: none"> <li>a. Customer account information</li> <li>b. Activity type (transaction, account access)</li> <li>c. For suspicious transactions: transaction amount, location, number</li> <li>d. For account access: location, frequency</li> </ol> </li> <li>6. Fraud analyst takes appropriate action, such as: <ol style="list-style-type: none"> <li>a. Approving the transaction if it is verified as legitimate</li> <li>b. Placing the account on hold if fraud is suspected</li> <li>c. Notifying the customer for verification</li> </ol> </li> <li>7. System confirms the action to the fraud analyst and the customer.</li> </ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 5:</b> If transaction data is incomplete, the system displays: "Insufficient transaction details. Investigation pending."</p> <p><b>Step 6c:</b> If the customer does not respond to verification attempts, the system locks the account temporarily.</p>
<b>Non-Functional Requirements</b>	<p>Fraud alerts must be reviewed within 1 hour of detection.</p> <p>Sensitive customer data must be securely encrypted.</p>
<b>Postconditions</b>	<p>Suspicious activity is either approved or blocked.</p> <p>Customer is notified of fraud-handling actions.</p>



**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_FD_02</b> Report Fraudulent Activities
<b>Summary</b>	Customers report fraudulent activities related to their account.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_FD_01</i> (Handle Fraudulent Activities)
<b>Actors</b>	Customer, Fraud Analyst
<b>Preconditions</b>	Customer has an active bank account.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the "Report Fraud" section.</li><li>3. Customer selects the type of fraud:<ol style="list-style-type: none"><li>a. Unauthorized transaction</li><li>b. Suspicious login attempt</li><li>c. Identity theft</li></ol></li><li>4. Customer provides details (e.g., transaction ID, date, amount).</li><li>5. System validates the information.</li><li>6. Customer submits the fraud report.</li><li>7. System generates a case reference number and logs the report.</li><li>8. System temporarily suspends account access/activities.</li><li>9. Include <i>UC_FD_01</i> (Handle Fraudulent Activities).</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 5:</b> If required fields are missing, system prompts the customer to complete the information.
<b>Non-Functional Requirements</b>	Fraud report submission should be processed within 3 seconds. Sensitive customer data must be securely encrypted.
<b>Postconditions</b>	Fraud report is successfully logged and handled.

**Customer Services**

<b>UC Name</b>	<b>UC_CS_01</b> Access Bank-Related Information
<b>Summary</b>	Customers are able to access real-time information about ATMs and branches.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account)
<b>Actors</b>	Customer
<b>Preconditions</b>	Bank information is available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. Include <i>UC_UM_03</i> (Access Online Account)</li> <li>2. Customer navigates to the “Bank Information” section.</li> <li>3. System retrieves and displays a list of available ATMs and branches.</li> <li>4. Customer can filter bank units based on their location or type (ATM/physical branch).</li> <li>5. System displays a filtered list of available ATMs and branches.</li> <li>6. Customer selects a specific branch or ATM from the list.</li> <li>7. System displays the details of the selected branch/ATM, including: <ol style="list-style-type: none"> <li>a. Working hours</li> <li>b. Contact details</li> <li>c. Available services</li> <li>d. Temporary closures or disruptions.</li> </ol> </li> </ol>
<b>Description of the Alternative Sequence</b>	<b>Step 3, 5 &amp; 7:</b> If the system is unable to retrieve information, the system displays an error message: “Unable to retrieve bank information at the moment. Please try again later.”
<b>Non-Functional Requirements</b>	<p>System should retrieve and display information in under 5 seconds for optimal user experience.</p> <p>System should provide an easy-to-navigate interface.</p>
<b>Postconditions</b>	Customer views up-to-date ATM/branch information.

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_CS_02</b> Schedule Appointments
<b>Summary</b>	Customers are able to schedule in-branch appointments for different banking services online.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer, Bank Teller
<b>Preconditions</b>	None
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the “Schedule Appointment” section.</li><li>3. Customer selects the type of service (loan consultation, account opening, etc.).</li><li>4. System displays available time slots for the selected service at different branches.</li><li>5. Customer selects a convenient time and branch.</li><li>6. Customer confirms appointment.</li><li>7. System updates appointment calendar.</li><li>8. System sends an appointment confirmation notification to the customer.</li><li>9. Include <i>UC_UM_02</i> (Login).</li><li>10. Bank teller navigates to the “Appointments” section.</li><li>11. System retrieves and displays the updated appointment calendar.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 4:</b> If no slots are available, the system displays: "No available time slots for the selected service. Please try another option."
<b>Non-Functional Requirement</b>	System should display available appointment slots within 3 seconds. Appointment booking should be completed within 2 minutes. Appointment data must be securely stored and retrieved.
<b>Postconditions</b>	Appointment is successfully scheduled, confirmed, and reflected in the system.

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_CS_03</b> Submit Feedback
<b>Summary</b>	Customers can submit feedback and complaints about their banking experience online.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer, Bank Teller
<b>Preconditions</b>	None
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account).</li><li>2. Customer navigates to the “Feedback” section.</li><li>3. Customer selects the type of feedback/complaint (service, transaction issue, etc.).</li><li>4. Customer provides details of the complaint/feedback.</li><li>5. Customer uploads supporting documents (optional).</li><li>6. System validates the information.</li><li>7. Customer submits complaint/feedback.</li><li>8. System generates a unique tracking number for the complaint and confirms the submission with the customer.</li><li>9. Include <i>UC_UM_02</i> (Login).</li><li>10. Bank teller navigates to the “Feedback” section.</li><li>11. System retrieves and displays submitted feedback.</li><li>12. Bank teller reviews the complaint.</li><li>13. Bank teller responds to the complaint with a resolution.</li><li>14. System sends update notifications to the customer regarding resolution of the complaint.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 6:</b> If information provided is incomplete, the system prompts the customer to complete the necessary fields.
<b>Non-Functional Requirements</b>	Feedback submission should be processed within 3 seconds. Complaints and feedback must be securely stored. Complaints must be addressed within 5 business days.
<b>Postconditions</b>	Complaint is successfully submitted. Customers are notified of updates on the status of their complaints.

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_CS_04</b> Request Official Documents
<b>Summary</b>	Customers can request various account-related documents and be notified when requested documents are available.
<b>Dependency</b>	Include <i>UC_UM_03</i> (Access Online Account), <i>UC_UM_02</i> (Login)
<b>Actors</b>	Customer, Bank Teller
<b>Preconditions</b>	Customer must have an active account with the bank for which they can request documents.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_03</i> (Access Online Account)</li><li>2. Customer navigates to the “Request Documents” section.</li><li>3. Customer selects the type of document they wish to request (e.g. account verification, loan payoff).</li><li>4. Customer selects the delivery method:<ol style="list-style-type: none"><li>a. Download</li><li>b. Physical copy (requires selection of pickup branch)</li></ol></li><li>5. System generates a request for the document and notifies the customer that the request is being processed.</li><li>6. Include <i>UC_UM_02</i> (Login).</li><li>7. Bank teller navigates to the “Document Requests” section.</li><li>8. System retrieves and displays document requests.</li><li>9. Bank teller reviews the document request.</li><li>10. Bank teller prepares and signs the requested document.</li><li>11. Customer receives notification (via SMS/email) to download or collect the physical copy of the document.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 9:</b> If the document request is denied by the bank employee, the system will notify the customer that their request was denied.
<b>Non-Functional Requirements</b>	Online document requests should be processed within 1 day. Physical document requests should be processed within 2-3 business days. Secure encryption must protect sensitive customer data.
<b>Postconditions</b>	Customer’s document request is successfully submitted. Customer is notified once the document is ready.

**Audit & Reporting**

<b>UC Name</b>	<b>UC_AR_01</b> View Audit Trails
<b>Summary</b>	Auditors access and review audit trails to ensure compliance with banking regulations.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Auditor
<b>Preconditions</b>	Log trails are available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"> <li>1. Include <i>UC_UM_02</i> (Login)</li> <li>2. Auditor navigates to the "Audit Trails" section.</li> <li>3. System retrieves and displays logs chronologically, including: <ol style="list-style-type: none"> <li>a. Login attempts</li> <li>b. Account modifications</li> <li>c. Financial transactions</li> </ol> </li> <li>4. Auditor can filter records by: <ol style="list-style-type: none"> <li>a. Date range</li> <li>b. User</li> <li>c. Type (from previous points)</li> </ol> </li> <li>5. System displays a filtered list of records.</li> <li>6. Auditor downloads audit log documents for compliance purposes.</li> </ol>
<b>Description of the Alternative Sequence</b>	<p><b>Step 3:</b> If the system is unable to retrieve records, the system displays an error message: "Unable to retrieve audit logs at the moment. Please try again later."</p> <p><b>Step 5:</b> If no records match the selected filters, the system displays: "No audit logs found for the given criteria."</p>
<b>Non-Functional Requirements</b>	<p>Audit logs must be stored securely and encrypted.</p> <p>The system must ensure logs cannot be tampered with.</p> <p>System should support retrieval of logs for at least 7 years.</p>
<b>Postconditions</b>	Auditor successfully views, filters, and downloads audit logs.

**Bank Management System Requirements Specification**

<b>UC Name</b>	<b>UC_AR_02</b> View Customer Analytics
<b>Summary</b>	Bank managers access customer analytics to gain insight into customer behavior and banking trends.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Bank Manager
<b>Preconditions</b>	Customer analytics is available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Manager navigates to the "Customer Analytics" section.</li><li>3. Manager selects specific filters such as:<ol style="list-style-type: none"><li>a. Date range</li><li>b. Customer demographics (age, location)</li><li>c. Account type</li><li>d. Account activities (savings, spending, loaning, transfers)</li><li>e. Frequency (monthly, quarterly, yearly, etc.)</li></ol></li><li>4. System retrieves and displays customer analytics in graphs and tables.</li><li>5. Manager downloads customer analytics reports for strategic decision-making.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 4:</b> If the system is unable to retrieve data, the system displays an error message: "Unable to retrieve analytics at the moment. Please try again later."
<b>Non-Functional Requirements</b>	Customer data should be retrieved within 3 seconds. Data visualization should be interactive and user-friendly. Customer data must be anonymized to protect privacy.
<b>Postconditions</b>	Manager successfully views and exports customer analytics.

### Bank Management System Requirements Specification

<b>UC Name</b>	<b>UC_AR_03</b> View Fraud Detection Analytics
<b>Summary</b>	Bank managers access fraud detection analytics to extract fraud insights.
<b>Dependency</b>	Include <i>UC_UM_02</i> (Login)
<b>Actors</b>	Bank Manager
<b>Preconditions</b>	Fraud detection analytics is available.
<b>Description of the Main Sequence</b>	<ol style="list-style-type: none"><li>1. Include <i>UC_UM_02</i> (Login)</li><li>2. Manager navigates to the “Fraud Analytics” section.</li><li>3. Manager selects analysis filters such as:<ol style="list-style-type: none"><li>a. Date range</li><li>b. Geographical location</li><li>c. Customer demographics</li><li>d. Account and transaction types</li></ol></li><li>4. System retrieves and displays fraud detection data in graphs and tables.</li><li>5. Manager downloads fraud data reports.</li></ol>
<b>Description of the Alternative Sequence</b>	<b>Step 4:</b> If the system is unable to retrieve fraud detection data, the system displays an error message: “Unable to retrieve analytics at the moment. Please try again later.”
<b>Non-Functional Requirements</b>	Fraud detection data should be retrieved within 3 seconds. Data visualization should be interactive and user-friendly. Customer data must be anonymized to protect privacy.
<b>Postconditions</b>	Manager successfully views and exports fraud analytics.



## Diagrams

### Use Case Diagram

