

Software Requirements Specification

Banking Management System

Version 1.1

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1 Introduction

1.1 Purpose

This document describes the requirements for the banking management system of Super-Bank. The system provides secure banking operations, client management, transaction processing, currency conversion, and user access control

1.2 Scope

The Banking Management System will:

- Manage client information and bank accounts
- Process financial transactions (deposits, withdrawals, transfers)
- Provide currency exchange capabilities
- Control user access with authentication and permission systems
- Maintain comprehensive audit trails and logging

1.3 Definitions, Acronyms, and Abbreviations

- **SRS:** Software Requirements Specification
- **FR:** Functional Requirement
- **NFR:** Non-Functional Requirement
- **UI:** User Interface
- **M:** Must Have (Critical requirement)
- **S:** Should Have (Important but not critical)
- **C:** Could Have (Optional)

1.4 References

- IEEE Std 830-1998 - IEEE Recommended Practice for Software Requirements Specifications
- Course Materials: "Software Requirements Engineering"
- Banking Security Standards

2 Overall Description

2.1 Product Perspective

The Banking Management System is a desktop java application with SQL data storage . It provides comprehensive banking operations with integrated currency exchange functionality

2.2 Product Functions

- User Authentication and Access Control
- Client Account Management
- Financial Transaction Processing
- Currency Exchange Operations
- Comprehensive Logging and Audit Trails
- Security and Input Validation

2.3 User Characteristics

- **Regular users:** bank employees who perform deposits/withdrawals from/into the accounts of the bank clients
- **Administrators:** bank employees with full system access for client and system management

2.4 Constraints

- Graphical user interface
- SQL data storage
- Local operation only (no network connectivity, could need internet connection for accurate currency exchange data)
- Must run on Windows OS with Java being already installed

3 Specific Requirements

3.1 Functional Requirements

3.1.1 Authentication and Access

FR1: System shall allow users to log into their user accounts **Priority: M**

FR2: System shall validate username and password credentials **Priority: M**

FR3: System shall allow admin to have admin permissions, and user to only have user permissions **Priority: M**

FR4: Admin users shall have full system access privileges **Priority: M**

FR5: Regular users shall be able to withdraw or deposit funds and make currency exchange **Priority: M**

FR6: Administrators have full control in all transactions and banking data of the clients **Priority: M**

3.1.2 Client Management

- FR7:** System shall display client records to administrators **Priority: M**
FR8: System shall show all client information to administrators **Priority: M**
FR9: Admin shall be able to search for specific clients **Priority: M**
FR10: Admin shall be able to delete client records **Priority: M**
FR11: Admin shall be able to add new clients with detailed profiles **Priority: M**

3.1.3 Transaction Processing

- FR12:** Signed-in users shall be able to deposit funds into accounts **Priority: M**
FR13: Signed-in users shall be able to withdraw funds from accounts **Priority: M**
FR14: Signed-in users shall be able to deposit funds into accounts **Priority: M**
FR15: Admin shall be able to transfer money between accounts **Priority: M**

3.1.4 Currency Exchange

- FR16:** Users shall be able to see available currencies **Priority: S**
FR17: Users shall be able to find specific currency rates **Priority: S**
FR18: Users shall be able to calculate currency conversion **Priority: S**
FR19: Signed-in users shall be able to commit currency exchange **Priority: S**

3.2 Non-Functional Requirements

3.2.1 Security Requirements

- NFR1:** All sensitive operations shall require authentication **Priority: M**
NFR3: System shall provide password protected access to all functionalities **Priority: M**
NFR4: System shall provide a user authentication and login system **Priority: M**
NFR5: Credentials shall be securely stored and validated **Priority: M**
NFR6: System shall validate both source and destination accounts **Priority: M**
NFR7: System shall keep track of failed login attempts **Priority: S**
NFR8: System may implement account lockout after excessive failures **Priority: S**
NFR9: System shall manage user permissions for different operations **Priority: M**
NFR10: Role-based access control shall be implemented **Priority: M**
NFR11: System shall require confirmation before deletion of a client account **Priority: M**

3.2.2 Data Management Requirements

- NFR12:** System shall keep track of each transaction and the time it was done **Priority: M**
NFR13: Complete audit trail for all financial operations **Priority: M**
NFR14: System shall display current supported currency codes **Priority: M**
NFR15: System shall display current exchange rates **Priority: M**
NFR16: System shall provide real-time conversion calculations **Priority: M**
NFR17: System shall update account balances after exchange transactions **Priority: M**
NFR18: System shall provide user input validation and tracking **Priority: M**

NFR19: Protection against data migration and incorrect data types **Priority: M**
NFR20: Validation for all user inputs and financial amounts **Priority: M**
NFR21: System shall keep user activity logging **Priority: S**
NFR22: All significant user actions shall be recorded **Priority: S**
NFR23: System shall display all client records and transaction history in an organized format **Priority: S**
NFR24: Data shall be presented in clear, readable layouts **Priority: S**
NFR25: System shall update account balance accordingly **Priority: S**
NFR26: System shall validate sufficient funds before withdrawal **Priority: S**

3.2.3 Currency Exchange Requirements

NFR27: System shall update exchange rates periodically **Priority: S**
NFR28: Automatic refresh of currency exchange rates **Priority: S**
NFR29: System shall provide support for multiple currencies **Priority: S**
NFR30: Handling of different currency codes and conversions **Priority: S**

3.2.4 Reliability Requirements

NFR31: System shall maintain data consistency across all operations **Priority: M**
NFR32: No data loss during transaction processing **Priority: M**
NFR33: Search functionality shall support multiple criteria **Priority: M**
NFR34: System shall handle errors gracefully with appropriate messages **Priority: S**
NFR35: No system crashes on invalid inputs or operations **Priority: S**

4 System Features

4.1 Authentication and Security

- Secure user login with credential validation
- Role-based access control (Admin vs Regular User)
- Login attempt monitoring and tracking
- Session management for signed-in users

4.2 Client Management

- Comprehensive client profile management
- Client search and retrieval functionality
- Client record creation, viewing, and deletion

4.3 Financial Transactions

- Deposit and withdrawal processing
- Inter-account fund transfers
- Balance validation and update

- Transaction history recording

4.4 Currency Exchange

- Multi-currency account support
- Real-time exchange rate display
- Currency conversion calculations
- Exchange transaction execution

4.5 Audit and Logging

- Comprehensive transaction logging
- User activity monitoring
- System operation tracking
- Security event recording

5 Appendices

5.1 Data Storage Format

- **User Data:** Client_id | account_number | balance
- **Client Data:** user_id | first_name | last_name | email | phone_number | password | user_type(admin or user) | creation_date
- **Transaction Logs:** transaction_id | from_account_number | to_account_number | amount | transaction_type | timestamp | description

5.2 User Roles and Permissions

- **Admin:** Full access to all system functions including adding and removing clients, and making transaction between accounts
- **Regular User:** Limited to personal transactions and currency exchange

5.3 Supported Currencies

- MAD (Moroccan Dirham) - Base currency
- USD (US Dollar)
- EUR (Euro)
- DZD(Algerien Dinar)
- JPY (Japanesse Yen)