# Software Requirements Specification (SRS) Template

**Project:** Automated Teller Machine (ATM) System  
**Version:** 1.0  
**Authors:** < Instructor / Student>  
**Date:** 18-08-2025  
**Status:** Model Answer / Approved

## Revision history

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| --- | --- | --- | --- | --- |
| Version | Date | Author | Change summary | Approval |
| 1.0 | 18-08-2025 | Instructor | SRS with diagrams embedded |  |

## Approvals

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| --- | --- | --- | --- |
| Role | Name | Signature / Email | Date |
| Course Coordinator |  |  |  |

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## 1. Introduction

1.1 Purpose

This document is a Software Requirements Specification (SRS) for an Automated Teller Machine (ATM) system. It defines functional and non-functional requirements, interfaces, and verification criteria intended for instructors and students to use as a reference.

1.2 Scope  
Covers user interactions at ATM terminals, integration with bank core systems for account operations and transaction settlement, maintenance functions, and operational monitoring. Excludes core banking internal implementation beyond APIs and bank branch activities.

1.3 Audience  
Developers, QA Engineers, System Integrators, Maintenance Technicians, and Assessment Evaluators.

1.4 Definitions  
List of acronyms: ATM, PIN, OTP, UI, API, EMV, TLS, RTO, RPO.

## 2. Overall description

2.1 Product perspective  
The ATM is a self-service kiosk interacting with users and the bank core. It includes hardware (card reader, cash dispenser, printer), embedded software, and networked services for transaction authorisation, settlement, and monitoring.

2.2 Major product functions (detailed)  
- Authenticate user  
- Cash withdrawal  
- Balance inquiry  
- Funds transfer (within same bank)  
- Cash deposit (envelope / bulk note acceptor)  
- Mini-statement and receipt printing  
- Administrative maintenance and health checks  
- Offline transaction queuing and reconciliation (limited capability)

2.3 User roles and characteristics (expanded)  
- Customer: basic banking knowledge, expects short transaction times and clarity.   
- Technician: limited time on-site, needs diagnostic UIs and logs.  
- Bank Operator: remote monitoring and settlement responsibilities.

2.4 Operating environment  
Embedded ATM OS, secure network (public or private WAN), power with UPS, environmental constraints (temperature/humidity).

2.5 Constraints  
EMV compliance, PCI-DSS considerations for cardholder data, use of approved crypto modules, hardware vendor APIs for dispenser module.

## 3. External interface requirements

3.1 User interfaces  
Primary UI: touch-enabled screen with clear menu structure. Accessibility: screen-reader friendly prompts for visually impaired users and high-contrast mode.

3.2 Hardware interfaces  
- EMV card reader (ISO/IEC 7816)  
- PIN keypad (secure pin entry)  
- Cash dispenser module (vendor-specific interface)  
- Deposit acceptor  
- Receipt printer  
- Status LEDs and operator panel

3.3 Software interfaces  
- Bank Core API (authorized JSON over TLS) for account validation, debit/credit, and settlement.  
- Monitoring & Logging API for health checks and alerts.  
- Optional third-party services (cash recycler monitoring).

3.4 Communications  
- TLS 1.2+ enforced, mutual TLS for bank core where required.  
- Retry/backoff strategy and offline queuing with secure signing for offline transactions.

<< Make sure overall there are at least 15 FRs for overall project, 5 NFRs, 2 security objectives and 5 Security requirements>>

## 4. System features (detailed)

Each requirement below includes acceptance criteria and a reference test case. IDs follow ATM-F-###.

### 4.1 Authentication

Description: Authenticate the cardholder using EMV card and PIN; support chip & contactless where applicable.

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| Req ID | Requirement | Type | Priority | Source/Stakeholder | Acceptance criteria / Test case ref | Comments / Dependencies |
| ATM-F-001 | The system shall validate card authenticity (EMV) and verify PIN via bank core. | Functional | High | Security / Banking | AC-ATM-F-001: Valid EMV card and correct PIN leads to authenticated session. Test: TC-Auth-01 | Requires EMV reader and Core API |
| ATM-F-002 | The system shall mask PIN entry and not log PIN characters. | Functional | High | PCI-DSS | AC-ATM-F-002: PIN masked on UI and absent from logs. Test: TC-Auth-02 | Audit review required |
| ATM-F-003 | The system shall lock the card after 3 consecutive failed PIN attempts and record an audit event. | Functional | High | Security | AC-ATM-F-003: After 3 failures, further attempts are blocked and message displayed. Test: TC-Auth-03 | Card must be flagged in Core |

### 4.2 Cash Withdrawal

Description: Dispense cash in validated denominations and ensure ledger consistency with bank core.

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| Req ID | Requirement (shall...) | Type | Priority | Source/Stakeholder | Acceptance criteria / Test case ref | Comments / Dependencies |
| ATM-F-010 | The system shall verify sufficient available balance and daily limit before dispensing cash. | Functional | High | Business | AC-ATM-F-010: Dispense occurs only if balance >= amount and within limits. Test: TC-WD-01 | Core API check required |
| ATM-F-011 | The system shall dispense requested amount using available denominations and update cash cassette counts. | Functional | High | Operations | AC-ATM-F-011: Dispensed amount equals requested; cassette counts decremented. Test: TC-WD-02 | Hardware interaction with dispenser |
|  |  |  |  |  |  |  |

### 4.3 Cash/Check Deposit

Requirements: The system shall accept deposits (envelope or bulk acceptor), validate amounts where possible, and queue offline transactions if network unavailable. IDs: ATM-F-020..ATM-F-025.

### 4.4 Funds Transfer

Requirements: Support intra-bank transfers between own accounts with confirmation and receipt. Reject transfers exceeding configured limits. IDs ATM-F-030..ATM-F-032.

### 4.5 Maintenance & Monitoring

Requirements: Provide a technician menu for diagnostics, remote monitoring API integration, secure admin authentication, and encrypted log shipping. IDs ATM-F-040..ATM-F-045.

## 5. Non-functional requirements (detailed)

NFRs below are measurable and tied to test plans. IDs ATM-NF-###.

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| --- | --- | --- | --- | --- |
| Req ID | Requirement | Category | Priority | Acceptance criteria / Measurement |
| ATM-NF-001 | Overall transaction response (from card insertion to end) shall be ≤ 5 seconds for 90% of transactions under normal load. | Performance | High | 90th percentile ≤ 5s in production-like test. Test: TC-Perf-01 |
| ATM-NF-002 | System shall provide 99.9% availability monthly; scheduled maintenance windows excluded. | Reliability | High | Uptime reports show ≥99.9% per month. Test: Ops reports. |
| ATM-NF-003 | All sensitive cardholder data must comply with PCI-DSS; PAN must not be stored in plaintext. | Security/Compliance | High | PCI-DSS audit checklist pass. Test: TC-Sec-01 |
| ATM-NF-004 | System shall provide logs with timestamped events retained for 7 years for audit purposes. | Audit/Data Retention | High | Automated archival and retrieval verified. Test: TC-OPS-01 |
| ATM-NF-005 | System shall support accessibility features (screen reader, high contrast) conforming to WCAG 2.1 AA where applicable. | Usability/Accessibility | Medium | Accessibility audit pass. Test: TC-UX-01 |

## 5.1. Security

## 5.1.1 Security Objectives

This section will list 2 to 4 security objectives for the project.

## 5.1.2 Security Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Req ID | Requirement (shall...) | Type | Priority | Acceptance criteria / Test case ref |
| PRJ-SR-001 | TLS 1.2+ mandatory for all network connections. | Security | High |  |

## 6. Quality attributes & Acceptance tests

- Exit criteria for acceptance: All high-priority functional requirements implemented and verified, no critical NFR failures, and RTM shows all test cases passed.

- Acceptance test suites: Authentication, Withdrawal, Deposit, Transfer, Performance, Security, and Accessibility tests.

## 7. System models and diagrams

## 7.1 UML Use-Case diagram

At least 2 UML use case diagrams to be created.

## 8. Requirements Traceability Matrix (RTM)

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| --- | --- | --- | --- | --- | --- | --- |
| Req ID | Requirement short | Section ref / Design Spec | Module | Test case(s) | Status (N/P/A) | Comments |
| ATM-F-001 | Validate PIN | 4.1 / DS-Auth-01 | AuthModule | TC-Auth-01 | N |  |
| ATM-F-010 | Dispense cash | 4.2 / DS-Dispense-01 | DispenseModule | TC-WD-01, TC-WD-02 | N |  |
| ATM-NF-001 | Response time target | 5 / DS-Perf-01 | WebUI / CoreAPI | TC-Perf-01 | N |  |