# Software Requirements Specification For

# Advanced ATM Software ATM360

**Version 1.0**

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**9th January 2017**

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# Revision History

| Name | Date | Reason For Changes | Version |
|---|---|---|---|
| **Version 1.0** | 9th January 2017 | First Draft | 1.0 |
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# 1. Introduction

## 1.1 Purpose

This document describes the software requirements and specification for an advanced automated teller machine (ATM) network. An automated teller machine (ATM) is a computerized telecommunications device that provides a financial institution's customers a secure method of performing financial transactions, in a public space without the need for a human bank teller. Through ATM, customers interact with a user-friendly interface that enables them to access their bank accounts and perform various transactions.
The document is intended for the customer and developer.

## 1.2 Document Conventions

- Account : An account at the bank on which transactions are applied. There are different types of accounts. A customer can have more than one account.
- PIN : It stands for Personal Identification Number. It is the validation factor for the user. The PIN is known only to the user.
- Balance : The residual amount in the user's bank account or the bank balance.

## 1.3 Intended Audience and Reading Suggestions

The intended audience of this SRS consists of
- Software Designers
- Software Engineers
- Software Developers
- Software Testers
- Customers

Section 1 (Introduction) of this document acts as a guide to go through the rest of the document. It also talks about the scope of the software and the references made while preparing this document.

Section 2 (Overall description) of this document provides an overview of the entire software. It also contains the context diagram, dataflow diagram and the entity relationship diagram. This section is intended for all audience including users and developers.

Section 3 (External Interfaces) provides information about how the software would interact with other processes, users and hardware.

Section 4 (System Features) describes the functional requirements of the software. It also contains the use case and domain model diagrams. This section is mainly meant for the developers and stakeholders.

Section 5 (Non functional requirements) lists the non functional requirements of the software like performance, safety and security requirements. It is meant for the stakeholders primarily.

## 1.4 Product Scope

This document applies to Automated Teller Machine software **ATM360** version 1.0. This software helps the user perform various transactions in his account without having to physically go to the bank. It allows basic benefits such as cash withdrawals and balance inquiry and other features like balance transfers, deposits and other banking operations.
The administrator of the software is also allowed to fix extra charges and rules.

The software requires the user to enter login ID and bank account number to log in. This results in an interactive display where the user can select the function he wishes to perform. To confirm a function or transaction, the user must enter a secret Personal Identification Number (PIN).

## 1.5 References


- ATM Specifications : www.wikipedia.com/ATM
- IEEE. Software Requirements Specification Std. 830-1993.
- Example ATM System : http://www.mathscs.gordon.edu/local/courses/cs211/ATMExample/

# 2. Overall Description

## 2.1 Product Perspective

An Automated Teller Machine (ATM) is a single functional unit consisting of various components. It is a computerized telecommunications device that provides the customers of a financial institution with access to financial transactions in a public space without the need for a human teller. On modern ATMs, a plastic smartcard with a chip containing a unique card number and some security information like CVV number. Security is provided by the customer entering a PIN before committing to any transaction.

The modification provided in ATM360 is a new and more secure way of entering the PIN onto the system such that an on looking user is unable to steal or misuse the PIN number of the user. The PIN keyboard is displayed on the screen of the ATM. This keyboard is different from the conventional keyboard as the numbers are not in order. A randomized keyboard is generated every time and the user enters the position of the numbers in his PIN instead of the actual PIN. This guarantees more secure transactions as the numbers being entered by the user are always different.

ATM360 also provides a feature for paying the user's bills like electricity, water, credit card and phone bills. It is also programmed to remind the user of unpaid bills close to the last date of bill payment.

It also includes basic features of an ATM like Balance Inquiry, Bank Transfer and Depositing Cash.

ATM360 aims to provide a user friendly and smart banking experience to the customers without having to visit banks and conform to the usual norms of communicating with a human teller or banker.

## 2.2 Product Functions

The major functions provided by the software are as follows:

- Language Selection:- After the user has logged in, the display provides him with a list of languages from which he can select any one in order to interact with the machine throughout that session. After the language selection the user is prompted with an option that whether he wants the selected language to be fixed for future use so that he is not offered with the language selection menu in future thus making the transaction a bit faster. User also has the freedom to switch to a different language mentioned in the list in between that session.

- Account Maintenance:- The various functions that a user can perform with his account are as follows:-

    - Account Type:- The user has the freedom to select his account type to which all the transactions are made, i.e. he can select whether the account is current account or savings account etc.

    - Withdrawal/Deposit:- The software allows the user to select the kind of operation to be performed i.e. whether he wants to withdraw or deposit the money.

    - Amount:- The amount to be withdrawn or deposited is then mentioned by the user.

- Denominations:- The user is also provided with the facility to mention the required denominations. Once he enters his requirements the machine goes through its calculations on the basis of current resources to check whether it is possible or not. If yes, the amount is given to the user otherwise other possible alternatives are displayed.

- Money Deposition:- Money deposition shall be done with an envelope. After typing the amount to be deposited and verification of the same, the customer must insert the envelope in the depositary.

- Balance Transfer:- Balance transfer shall be facilitated between any two accounts linked to the card for example saving and checking account.

- Balance Enquiry:- Balance enquiry for any account linked to the card shall be facilitated.

- Billing: - Any transaction shall be recorded in the form of a receipt and the same would be dispensed to the customer. The billing procedures are handled by the billing module that enable user to choose whether he wants the printed statement of the transaction or just the updating in his account.

- Cancelling:- The customer shall abort a transaction with the press of a Cancel key. For example on entering a wrong depositing amount. In addition the user can also cancel the entire session by pressing the abort key and can start a fresh session all over again.

- Bills Clearings: - The machine also allows the user to clear off his pending bills there only, if the name of his operator is mentioned there in the list. The machine displays the list of the companies supported by that bank to the user. It also reminds the user of pending bills.

More details of these are provided in section 3.

## 2.3 User Classes and Characteristics

There are different kinds of users that will be interacting with the system. The intended users of the software are as follows:

- User X: A novice ATM customer. This user has little or no experience with electronic means of account management and is not a frequent user of the product. User A will find the product easy to use due to simple explanatory screens for each ATM function. He is also assisted by an interactive teaching mechanism at every step of the transaction, both with the help of visual and audio help sessions.
- User Y: An experienced customer. This user has used an ATM on several occasions before and does most of his account management through the ATM. There is only a little help session that too at the beginning of the session thus making the transaction procedure faster.
- Bank Administrator: A bank employee. This user is familiar with the functioning of the ATM. This user is in charge of storing cash into the ATM vault and repairing the ATM in case of malfunction. This user is presented with a different display when he logs in with the administrator's password and is provided with options different from that of normal user. He has the authority to change or restrict various features provided by the software in situations of repairing.

## 2.4 Operating Environment

The software will be developed to run on all systems that support Java 8. All devices that support this version of Java. The software is developed using Eclipse, which provides us with Java SDK 8. It must also support Flash for the GUI which will be developed using Java Swing Framework. The software requires a minimum memory of 15GB. The database used should be SQL based like MySQL or PostgreSQL.

## 2.5 Design and Implementation Constraints

The major constraints that the project has are as follows:-

- The ATM must service at most one person at a time.
- The number of invalid pin entries attempted must not exceed three. After three unsuccessful login attempts, the card is seized/blocked and need to be unlocked by the bank.
- The simultaneous access to an account through both, the ATM and the bank is not supported.
- The minimum amount of money a user can withdraw is Rs 100/- and the maximum amount of money a user can withdraw in a session is Rs 15,000/-.
- Before the transaction is carried out, a check is performed by the machine to ensure that a minimum amount of Rs 1000/- is left in the user's account after the withdrawal failing which the withdrawal is denied.
- The minimum amount a user can deposit is Rs 100/- and the maximum amount he can deposit is Rs 10,000/-.
- A user can select only that operator for bill clearings that is supported by the bank.

## 2.6 User Documentation

The first time that the user opens the software, a tutorial will launch that will guide through the basic functionality of the software. Any assistance later can be searched through the user manual, which will be developed using HTML.

## 2.7 Assumptions and Dependencies

- One major dependency that the project might face is the changes that need to be incorporated with the changes in the bank policies regarding different services. As the policies changes the system needs to be updated with the same immediately. A delay in doing the same will result to tremendous loss to the bank. So this should be changed as and when required by the developer.
- The project could be largely affected if some amount is withdrawn from the user's account from the bank at the same time when someone is accessing that account through the ATM machine. Such a condition shall be taken care of.
- At this stage no quantitative measures are imposed on the software in terms of speed and memory although it is implied that all functions will be optimized with respect to speed and memory.

# 3. External Interface Requirements

## 3.1 User Interfaces

The interface provided to the user should be a very user-friendly one and it should provide an optional interactive help for each of the service listed. The interface provided is a menu driven one and the following screens will be provided:-

1. A login screen is provided in the beginning for entering the required username and account number.

2. In case of administrator, a screen will be shown having options to reboot system, shut down system, block system and disable any service.

3. Administrator is also provided with a screen that enables him to block any service provided to the user by entering the name of the service or by selecting it from the list displayed.

4. After the login, a screen with a number of options is then shown to the user. It contains all the options along with their brief description to enable the user to understand their functioning and select the proper option.

5. A screen will be provided for user to check his account balance.

6. A screen will be provided for the user to perform various transactions in his account.

## 3.2 Hardware Interfaces

At this stage of development, the hardware interfaces required are a working computer with sufficient memory of at least 15GB and at least 800x600 viewing screen for the purpose of the user.

## 3.3 Software Interfaces

In order to perform various different functions, this software needs to interact with various other software. So there are certain software interface requirements that need to be fulfilled which are listed as follows:-

- The database used to keep record of user accounts shall be PostgreSQL, MySQL or any SQL based database management system.
- The system should be able to interact with Java interfaces and Swing for appropriate Graphical User Interface.

## 3.4 Communications Interfaces

The machine needs to communicate with the main branch for each session for various functions such as login verification, account access etc. so the following are the various communication interface requirements that are needed to be fulfilled in order to run the software successfully:-

- The communication protocol used will be TCP/IP.
- The protocol for data transfer will be FTP.

# 4. System Features

## 4.1 Remote Banking

### 4.1.1 Description

The system is designed to provide the user with the facility of remote banking and perform various other functions at an interface without any aid of human bank teller.

### 4.1.2 Response Sequences

- At the start, the user is provided with a log in screen and he is required to enter his PIN and Account details which are then verified by the machine. In case of an unsuccessful attempt a user is asked again for his credentials but the maximum number of attempt given to the user is limited to 3 only, failing which his card is blocked and need to be unblocked by the bank for any future use
- The user selects the language with which he is comfortable.
- After the language selection, the user is directed towards a main page that displays a set of options/services along with their brief description, enabling the user to understand their functioning. The user can select any of the listed options and can continue with the transaction.

## 4.2 Functional Requirements

The functional requirements of the software are as follows:

REQ1 : - Provide an interactive user interface at the ATM for customers.

REQ2 : - Introduce helpful navigation tools for new customers at the ATM and disable these tools for experienced customers.

REQ3 : - Provide an easy interface for a Bank Administrator or Official to easily make changes as change in policies and rules.

REQ4 : - Introduce new and innovative ways to provide PIN security to the customer.

# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

- The software ATM360 must be functional for 24 hours every day. For this to be possible without problems in the functioning of the software, the software must be robust.
- Each transaction must not take more than 2 seconds to complete.

## 5.2 Safety Requirements

In case of any damage to the software or hardware while a transaction is taking place, the transaction must be aborted immediately and the concerned bank must be notified of the damage. The connection to the bank server must be terminated securely such that it cannot be infiltrated.

## 5.3 Security Requirements

The passwords provided to customers must be secure and should not contain easily deductible characters or numbers.
The user should be provided with only three attempts for login failing after which the user will be blocked from using the ATM and must contact the bank for further procedure.

## 5.4 Software Quality Attributes

The primary objective is to produce quality software. As the quality of a piece of software is difficult to measure quantitatively, the following guidelines will be used when judging the quality of the software:
1. Consistency – All code will be consistent.
2. Test cases – All functionality will be thoroughly tested

## 5.5 Business Rules

The following business rules will be adhered to:

- The Administrator has the authority to fix the rules and regulations and to set or update the policies as and when required.
- A log of the following annexure is generated by the system:
    - User bank account details.
    - Updates made in the user account along with date, time and the changes made.

# 6. Other Requirements

As of this version, no other requirements

# Appendix A: Glossary

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|---|---|
| ATM | An unattended electronic machine in a public place, connected to a data system and related equipment and activated by a bank customer to obtain cash withdrawals and other banking services. |
| TCP/IP | Transmission Control Protocol/Internet Protocol. |
| FTP | File Transfer Protocol |