ATM Interface Program Report

1. Introduction

The ATM Interface Program is a Java-based application designed to simulate basic ATM functionalities such as checking balance, withdrawing money, and depositing money. This report provides an overview of the project, including its objectives, implementation details, and testing procedures.

2. Objectives

The primary objectives of the ATM Interface Program are as follows:

- To create a user-friendly interface for conducting banking operations.
- To implement secure user authentication mechanisms.
- To handle various banking operations, including balance inquiries, withdrawals, and deposits.
- To incorporate error handling mechanisms for managing invalid user inputs and insufficient funds scenarios.

3. Implementation Details

The implementation of the ATM Interface Program involves the following key components:

User Class

- Represents individual users with attributes such as `userID`, `userPIN`, and `accountBalance`.
- Provides methods for accessing and modifying user data.

ATM Class

- Encapsulates ATM functionalities including user authentication, balance inquiries, withdrawals, and deposits.
- Utilizes a `HashMap` data structure to store user data.
- Implements error handling mechanisms to manage various scenarios such as invalid user inputs and insufficient funds.

Input/Output Handling

- Utilizes the `Scanner` class for user input.
- Displays informative messages and prompts to guide users through the ATM interface.

Testing and Debugging

- Thoroughly tested the program with various test cases to ensure functionality and reliability.

- Debugged any issues encountered during testing and made necessary adjustments to the code.

4. Testing Procedures

The testing procedures for the ATM Interface Program involved the following steps:

1. **Unit Testing**: Individual components such as the `User` class and `ATM` class were tested independently to ensure they function as expected.
2. **Integration Testing**: The integration of different components was tested to verify the interactions between them.
3. **Scenario Testing**: Various scenarios were tested, including valid and invalid user inputs, sufficient and insufficient funds scenarios, and edge cases.

5. Conclusion

The ATM Interface Program successfully meets the objectives outlined in the project requirements. It provides a user-friendly interface for conducting banking operations while incorporating secure authentication mechanisms and error handling functionalities. The program has been thoroughly tested to ensure functionality and reliability.