**Exploratory Test Plan**

**Objective**

The goal of this exploratory test is to identify defects in the ATM simulation system by simulating real-world user interactions. The test will focus on core functionalities such as authentication, transactions, and system behavior in both normal and edge-case scenarios.

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**Functions Being Targeted**

We will test a broad range of functions to ensure coverage across multiple aspects of the ATM system. The primary focus areas include:

1. **Authentication & Session Management**

   o   Card insertion and PIN validation

   o   Handling of incorrect PIN attempts (lockout mechanism)

   o   Session start and termination

2. **Transaction Types**

   o   Cash withdrawal (valid and invalid cases)

   o   Deposits and envelope insertion

   o   Fund transfers between accounts

   o   Balance inquiries

3. **System Controls**

   o   ATM startup and shutdown functionality

   o   Response to unexpected system inputs (e.g., canceling transactions at different stages)

4. **Error Handling & User Feedback**

   o   System response to invalid inputs (e.g., unsupported transactions, invalid account selections)

   o   Handling of insufficient funds or ATM cash shortages

   o   User feedback messages (clarity and correctness)

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**Approach**

To ensure an efficient and thorough test, we will adopt the following approach:

1. **Broad Coverage with Focus on Key Transactions**

   o   Instead of testing all functions equally, we will prioritize functions that users interact with the most (withdrawals, deposits, balance inquiries).

   o   We will also test rare but critical scenarios, such as incorrect PIN handling and insufficient funds, to verify the robustness of the system.

2. **Balanced Testing Strategy**

- o We will perform both **shallow** (testing a broad range of features quickly) and **deep** (stress-testing critical functionalities) testing.

- o For each function, we will check:

  - ▪ **Happy path:** Expected user interactions that should work smoothly.

  - ▪ **Edge cases:** Unusual but possible interactions (e.g., withdrawing more money than available, inserting an unreadable card).

3. **Test Case Development**

   - o **Common Scenarios:** Standard ATM interactions such as deposits, withdrawals, and balance inquiries.

   - o **Exceptional Scenarios:** Incorrect PINs, ATM cash depletion, session timeouts, invalid transactions.

   - o **Negative Testing:** Attempting invalid actions to verify the system's handling of errors and security measures.

4. **Test Execution Plan**

   - o First, familiarize ourselves with the ATM system's user interface and basic operations.

   - o Perform a structured test of each transaction type, documenting all observed behaviors.

   - o Attempt transactions under varying conditions (e.g., low ATM cash levels, incorrect inputs).

   - o Record defects as they are found, ensuring sufficient detail for reproduction and debugging.

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**Key Details to Record**

For each test, we will document:

- **Test scenario**

- **Initial system state**

- **Steps performed**

- **Expected outcome**

- **Actual outcome**

- **Severity of the issue (if a defect is found)**

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**Justification**

This plan ensures efficient and thorough coverage by balancing functional, edge-case, and negative testing. It prioritizes commonly used functions while also checking for system robustness and error handling. By combining structured testing with exploratory techniques, we maximize the chances of uncovering defects before the regression phase.

**Selected Exploratory Tests**

1. **System Startup**
   *Focus:* Verify that the ATM starts correctly.
   *Test:* Turn the system "on" to initiate startup.
   *Why:* Ensures that the system transitions from an off state to requesting the initial cash amount.

2. **Card Insertion & Valid PIN Entry (Session Start)**
   *Focus:* Test the basic login process.
   *Test:* Insert a valid (readable) card and then enter the correct PIN.
   *Why:* Confirms that the ATM accepts a valid card and PIN combination and presents the transaction menu.

3. **Invalid PIN Handling**
   *Focus:* Test error handling for authentication.
   *Test:* Insert a valid card but then enter an incorrect PIN.
   *Why:* Checks whether the system correctly identifies and handles an invalid PIN, prompting for a re-entry.

4. **Legitimate Withdrawal Transaction**
   *Focus:* Verify a standard cash withdrawal.
   *Test:* Select a withdrawal transaction with an amount that is within both the account balance and the available ATM cash.
   *Why:* Confirms that cash is dispensed correctly, a proper receipt is printed, and the transaction is logged.

5. **Withdrawal with Insufficient ATM Cash**
   *Focus:* Test handling of a cash-out request when the machine's cash is insufficient.
   *Test:* Attempt to withdraw an amount greater than the current cash available in the ATM (even if the account balance is sufficient).
   *Why:* Ensures that the system checks the ATM's cash reserve and alerts the user appropriately.

6. **Withdrawal with Insufficient Account Balance**
   *Focus:* Test account balance verification.
   *Test:* Attempt to withdraw an amount that exceeds the account's available balance.
   *Why:* Verifies that the system prevents overdrafts and informs the user about insufficient funds.

7. **Legitimate Deposit Transaction**
   *Focus:* Confirm proper deposit processing.
   *Test:* Choose a deposit transaction, enter a valid deposit amount, and simulate envelope insertion.
   *Why:* Checks that the system accepts the deposit, prints the correct receipt, and updates the account balance.

8. **Legitimate Transfer Transaction**
   *Focus:* Test money transfer between accounts.
   *Test:* Select a transfer transaction, choose valid source and target accounts, and enter an acceptable transfer amount.
   *Why:* Validates that the transfer occurs correctly with updated balances and that the receipt and log are accurate.

9. **Legitimate Balance Inquiry Transaction**
   *Focus:* Verify account balance display.
   *Test:* Initiate a balance inquiry for an account (e.g., checking).
   *Why:* Confirms that the correct balance is displayed and that a receipt is printed.

10. **Transaction Cancellation**
    *Focus:* Test the ability to cancel an in-progress transaction.
    *Test:* Start a transaction (for example, during the withdrawal process) and press the "Cancel" key.
    *Why:* Ensures that the system immediately stops the transaction and displays an appropriate cancellation message.

**Key: RED = bugs**

**Exploratory (Manual Non-scripted) Testing – Abdul, Azmath**

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output | The actual outcome | How to recreate |
|---|---|---|---|---|---|---|---|
| 1 (MFT) | System Startup | System is started when the switch is turned "on" | System is off | Activate the "on" switch | System requests the initial cash amount | System requested the initial cash amount | N/A |
| 2 (MFT) | Session | System reads a customer's ATM card | System is on and idle | Insert a readable card | Card is accepted; system asks for entry of PIN | Card was accepted; system asked for entry of PIN | N/A |
| 3 (MFT) | Session | System accepts customer's PIN | System prompts for PIN entry | Enter correct PIN (e.g., 42) | System displays a menu of transaction types | System displayed a menu of transaction types | N/A |
| 4 | Session | System handles an invalid PIN | System prompts for PIN entry | Enter an incorrect PIN | Error message is displayed; system prompts for re-entry of PIN | Error message was displayed; system prompts for re-entry of PIN | N/A |
| 5 (MFT) | Withdrawal | System performs a legitimate withdrawal transaction properly | System displays withdrawal options | Select a withdrawal amount within account balance and ATM cash | Cash is dispensed; receipt printed with correct amount and updated balance; transaction logged | Wrong amount of cash is dispensed than what is selected; receipt printed with incorrect amount requested but correct correlating updated balance; transaction logged with incorrect amount | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 1. Press 1. Press 1. |
| 6 | Withdrawal | System verifies sufficient ATM cash for withdrawal | ATM is started with limited cash relative to request | Select a withdrawal amount greater than | System displays a message indicating insufficient ATM cash; | System displays a message indicating insufficient ATM cash; | N/A |

| | | | | available ATM cash | prompts user to choose a different amount | prompts user to choose a different amount | |
|---|---|---|---|---|---|---|---|
| 7 | Withdrawal | System verifies sufficient account balance for withdrawal | System prompts for withdrawal amount | Select a withdrawal amount exceeding account balance | System displays a message indicating insufficient funds; offers the option to perform another transaction | System proceeds with transaction then offers the option to perform another transaction | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 1. Press 1. Press 5. |
| 8 (MFT) | Deposit | System performs a legitimate deposit transaction properly | System prompts for deposit amount and envelope insertion | Enter a valid deposit amount; simulate envelope insertion | Envelope accepted; receipt printed showing deposit amount and updated balance; transaction logged | Envelope accepted; receipt printed shows correct deposit amount but updated wrong balance amount and wrong amount available; transaction logged correctly | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 2. Press 1. Enter $50 Press enter. Click insert envelop. |
| 9 | Transfer | System performs a legitimate transfer transaction properly | System prompts for transfer details (source, destination, amount) | Select valid source and destination accounts; enter a valid transfer amount | Transfer completed; receipt printed with correct details and updated balances; transaction logged | can't transfer from or to money market | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 3. Press 3. Press 2. Enter $50 Press enter. |
| 10 | Inquiry | System performs a legitimate balance inquiry transaction | System displays the transaction menu | Choose balance inquiry; select an account (e.g., Checking) | Receipt printed showing correct account balance; transaction logged | Receipt printed showing incorrect card number card 1 shows card 2 card 2 shows card 3 | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 4. Press 1. |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | Transaction Cancellation | Customer cancels a transaction before completion | System is in the middle of a transaction (e.g., during withdrawal) | Press the "Cancel" key | System displays a cancellation message; transaction aborted; returns to the transaction menu or ejects card | System does not display a cancellation message; transaction aborted; ejects card | N/A |
| 12 | Transaction | System handles an invalid menu option | Menu of transactions being displayed | Press menu option that is not 1,2,3,4 | An appropriate message is displayed and re-entry of transaction type is again requested | The system dispenses $20 | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 0. |
| 13 | Transaction Cancellation | Customer cancels any transaction | System displays any Transaction e.g Withdraw, Deposit, Money Transfer, Balance Inquiry | Press the "Cancel" key | System displays a would you like to do another transaction message | Spelling mistake would is spelled as "wood" | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 1. Press cancel. |
| 14 | Balance Inquiry | user selects Balance Inquiry | Menu of balance Inquiry | User presses 4 for balance inquiry | All accounts should be displayed | Only "Checking" and "Money Market" menu options are displayed. | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 4. |
| 15 | Invalid PIN Extension | Leading Zeros in PIN | System is asking for entry of PIN | For card 1 user enters 0042 | Card Ejection with error message "FAILURE invalid card" or "PIN was incorrect" | Card is accepted | Enter 10 in number of $20 bills. Insert card. Enter card number 1. Enter pin 0042. |
| 16 | Balance Inquiry | user selects money market | Menu of balance Inquiry | User presses 2 | Displays account information | Displays Unknown Error on the green screen and $500 appears right below the green | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 4. Press 2 |

| | | | | | | screen and the receipt prints | |
|---|---|---|---|---|---|---|---|
| 17 | Transaction | Transaction finished | System displays any Transaction e.g Withdraw, Deposit, Money Transfer, Balance Inquiry | User finishes a transaction | System displays a would you like to do another transaction message | Spelling mistake would is spelled as "wood" | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 1. Press 1. Press 1. |

**Exploratory (Manual Non-scripted) Testing – Hashir, Taiwu**

| Test Case | Use Case | Function Being Tested | Initial System State | Input | Expected Output | The actual outcome | How to recreate Bug |
|---|---|---|---|---|---|---|---|
| 1 | System Startup and Cash Initialization | ATM startup and cash initialization | ATM is off | Press the power "on" button and enter $20 bills | ATM powers on and indicating the next step | ATM powers on and asks for inserting card | N/A |
| 2 | Valid Card Insertion | Card recognition and acceptance | ATM is on and idle | Insert a valid card (card number "1") | Card is accepted; system prompts for PIN entry | Same as expected | N/A |
| 3 | Unreadable/Invalid Card Insertion | Handling of an invalid or unreadable card | ATM is on and idle | Insert an unreadable or invalid card | Card is ejected | Asking for PIN | N/A |
| 4 | Correct PIN Entry | PIN validation | After valid card insertion, PIN prompt is displayed | Enter correct PIN "42" | PIN is validated; transaction menu is displayed | Same as expected | N/A |
| 5 | Incorrect PIN Entry and Re-Entry | Handling of incorrect PIN and re-entry process | After valid card insertion; PIN prompt is displayed | Enter an incorrect PIN then re-enter the correct PIN "42" | First attempt rejected with an error; on correct re-entry, the transaction menu is displayed | Same as expected | N/A |
| 6 | Withdrawal - Valid | Processing a withdrawal transaction | Transaction menu is displayed; account and ATM have | Select withdrawal; enter a valid amount within | Correct amount of cash is dispensed | cash dispensed is the amount entered + $20, which is correct | N/A |

| # | Test Name | Objective | Precondition | Test Steps | Expected Result | Actual Result | Test Data |
|---|---|---|---|---|---|---|---|
| | | | sufficient funds | account balance and ATM cash limits | | | |
| 7 | Withdrawal – Insufficient Account Funds | Withdrawal processing when account funds are low | Transaction menu is displayed; account balance is lower than the requested amount | Select withdrawal; enter an amount exceeding the account balance | Error message "Insufficient funds" is displayed; no cash is dispensed | No error message is displayed, charged $20 | Select withdrawal Select checking Select $200 |
| 8 | Withdrawal – Cancellation | Ability to cancel a withdrawal transaction | Withdrawal process initiated | Begin a withdrawal and press "Cancel" at the account or amount selection stage | no cash is dispensed | no cash is dispensed, Showing "Insufficient available balance", Typo "Wood" | When withdrawing, click "Cancel" button |
| 9 | Deposit - Valid | Processing a deposit transaction | Transaction menu is displayed; deposit option is available | Select deposit; choose an account; enter a valid deposit amount; simulate envelope insertion | Correct Amount is deposited into respective account, ATM adds deposited number to the overall balance. | Incorrect Value is displayed, every deposit amount is added but then it subtracts $10 from balance | When depositing notes down inputted value, click the input envelope button, when the display information shows the updated balance, it will display the number that was added - $10 |
| 10 | Deposit - Cancellation | Cancelling a deposit transaction | Deposit process initiated | Press "Cancel" during the deposit process | The deposit process is cancelled; prompts user on another transaction | Same as expected, however the only defect is the incorrect spelling of "would". | When initiating for deposit, press the cancel button through the process. When it is cancelled it will show on the green screen, " wood you like to do another transaction". |
| 11 | Balance Inquiry | Displaying the account balance | Transaction menu is displayed; account is available | Select balance inquiry; choose the account | Shows account balance of the respective account; Shows an accurate number | Outcome as expected. | N/A |

| 12 | Transfer - Valid | Transferring funds between accounts | Transaction menu is displayed; both source and destination accounts are active | Select transfer; choose source and destination accounts; enter a valid transfer amount | Transfers correct amount from bank A to bank B, maintaining correct values. | Incorrect amount transferred. Deducts $0.50 from input transfer amount. | When transferring note down inputted value, click the input enter button, when the display information shows the updated balance, it will display the number that was added – $0.50 |
| 13 | Transfer Insufficient Account Funds | Handling invalid input during transfer | Transfer process initiated | Enter an invalid (e.g., negative) amount | If invalid amount is inputted, notifies user and directs user for next step | **ATM Freezes with blank screen** | After arriving at the transfer screen, input an extremely large number, such as "600000", when you press the enter button the app should freeze |
| 14 | Transfer – Cancellation | Handling cancellation during transfer | Transfer process initiated | Start a transfer then press "Cancel" | Transferring of balance is cancelled leaving both accounts unaffected | Cancel button does not work, transfer goes through regardless. | During the transfer process press the "cancel" button, note that the button becomes unresponsive and the transfer continues. |

**Manual Scripted Testing**

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output | The actual outcome | How to recreate |
|---|---|---|---|---|---|---|---|
| 2 | System Startup | System accepts initial cash amount | System is requesting cash amount | Enter a legitimate amount | System is on | System is on | N/A |
| 3 | System Startup | Connection to the bank is established | System has just been turned on | Perform a legitimate inquiry transaction | System output should demonstrate that a connection has been established to the Bank | System output demonstrates that a connection has been established to the Bank | N/A |

| 4 | System Shutdown | System is shut down when the switch is turned "off" | System is on and not servicing a customer | Activate the "off" switch | System is off | System is off | N/A |
|---|---|---|---|---|---|---|---|
| 6 | Session | System rejects an unreadable card | System is on and not servicing a customer | Insert an unreadable card | Card is ejected; System displays an error screen; System is ready to start a new session | Card is ejected; System displays an error screen; System is ready to start a new session | N/A |
| 8 | Session | System allows customer to perform a transaction | System is displaying menu of transaction types | Perform a transaction | System asks whether customer wants another transaction | System asks whether customer wants another transaction | N/A |
| 9 | Session | System allows multiple transactions in one session | System is asking whether customer wants another transaction | Answer yes | System displays a menu of transaction types | System displays a menu of transaction types | N/A |
| 10 | Session | Session ends when customer chooses not to do another transaction | System is asking whether customer wants another transaction | Answer no | System ejects card and is ready to start a new session | System ejects card and is ready to start a new session | N/A |
| 12 | Withdrawal | System asks customer to choose an account to withdraw from | Menu of transaction types is being displayed | Choose Withdrawal transaction | System displays a menu of account types | System displays a menu of account types | N/A |
| 13 | Withdrawal | System asks customer to choose a dollar amount to withdraw | Menu of account types is being displayed | Choose checking account | System displays a menu of possible withdrawal amounts | System displays a menu of possible withdrawal amounts | N/A |
| 17 | Withdrawal | Withdrawal transaction can be cancelled by the customer prior to choosing amount | System is displaying menu of account types | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 18 | Withdrawal | Withdrawal transaction can be | System is displaying menu of | Press "Cancel" key | System displays an appropriate | System displays an appropriate | N/A |

| # | Transaction | | | | | | |
|---|---|---|---|---|---|---|---|
| | | cancelled by the customer prior to choosing amount | dollar amounts | | message and offers the option to do another transaction | message and offers the option to do another transaction | |
| 19 | Deposit | System asks customer to choose an account to deposit to | Menu of transaction types is being displayed | Choose Deposit transaction | System displays a menu of account types | System displays a menu of account types | N/A |
| 20 | Deposit | System asks customer to enter a dollar amount to deposit | Menu of transaction types is being displayed | Choose checking account | *System displays a request for the customer to type a dollar amount* | System displays a request for the customer to type a dollar amount | N/A |
| 21 | Deposit | System asks customer to insert an envelope | System is displaying a request for the customer to type a dollar amount | Enter a legitimate dollar amount | System requests that the customer insert an envelope | System requests that the customer insert an envelope | N/A |
| 23 | Deposit | Deposit transaction can be cancelled by the customer prior to inserting an envelope | System is displaying menu of account types | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 24 | Deposit | Deposit transaction can be cancelled by the customer prior to inserting an envelope | System is requesting customer to enter a dollar amount | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 25 | Deposit | Deposit transaction can be cancelled by the customer prior to inserting an envelope | System is requesting customer to insert an envelope | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 26 | Transfer | System asks customer to choose an account to transfer from | Menu of transaction types is being displayed | Choose Transfer transaction | System displays a menu of account types specifying transfer from | System displays a menu of account types specifying transfer from | N/A |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27 | Transfer | System asks customer to choose an account to transfer to | Menu of account types to transfer from is being displayed | Choose checking account | System displays a menu of account types specifying transfer to | System displays a menu of account types specifying transfer to | N/A |
| 28 | Transfer | System asks customer to enter a dollar amount to transfer | Menu of account types to transfer to is being displayed | Choose savings account | System displays a request for the customer to type a dollar amount | System displays a request for the customer to type a dollar amount | N/A |
| 30 | Transfer | Transfer transaction can be cancelled by the customer prior to entering amount | System is displaying menu of account types specifying transfer from | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 31 | Transfer | Transfer transaction can be cancelled by the customer prior to entering amount | System is displaying menu of account types specifying transfer to | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 32 | Transfer | Transfer transaction can be cancelled by the customer prior to entering amount | System is requesting customer to enter a dollar amount | Press "Cancel" key | System displays an appropriate message and offers the option to do another transaction | System displays an appropriate message and offers the option to do another transaction | N/A |
| 33 | Inquiry | System asks customer to choose an account to inquire about | Menu of transaction types is being displayed | Choose Inquiry transaction | System displays a menu of account types | System displays incomplete menu of account types saving account missing | Enter 10 in number of $20 bills. Insert card. Enter card number. Enter pin. Press 4. |
| 35 | Inquiry | Inquiry transaction can be cancelled by the customer prior to | System is displaying menu of account types | Press "Cancel" key | System displays an appropriate message and offers the option to do | System displays an appropriate message and offers the option to do | N/A |

| | | choosing an account | | | another transaction | another transaction | |
|---|---|---|---|---|---|---|---|
| 36 | Invalid PIN Extension | Customer is asked to reenter PIN | System is asking for entry of PIN | Enter an incorrect PIN; attempt an inquiry transaction | Customer is asked to re-enter PIN | Customer is asked to re-enter PIN | N/A |
| 37 | Invalid PIN Extension | Correct re-entry of PIN is accepted | Request to re-enter PIN is being displayed | Enter correct PIN | Original transaction completes successfully | Requests to enter PIN again | Enter 10 in number of $20 bills. Insert card. Enter card number 1. Enter pin 1. Enter pin 42. |
| 38 | Invalid PIN Extension | Incorrect re-entry of PIN is not accepted | Request to re-enter PIN is being displayed | Enter incorrect PIN | Appropriate message is displayed and re-entry of PIN is requested | Appropriate message is displayed and re-entry of PIN is requested | N/A |
| 39 | Invalid PIN Extension | Correct re-entry of PIN on the second try is accepted | Request to re-enter PIN is being displayed | Enter incorrect PIN first, then correct PIN | Original transaction completes successfully | Asks for pin again after correct PIN Second time | Enter 10 in number of $20 bills. Insert card. Enter card number 1. Enter pin 1. Enter pin 42. |
| 40 | Invalid PIN Extension | Correct re-entry of PIN on the third try is accepted | Request to re-enter PIN is being displayed | Enter incorrect PIN twice, then correct PIN | Original transaction completes successfully | Asks for pin again after correct PIN third time | Enter 10 in number of $20 bills. Insert card. Enter card number 1. Enter pin 1. Enter pin 1. Enter pin 42 |

**Regression Testing (Version 1.1) Abdul, Azmath**

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output | The actual outcome | Status |
|---|---|---|---|---|---|---|---|
| 5 | Withdrawal | System performs a legitimate withdrawal transaction properly | System displays withdrawal options | Select a withdrawal amount within account balance and ATM cash | Cash is dispensed; receipt printed with correct amount and updated balance; | Cash is dispensed; a receipt is printed showing the correct amount and updated balance; the | RESOLVED |

| | | | | | transaction logged | transaction is logged. | |
|---|---|---|---|---|---|---|---|
| 6 | Withdrawal | System verifies sufficient ATM cash for withdrawal | ATM is started with limited cash relative to request | Select a withdrawal amount greater than available ATM cash | System displays a message indicating insufficient ATM cash; prompts user to choose a different amount | The system displays a message indicating insufficient cash in the ATM and prompts the user to select a different amount. | RESOLVED |
| 7 | Withdrawal | System verifies sufficient account balance for withdrawal | System prompts for withdrawal amount | Select a withdrawal amount exceeding account balance | System displays a message indicating insufficient funds; offers the option to perform another transaction | The system displays a message indicating insufficient funds and provides the option to proceed with another transaction. | RESOLVED |
| 8 | Deposit | System performs a legitimate deposit transaction properly | System prompts for deposit amount and envelope insertion | Enter a valid deposit amount; simulate envelope insertion | Envelope accepted; receipt printed showing deposit amount and updated balance; transaction logged | The envelope is accepted; a receipt is printed displaying the correct deposit amount but an incorrect updated balance, which is one less than the actual amount, and the wrong available balance is shown; however, the transaction is logged correctly. | IN-PROGRESS |
| 9 | Transfer | System performs a legitimate transfer | System prompts for transfer details (source, | Select valid source and destination accounts; enter a | Transfer completed; receipt printed with correct | The transfer is completed; a receipt is printed | RESOLVED |

| # | Category | Objective | Precondition | Input | Expected Result | Actual Result | Status |
|---|---|---|---|---|---|---|---|
| | | transaction properly | destination, amount) | valid transfer amount | details and updated balances; transaction logged | containing the correct details and updated balances; the transaction is logged. | |
| 10 | Inquiry | System performs a legitimate balance inquiry transaction | System displays the transaction menu | Choose balance inquiry; select an account (e.g., Checking) | Receipt printed showing correct account balance; transaction logged | Receipt printed showing incorrect card number card 1 shows card 2 card 2 shows card 3 | IN-PROGRESS |
| 11 | Transaction Cancellation | Customer cancels a transaction before completion | System is in the middle of a transaction (e.g., during withdrawal) | Press the "Cancel" key | System displays a cancellation message; transaction aborted; returns to the transaction menu or ejects card | The system displays a cancellation message, aborts the transaction, and either returns to the transaction menu or ejects the card. | RESOLVED |
| 12 | Transaction | System handles an invalid menu option | Menu of transactions being displayed | Press menu option that is not 1,2,3,4 | An appropriate message is displayed and re-entry of transaction type is again requested | The system dispenses $20 | IN-PROGRESS |
| 13 | Transaction Cancellation | Customer cancels any transaction | System displays any Transaction e.g Withdraw, Deposit, Money Transfer, Balance Inquiry | Press the "Cancel" key | System displays a would you like to do another transaction message | Spelling mistake corrected | RESOLVED |
| 14 | Balance Inquiry | user selects Balance Inquiry | Menu of balance Inquiry | User presses 4 for balance inquiry | All accounts should be displayed | All accounts are displayed | RESOLVED |

| 15 | Invalid PIN Extension | Leading Zeros in PIN | System is asking for entry of PIN | For card 1 user enters 0042 | Card Ejection with error message "FAILURE invalid card" or "PIN was incorrect" | Card is accepted | IN-PROGRESS |
|----|----|----|----|----|----|----|----|
| 16 | Balance Inquiry | user selects money market | Menu of balance Inquiry | User presses 2 | Displays account information | Displays Unknown Error on the green screen and $500 appears right below the green screen and the receipt prints | IN-PROGRESS |
| 17 | Transaction | Transaction finished | System displays any Transaction e.g Withdraw, Deposit, Money Transfer, Balance Inquiry | User finishes a transaction | System displays a would you like to do another transaction message | Spelling mistake corrected | RESOLVED |
| 33 | Inquiry | System asks customer to choose an account to inquire about | Menu of transaction types is being displayed | Choose Inquiry transaction | System displays a menu of account types | System displays a menu of account types | RESOLVED |
| 37 | Invalid PIN Extension | Correct re-entry of PIN is accepted | Request to re-enter PIN is being displayed | Enter correct PIN | Original transaction completes successfully | Original transaction completes successfully | RESOLVED |
| 39 | Invalid PIN Extension | Correct re-entry of PIN on the second try is accepted | Request to re-enter PIN is being displayed | Enter incorrect PIN first, then correct PIN | Original transaction completes successfully | Original transaction completes successfully | RESOLVED |
| 40 | Invalid PIN Extension | Correct re-entry of PIN on the third try is accepted | Request to re-enter PIN is being displayed | Enter incorrect PIN twice, then correct PIN | Original transaction completes successfully | Original transaction completes successfully | RESOLVED |

| 7 | Withdrawal – Insufficient Account Funds | Withdrawal processing when account funds are low | Transaction menu is displayed; account balance is lower than the requested amount | Select withdrawal; enter an amount exceeding the account balance | Error message "Insufficient funds" is displayed; no cash is dispensed | Error message "Insufficient funds" is displayed; no cash is dispensed | RESOLVED |
|---|---|---|---|---|---|---|---|
| 9 | Deposit - Valid | Processing a deposit transaction | Transaction menu is displayed; deposit option is available | Select deposit; choose an account; enter a valid deposit amount; simulate envelope insertion | Correct Amount is deposited into respective account, ATM adds deposited number to the overall balance. | Incorrect Value is displayed, every deposit amount is added but then it subtracts $0.10 from balance | IN-PROGRESS |
| 13 | Transfer Insufficient Account Funds | Handling invalid input during transfer | Transfer process initiated | Enter an invalid (e.g., negative) amount | If invalid amount is inputted, notifies user and directs user for next step | ATM Freezes with blank screen | IN-PROGRESS |
| 14 | Transfer – Cancellation | Handling cancellation during transfer | Transfer process initiated | Start a transfer then press "Cancel" | Transferring of balance is cancelled leaving both accounts unaffected | Cancel button does not work, transfer goes through regardless. | IN-PROGRESS |