

10 APPENDIX E - FUNCTIONAL TEST SUITE

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output |
|-------------|------------------------|--|---|---|--|
| 1 | System Startup | System is started when the switch is turned "on" | System is off | Activate the "on" switch | System requests initial cash amount |
| 2 | System Startup | System accepts initial cash amount | System is requesting cash amount | Enter a legitimate amount | System is on |
| 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 |
| 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 |
| 5 | Session | System reads a customer's ATM card | System is on and not servicing a customer | Insert a readable card | Card is accepted; System asks for entry of PIN |
| 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 |
| 7 | Session | System accepts customer's PIN | System is asking for entry of PIN | Enter a PIN | System displays a menu of transaction types |
| 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 |
| 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 |
| 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 |
| 11 | Transaction | System handles an invalid PIN properly | A readable card has been entered | Enter an incorrect PIN and then attempt a transaction | The Invalid PIN Extension is performed |

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output |
|-------------|-------------------|--|--|--|--|
| 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 |
| 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 |
| 14 | Withdrawal | System performs a legitimate withdrawal transaction properly | System is displaying the menu of withdrawal amounts | Choose an amount that the system currently has and which is not greater than the account balance | System dispenses this amount of cash; System prints a correct receipt showing amount and correct updated balance; System records transaction correctly in the log (showing both message to the bank and approval back) |
| 15 | Withdrawal | System verifies that it has sufficient cash on hand to fulfill the request | System has been started up with less than the maximum withdrawal amount in cash on hand; System is requesting a withdrawal amount | Choose an amount greater than what the system currently has | System displays an appropriate message and asks customer to choose a different amount |
| 16 | Withdrawal | System verifies that customer's balance is sufficient to fulfill the request | System is requesting a withdrawal amount | Choose an amount that the system currently has but which is greater than the account balance | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 17 | Withdrawal | A withdrawal transaction can be cancelled by the customer any time prior to choosing the dollar amount | System is displaying menu of account types | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 18 | Withdrawal | A withdrawal transaction can be cancelled by the customer any time prior to choosing the dollar amount | System is displaying menu of dollar amounts | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output |
|-------------|-----------------|--|---|----------------------------------|---|
| 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 |
| 20 | Deposit | System asks customer to enter a dollar amount to deposit | Menu of account types is being displayed | Choose checking account | System displays a request for the customer to type a dollar amount |
| 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 customer insert an envelope |
| 22 | Deposit | System performs a legitimate deposit transaction properly | System is requesting that customer insert an envelope | Insert an envelope | System accepts envelope; System prints a correct receipt showing amount and correct updated balance; System records transaction correctly in the log (showing message to the bank, approval back, and acceptance of the envelope) |
| 23 | Deposit | A deposit transaction can be cancelled by the customer any time prior to inserting an envelope | System is displaying menu of account types | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 24 | Deposit | A deposit transaction can be cancelled by the customer any time prior to inserting an envelope | System is requesting customer to enter a dollar amount | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 25 | Deposit | A deposit transaction can be cancelled by the customer any time prior to inserting an envelope | System is requesting customer to insert an envelope | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 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 |
| 27 | Transfer | System asks customer to choose | Menu of account types to transfer | Choose checking | System displays a menu of account types specifying |

| Test Case # | Use Case | Function Being Tested | Initial System State | Input | Expected Output |
|-------------|-----------------|--|---|----------------------------------|---|
| | | an account to transfer to | from is being displayed | account | transfer to |
| 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 |
| 29 | Transfer | System performs a legitimate transfer transaction properly | System is displaying a request for the customer to type a dollar amount | Enter a legitimate dollar amount | System prints a correct receipt showing amount and correct updated balance; System records transaction correctly in the log (showing both message to the bank and approval back) |
| 30 | Transfer | A transfer transaction can be cancelled by the customer any time prior to entering dollar amount | System is displaying menu of account types specifying transfer from | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 31 | Transfer | A transfer transaction can be cancelled by the customer any time prior to entering dollar amount | System is displaying menu of account types specifying transfer to | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 32 | Transfer | A transfer transaction can be cancelled by the customer any time prior to entering dollar amount | System is requesting customer to enter a dollar amount | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 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 |
| 34 | Inquiry | System performs a legitimate inquiry transaction properly | System is displaying menu of account types | Choose checking account | System prints a correct receipt showing correct balance; System records transaction correctly in the log (showing both message to the bank and approval back) |

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|-------------|------------------------------|---|---|--|---|
| 35 | Inquiry | An inquiry transaction can be cancelled by the customer any time prior to choosing an account | System is displaying menu of account types | Press "Cancel" key | System displays an appropriate message and offers customer the option of choosing to do another transaction or not. |
| 36 | Invalid PIN Extension | Customer is asked to reenter PIN | | Enter an incorrect PIN; Attempt an inquiry transaction on the customer's checking account | Customer is asked to re-enter PIN |
| 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 |
| 38 | Invalid PIN Extension | A correctly re-entered PIN is used for subsequent transactions | An incorrect PIN has been re-entered and transaction completed normally | Perform another transaction | This transaction completes successfully as well |
| 39 | Invalid PIN Extension | Incorrect re-entry of PIN is not accepted | Request to re-enter PIN is being displayed | Enter incorrect PIN | An appropriate message is displayed and re-entry of the PIN is again requested |
| 40 | 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 the first time, then correct PIN the second time | Original transaction completes successfully |
| 41 | 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 the first time and second times, then correct PIN the third time | Original transaction completes successfully |
| 42 | Invalid PIN Extension | Three incorrect re-entries of PIN result in retaining card and aborting transaction | Request to re-enter PIN is being displayed | Enter incorrect PIN three times | An appropriate message is displayed; Card is retained by machine; Session is terminated |