**Test Cases**

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**Login Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify that user cannot login if another login session has been created. | User attempts to login when another person is logged in. | The user is notified that they must first logout before they attempt another login. | logn000.in  logn000.out  logn000.trans |
| Verify that username exists when the user logs in. | User attempts to login when don’t currently have an account. | The user is notified that they do not have a valid account and must speak to an admin before being able to login in. | logn001.in  logn001.out  logn001.trans |
| Verify that users and admins have different privileges | Use admin command as user and as admin. | User is unable to perform admin operation, and admin is able to perform operation | logn002.in  logn002.out  logn002.trans |
| Verify login must be performed before other commands can be used | Use commands before user login. | User is unable to perform operation since they are not logged in | logn003.in  logn003.out  logn003.trans |

**Withdrawal Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account holder's name and account number correspond with each other. | Admin and standard try to access names without accounts, with wrong account numbers, and with account numbers that do not correspond to the names. | The user is notified the account is not valid and no changes occur. | with000.in  with000.out  with000.trans |
| Verify invalid dollar values are rejected. | Admin and standard try to withdraw 0 and negative dollar (-5) values. | User is informed that only positive values are accepted; no withdrawal occurs. | with001.in  with001.out  with001.trans |
| Verify that only #####.## number of decimals is accepted | As admin & standard, try various nonconforming inputs: 654321.12, 000005.00, .50, 5, 5., 5.000, & 5.0. | User is informed that their format is invalid. | with002.in  with002.out  with002.trans |
| Verify forbidden symbols are not accepted. | As admin & standard, try to enter a number with preceding, trailing dollar signs and comma delimiters. | User is informed that the symbol is not acceptable. | with003.in  with003.out  with003.trans |
| Verify only canadian bill values are allowed | Try to withdraw coin values as admin & standard. | User is informed that only canadian bill values are acceptable. | with004.in  with004.out  with004.trans |
| Verify dollar value of $5 is accepted | Try to withdraw 5.00 in admin & standard mode | 10.00 is withdrawn across the session, with transaction fees for standard and none for admin. | with005.in  with005.out  with005.trans |
| Verify composite dollar value (mixed bills) is accepted | Try to withdraw 15.00 | User successfully withdraws 15.00 | with006.in  with006.out  with006.trans |
| Verify single account withdraw limit cannot be exceeded | In standard mode, try to withdraw 500, then 100 and 405, then 400, then 5. | 500 will be withdrawn, with error messages for the other attempts. | with007.in  with007.out  with007.trans |
| Verify transaction fees are not counted towards withdrawal limit. | In standard mode, withdraw 5 then 495 dollars. | 500.00 will be withdrawn in total without conflicting with the limit. | with008.in  with008.out  with008.trans |
| Verify limits of transfer & paybill do not count towards withdrawal. | Bring transfer & paybill to limit and test withdrawal after each. | Amount transferred and paid will breach 500.00 but all withdrawals will succeed. | with009.in  with009.out  with009.trans |
| Verify account limits are separate | Withdraw $1000 dollars from 2 accounts. | $1000 will be withdrawn. | with010.in  with010.out  with010.trans |
| Verify single account withdraw limit for admins doesn't apply | Withdraw over limit as admin before and after standard reaches it | All money is withdrawn successfully. | with011.in  with011.out  with011.trans |
| Verify that correct plan transaction fees apply. | Withdraw as student & nonstudent. | The student is charged 5 cents while the nonstudent is charged 10. | with012.in  with012.out  with012.trans |
| Verify withdraw for admins does not incur transaction fee | Withdraw from SP and NS as admin. | No transaction fees will be applied. | with013.in  with013.out  with013.trans |
| Verify withdrawal with resulting zero balance is accepted | In standard mode for SP and NS, withdraw so that the remaining balance is canceled by the transaction fee. | The accounts will both be at zero. | with014.in  with014.out  with014.trans |
| Verify withdrawal with resulting negative balance is rejected | Withdraw $5 more than balance (within transaction limit) as admin & standard | User is informed that their balance would become negative. | with015.in  with015.out  with015.trans |
| Verify that previous transaction fees are factored into balance calculations properly | Perform withdrawal in standard mode after withdrawal, transfer, paybill, deposit for SP and NS | Transaction fees accumulate appropriately | with016.in  with016.out  with016.trans |

**Transfer Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account number for transfer. | Use incorrect account number when transferring. | User is unable to transfer from a different account | tran000.in  tran000.out  tran000.trans |
| Verify user cannot transfer to the same account | Transfer to the same account. | User is unable to transfer to the same account | tran001.in  tran001.out  tran001.trans |
| Verify user can transfer at the transfer zero dollars | Attempt to transfer zero dollars. | User is unable to transfer 0 dollars. | tran002.in  tran002.out  tran002.trans |
| Verify user transfers incurs fees where the admin does not | Attempt to transfer 100 in student user account and then 100 in admin account. | Account reduces 100.50 because of fees when user transfers, account reduces by 100 when admin transfers | tran003.in  tran003.out  tran003.trans |
| Verify max transfer | Test 1000 dollar transfer | Account reduces 1000.50 because of fees when user transfers | tran004.in  tran004.out  tran004.trans |
| Verify working transfer limit | Test 1005 dollar transfer | Account does not reduce any money. | tran005.in  tran005.out  tran005.trans |
| Verify summing of transfers | Test a 505 dollar transfer after 550 dollar transfer | Account reduces 500.50 because of fees when user transfers | tran006.in  tran006.out  tran006.trans |
| Verify only valid inputs are accepted | Test invalid inputs - 'a' | Account denies all invalid inputs for transfer. | tran007.in  tran007.out  tran007.trans |
| Verify users can transfer between own accounts. | Have someone transfer from one of their own accounts to another of their own accounts. | The transfer completes successfully both ways. | tran008.in  tran008.out  tran008.trans |
| Verify balance cannot exceed maximum | As admin and user try to transfer an amount that would cause balance to exceed maximum according to current balance and previous deposit. | All transfers are rejected. | tran009.in  tran009.out  tran009.trans |

**Paybill Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify the canon companies are accepted | As admin and standard, pay bills to EC, CQ, and TV. | Each payment runs successfully. | payb000.in  payb000.out  payb000.trans |
| Verify invalid company names are not accepted | In admin & standard mode, try to pay a bill to BS, SBS, S, TVI, and CE | User will be informed that these company names are not valid. | payb001.in  payb001.out  payb001.trans |
| Verify account holder's name and account number exist & correspond with each other. | Admin and standard try to access names without accounts, with wrong account numbers, and with account numbers that do not correspond to the names. | The user is notified the account is not valid and no changes occur. | payb002.in  payb002.out  payb002.trans |
| Verify invalid dollar values are rejected. | Admin and standard try to pay 0 and negative dollar (-5) values. | User is informed that only positive values are accepted; no billing occurs. | payb003.in  payb003.out  payb003.trans |
| Verify that only #####.## number of decimals is accepted | As admin & standard, try various nonconforming inputs: 654321.12, 000005.00, .50, 5, 5., 5.000, & 5.0. | User is informed that their format is invalid. | payb004.in  payb004.out  payb004.trans |
| Verify forbidden symbols are not accepted. | As admin & standard, try to enter a number with preceding, trailing dollar signs and comma delimiters. | User is informed that the symbol is not acceptable. | payb005.in  payb005.out  payb005.trans |
| Verify account & recipient limits are separate | Pay $8000 to 2 recipients across 2 accounts | $8000 will be paid | payb006.in  payb006.out  payb006.trans |
| Verify single account withdraw limit for admins doesn't apply | Pay over limit as admin before and after standard reaches it | All money is paid successfully. | payb007.in  payb007.out  payb007.trans |
| Verify that correct plan transaction fees apply. | Pay as student & nonstudent. | The student is charged 5 cents while the nonstudent is charged 10. | payb008.in  payb008.out  payb008.trans |
| Verify paybill for admins does not incur transaction fee | Pay from SP and NS as admin. | No transaction fees will be applied. | payb009.in  payb009.out  payb009.trans |
| Verify paybill with resulting zero balance is accepted | In standard mode for SP and NS, pay so that the remaining balance is canceled by the transaction fee. | The accounts will both be at zero. | payb010.in  payb010.out  payb010.trans |
| Verify paybill with resulting negative balance is rejected | Pay $5 more than balance (within transaction limit) as admin & standard | User is informed that their balance would become negative. | payb011.in  payb011.out  payb011.trans |
| Verify that previous transaction fees are factored into balance calculations properly | Perform paybill in standard mode after withdrawal, transfer, paybill, deposit for SP and NS | Transaction fees accumulate appropriately | payb012.in  payb012.out  payb012.trans |
| Verify transaction fees are not counted towards paybill limit. | In standard mode, pay 1 then 1995 dollars. | 2000.00 will be paid in total without conflicting with the limit. | payb013.in  payb013.out  payb013.trans |
| Verify single account paybill limit cannot be exceeded | In standard mode, try to pay 2005, then 100 and 1905, then 1900, then 5. | 2000 will be paid, with error messages for the other attempts. | payb014.in  payb014.out  payb014.trans |

**Deposit Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account holder's name and account number correspond with each other. | Admin and standard try to access names without accounts, with wrong account numbers, and with account numbers that do not correspond to the names. | The user is notified the account is not valid and no changes occur. | depo000.in  depo000.out  depo000.trans |
| Verify invalid dollar values are rejected. | Admin and standard try to deposit 0 and negative dollar (-5) values. | User is informed that only positive values are accepted; no deposit occurs. | depo001.in  depo001.out  depo001.trans |
| Verify different numeric inputs. | As admin & standard, try various nonconforming inputs: 654321.12, 000005.00, 5, 5., 5.000, & 5.0. | User is informed that their format is invalid if above max value, otherwise it's allowed. | depo002.in  depo002.out  depo002.trans |
| Verify forbidden symbols are not accepted. | As admin & standard, try to enter a number with a special character. | User is informed that the symbol is not acceptable. | depo003.in  depo003.out  depo003.trans |
| Verify that correct plan transaction fees apply. | Deposit as student & nonstudent. | The student is charged 5 cents while the nonstudent is charged 10. | depo004.in  depo004.out  depo004.trans |
| Verify deposit for admins does not incur transaction fee | Deposit in SP and NS as admin. | No transaction fees will be applied. | depo005.in  depo005.out  depo005.trans |
| Verify that transaction fees are factored into balance calculations properly | Deposit in standard mode for SP and NS | Transaction fees accumulate appropriately. | depo006.in  depo006.out  depo006.trans |
| Verify deposited funds are not available for use. | Test use of deposited funds with withdraw, paybill, and transfer in standard & admin mode. | No transactions besides the initial deposit will complete. | depo007.in  depo007.out  depo007.trans |
| Verify balance cannot exceed maximum. | As admin and user try to deposit an amount that would cause balance to exceed maximum according to current balance and from previous deposit. | All transactions that would break maximum balance are rejected. | depo008.in  depo008.out  depo008.trans |

**Create Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account creation (with valid input). | Admin enters an account holder's name that is under 20 characters and initial balance less than $99999.99 into the create feature. | Information is saved to the bank account transaction file with this new information and a uniquely generated account number. | crte000.in  crte000.out  crte000.trans |
| Verify account creation (with invalid name input – too long). | Admin enters an account holder's name that is greater than 20 characters and initial balance less than $99999.99 into the create feature. | Transaction is allowed but the name is truncated to 20 characters. | crte001.in  crte001.out  crte001.trans |
| Verify account creation (with used name already). | Admin enters an account holder's name that is already used. | Transaction is allowed. | crte002.in  crte002.out  crte002.trans |
| Verify account creation (with invalid inital balance input). | Admin enters an account holder's name that is less than or equal to 20 characters and initial balance greater than $99999.99 into the create feature. | Transaction is denied and the admin is notified that the initial balance is to much. | crte003.in  crte003.out  crte003.trans |
| Verify account creation (with both inputs being invalid). | Admin enters an account holder's name that is greater than 20 characters and initial balance greater than $99999.99 into the create feature. | Transaction is denied and the admin is notified that the initial balance is too much. | crte004.in  crte004.out  crte004.trans |
| Verify normal users cannot access the create feature. | Normal user attempts to use the create feature. | The command is rejected. | crte005.in  crte005.out  crte005.trans |
| Verify account is not available in the same session. | A transaction is done with the newly created account holder's name and account number. | Transaction is denied because the file hasn't been sent to the back end yet for processing (same session) | crte006.in  crte006.out  crte006.trans |

**Delete Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account holder's name and account number correspond with each other (Incorrect name, correct number). | Admin enters an incorrect account holder's name but correct account number. | The admin is notified the account is not valid. | delt000.in  delt000.out  delt000.trans |
| Verify account holder's name and account number correspond with each other (Correct name, incorrect number). | Admin enters a correct account holder's name but incorrect account number. | The admin is notified the account is not valid. | delt001.in  delt001.out  delt001.trans |
| Verify account holder's name and account number correspond with each other (Correct name, correct number but not matching). | Admin enters a correct account holder and correct account number but they do not correspond to each other. | The admin is notified the account is not valid. | delt002.in  delt002.out  delt002.trans |
| Verify normal users can not access the disable feature. | Normal user attempts to use the delete feature. | The command is rejected. | delt003.in  delt003.out  delt003.trans |
| Verify admin can delete an account. | Admin enters a correct account holder, correct account number and they do correspond to each other. | The information is saved to the bank account transaction file saying that the account is now deleted. | delt004.in  delt004.out  delt004.trans |
| Verify user can not do transactions to a deleted account. | Enter the deleted account's correct account holder's name, account number, and an amount of money in the withdraw feature. | Command is denied because the account is deleted. | delt005.in  delt005.out  delt005.trans |
| Verify admin can not do transactions to a deleted account. | Enter the deleted account's correct account holder's name, account number, and an amount of money in the withdraw feature. | Command is denied because the account is deleted. | delt006.in  delt006.out  delt006.trans |

**Disable Test Cases**

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account holder's name and account number correspond with each other (Incorrect name, correct number). | Admin enters an incorrect account holder's name but correct account number. | The admin is notified the account is not valid. | dsbl000.in  dsbl000.out  dsbl000.trans |
| Verify account holder's name and account number correspond with each other (Correct name, incorrect number). | Admin enters a correct account holder's name but incorrect account number. | The admin is notified the account is not valid. | dsbl001.in  dsbl001.out  dsbl001.trans |
| Verify account holder's name and account number correspond with each other (Correct name, correct number but not matching). | Admin enters a correct account holder and correct account number but they do not correspond to each other. | The admin is notified the account is not valid. | dsbl002.in  dsbl002.out  dsbl002.trans |
| Verify normal users cannot access the disable feature. | Normal user attempts to use the disable feature. | The command is rejected. | dsbl003.in  dsbl003.out  dsbl003.trans |
| Verify admin can change an account from A (active) to D (disabled). | Admin enters a correct account holder, correct account number and they do correspond to each other. | The information is saved to the bank account transaction file saying that the account is now disabled. | dsbl004.in  dsbl004.out  dsbl004.trans |
| Verify user withdraw transaction can no longer be done to a disabled account - user. | Enter the disabled account's correct account holder's name, account number, and an amount of money in the withdraw feature. | Command is denied because the account is disabled. | dsbl005.in  dsbl005.out  dsbl005.trans |
| Verify user deposit transaction can no longer be done to a disabled account - user. | Enter the disabled account's correct account holder's name, account number, and an amount of money in the deposit feature. | Command is denied because the account is disabled. | dsbl006.in  dsbl006.out  dsbl006.trans |
| Verify user paybill transaction can no longer be done to a disabled account - user. | Enter the disabled account's correct account holder's name, account number, company, and an amount of money to pay in the paybill feature. | Command is denied because the account is disabled. | dsbl007.in  dsbl007.out  dsbl007.trans |
| Verify delete transaction can still be done to a disabled account - user. | Enter the disabled account's correct account holder's name and account number in the delete feature. | Disabled account is deleted. | dsbl008.in  dsbl008.out  dsbl008.trans |
| Verify disable transaction can no longer be done to a disabled account - user. | Enter the disabled account's correct account holder's name and account number in the disable feature. | Command is denied because the account is disabled. | dsbl009.in  dsbl009.out  dsbl009.trans |
| Verify user transfer transaction can no longer be done with a disabled account (From an account to a disabled account) - user. | Enter the disabled account's correct account holder's name and account number, another account number and an amount of money in the transfer feature. | Command is denied because the account is disabled (disabled precedes valid account) - user. | dsbl010.in  dsbl010.out  dsbl010.trans |
| Verify user transfer transaction can no longer be done with a disabled account (From a disabled account to another account) - user. | Enter an account holder's name, account number, the disabled account number, and an amount of money in the transfer feature. | Command is denied because the account is disabled (disabled precedes valid account). | dsbl011.in  dsbl011.out  dsbl011.trans |
| Verify user withdraw transaction can no longer be done to a disabled account - admin. | Enter the disabled account's correct account holder's name, account number, and an amount of money in the withdraw feature. | Command is denied because the account is disabled. | dsbl012.in  dsbl012.out  dsbl012.trans |
| Verify user deposit transaction can no longer be done to a disabled account - admin. | Enter the disabled account's correct account holder's name, account number, and an amount of money in the deposit feature. | Command is denied because the account is disabled. | dsbl013.in  dsbl013.out  dsbl013.trans |
| Verify user paybill transaction can no longer be done to a disabled account - admin. | Enter the disabled account's correct account holder's name, account number, company, and an amount of money to pay in the paybill feature. | Command is denied because the account is disabled. | dsbl014.in  dsbl014.out  dsbl014.trans |
| Verify user transfer transaction can no longer be done with a disabled account (From an account to a disabled account) - admin. | Enter the disabled account's correct account holder's name and account number, another account number and an amount of money in the transfer feature.  Test Input: | Command is denied because the account is disabled (disabled precedes valid account) - admin. | dsbl015.in  dsbl015.out  dsbl015.trans |
| Verify user transfer transaction can no longer be done with a disabled account (From a disabled account to another account) - admin. | Enter an account holder's name, account number, the disabled account number, and an amount of money in the transfer feature. | Command is denied because the account is disabled (disabled precedes valid account). | dsbl016.in  dsbl016.out  dsbl016.trans |

**Change Plan Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify account holder's name and account number correspond with each other (Incorrect name, correct number). | Admin enters an incorrect account holder's name but correct account number. | The admin is notified the account is not valid. | chng000.in  chng000.out  chng000.trans |
| Verify account holder's name and account number correspond with each other (Correct name, incorrect number). | Admin enters a correct account holder's name but incorrect account number. | The admin is notified the account is not valid. | chng001.in  chng001.out  chng001.trans |
| Verify account holder's name and account number correspond with each other (Correct name, correct number but not matching). | Admin enters a correct account holder and correct account number but they do not correspond to each other. | The admin is notified the account is not valid. | chng002.in  chng002.out  chng002.trans |
| Verify admin can change an account from SP (student) to NP (non-student). | Admin enters a correct account holder, correct account number and they do correspond to each other. | The information is saved to the bank account transaction file saying that the account payment plan is now NP (non-student). | chng003.in  chng003.out  chng003.trans |
| Verify admin can change an account from NP (non-student) to SP (student). | Admin enters a correct account holder, correct account number and they do correspond to each other. | The information is saved to the bank account transaction file saying that the account payment plan is now SP (student). | chng004.in  chng004.out  chng004.trans |
| Verify normal users can not access the changeplan feature. | Normal user attempts to use the changeplan feature. | The command is rejected. | chng005.in  chng005.out  chng005.trans |

**Logout Test Cases**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify logout is successful. | User is unable to use operations after logout | User is unable to perform operations after logout | logt000.in  logt000.out  logt000.trans |

**Enable Functions**

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| **Scenario** | **Test Step** | **Expected Result** | **Files** |
| Verify disabled account is then enabled | Admin enables an account which is disabled. | Command is accepted. | enab000.in  enab000.out  enab000.trans |
| Verify only disabled accounts may be enabled. | Admin enables an enabled account. | Command is rejected. | enab001.in  enab001.out  enab001.trans |
| Verify normal users can not access the enable feature. | Normal user attempts to use the enable feature. | Command is rejected. | enab002.in  enab002.out  enab002.trans |
| Verify account holder's name and account number correspond with each other | Admin tries to access names without accounts, with wrong account numbers, and with account numbers that do not correspond to the names. | The user is notified the account is not valid; no changes occur. | enab003.in  enab003.out  enab003.trans |
| Verify future transactions can now be done to a re-enabled account. | After enabling, admin and user try withdrawal to test if the account can now to transactions. | The various operations complete successfully. | enab004.in  enab004.out  enab004.trans |