

## Requirement Problems

Requirements problems	Decision Made
It is unclear if portions of cents are allowed.	Assume only whole cents. Cent inputs with decimals will not be accepted
It is unclear if withdraw and transfer are in cents. Deposit specifies it's in cents	Assume withdraw and transfer are in cents
Output on negative test cases is unclear	Assume no output to summary transaction file when errors occur
It is stated that no further transactions can be completed on a deleted account, but deleting an account is not an instant process.	I assume this requirement is meant for after the nightly backend runs.

## Test Plan

**Test files:** We chose to include the content of our test files in the input file and output file columns of the test spreadsheet. The input file column always refers to the valid accounts list file, the output file column always refers to a transaction summary file.

For testing, we will be using the pytest framework. All of our tests will be organized in a “test” folder, which will contain all test files, our shell script for running the tests, and our output logs. Our tests will be organized based on the “informal groupings” we have given them, which are based off of the possible commands, such as “login”, “logout”, etc. Each informal grouping will have a python file, such as “test\_login.py”, which will contain all test cases for that group. The tests will be called by a bash script, which will run the tests, and then record all output into log files, parse the logs, and record the resulting data into a txt file, which will hold test results over time. The log file will simply detail the success or failure of each test (e.g. “login test 1 passed”).

The resulting test folder would appear as follows:

```
/test/
|
| ---- test_login.py
| ---- test_logout.py
| ---- etc.
| ---- test.sh
| ---- test_data.txt
/test_logs/
| ---- <date+time>.log
```

Informal grouping	Requirement	Test No.	Test Name	Purpose	Input	Input Files	Output	Output Files
login	No transaction other than login accepted before login		login	Must first login before any other transaction	login	none	Ask for session type	none
		R1T1	idle log out	Can't logout before logging in	logout	none	error prompt for user to login	none
		R1T2	idle createacct	Can't create an account before logging in	createacct	none	error prompt for user to login	none
		R1T3	idle deleteacct	Can't delete an account before logging in	deleteacct	none	error prompt for user to login	none
		R1T4	idle deposit	Can't deposit before logging in	deposit	none	error prompt for user to login	none
		R1T5	idle withdraw	Can't withdraw before logging in	withdraw	none	error prompt for user to login	none
		R1T6	idle transfer	Can't transfer an account before logging in	transfer	none	error prompt for user to login	none
	Should ask for a type of session	R1T7	login session atm	Ensure user can select atm	login atm	none	Successful login atm mode	none
		R2T1	login session teller	Ensure user can select teller	login agent	none	Successful login teller mode	none
		R2T2	login invalid session input	Ensure other options prompt user again	login flaj	none	Error prompting user to input either atm or teller	none
		R2T3						
	No subsequent login should be accepted after a login, until after a logout		ATM logged in login	Can't login once already logged in	login atm login	none	error telling user they are already logged in and they need to logout to login to a new account	none
		R3T1	Teller logged in login	Can't login once already logged in	login agent login	none	error telling user they are already logged in and they need to logout to login to a new account	none
		R3T2						
logout	Logout should only be accepted when logged in		Logout when logged in as ATM	Verify logout works	login atm logout	none	Successful logout	EOS 0000000 000 0000000 ***
		R4T1	Logout when logged in as teller	Verify logout works	login agent logout	none	Successful logout	EOS 0000000 000 0000000 ***
		R4T2						
createacct	Priviledged Transaction, only accepted in agent mode		ATM createacct	Verify ATM users cannot create accounts	login atm createacct	none	Error telling user only tellers can create accounts	none
		R5T1	Teller createacct	Verify Tellers can createacct	login agent createacct	none	User prompted for account number	none
		R5T2						
	New account number is exactly seven decimal digits not beginning with 0		createacct < 7 numbers for account number	Account numbers must be exactly 7 digits	login agent createacct 123456	none	Error prompt for user to enter a valid account number	none
		R6T1	createacct with account number starting with 0	Account numbers can not start with 0	login agent createacct 0123456	none	Error prompt for user to enter a valid account number	none
		R6T2	createacct > 7 numbers for account number	Account numbers must be exactly 7 digits	login agent createacct 12345678	none	Error prompt for user to enter a valid account number	none
		R6T3	account number contains non-decimal characters	Account for non-number entry	login agent createacct a234567	none	Error prompt for user to enter a valid account number	none
		R8T4	account number is 7 digits and doesn't start with 0	Postive test case for valid account number	login agent createacct 1234567	none	Ask for account name	none
		R8T5						
		R8T5	Repeat account number	Account numbers cannot be repeated	login agent createacct 1234567	1234567 0000000	Error prompt for user to enter a different account number	none
	New account name is between 3 and 30 alphanumeric characters, possibly including spaces but not beginning or ending with a space	R7T1	createacct name < 3 characters	Account name can't have less than 3 characters	login agent createacct 1234567 ab	none	Error prompt for user to enter a valid account name	none
		R8T3	createacct name > 30 characters	Account name can't have more than 30 characters	login agent createacct 1234567 abcdefghijklmnopqrstuvwxyzab	none	Error prompt for user to enter a valid account name	none
		R8T4	createacct name starting with space	Account name can't start with a space	login agent createacct 1234567 ab	none	Error prompt for user to enter a valid account name	none
		R8T5	createacct name ending with space	Account name can't end with a space	login agent createacct 1234567 ab	none	Error prompt for user to enter a valid account name	none
		R8T6	createacct with a valid account name	Positive test case for a valid account name	login agent createacct 1234567 abc logout	none	Account created successfully message	NEW 1234567 000 0000000 abc EOS 0000000 000 0000000 ***
		R8T7						
		R8T7						
deleteacct	Only accepted when logged in in agent mode		Delete account in ATM mode	Verify ATM user cannot delete accounts	login atm deleteacct 1234567	1234567 0000000	Error telling user command not accessible in ATM mode	none
		R9T1	Delete account in Teller mode	Verify tellers can delete accounts	login teller deleteacct	1234567 0000000	Prompt user to enter account number	none
		R9T2	Delete account invalid account number	Verify numbers must be valid	login teller deleteacct 1234566	1234567 0000000	Error telling user invalid account number	none
		R10T1						

Informal grouping	Requirement	Test No.	Test Name	Purpose	Input	Input Files	Output	Output Files
	Should check that the account number is valid, and save the account number and name in the transaction summary file	R10T2	Delete account valid account number	Verify transaction accepted with valid account number	login teller deleteacct 1234567	1234567 0000000	Prompt user for account name	none
		R10T3	Delete account with valid account number and a name inputted	Verify transaction accepted with valid account number and provided name	login teller deleteacct 1234567 f12rf logout	1234567 0000000	Successful transaction	DEL 1234567 000 0000000 f12rf EOS 0000000 000 0000000 ***
deposit	Should check that the account number is valid, and that the amount is valid	R11T1	deposit verify account number	verify deposit checks for valid account number in valid accounts list	login agent deposit 1234567	1234567 0000000	Amount to deposit:	none
		R11T2	Deposit verify invalid account number	Verify invalid accounts can't deposit	login agent deposit 1234567	0000000	Error invalid account number	none
		R11T2	Verify the deposit amount is numeric	Ensure that the amount deposited is a valid number	login agent deposit 1234567 1a2b	1234567 0000000	Error: input must be a number in cents	none
		R12T1	Agent mode deposit > \$999,999.99	Agent deposits can't be greater than \$999999.99	login agent deposit 1234567 100000000	1234567 0000000	Error prompting user to enter a deposit amount less than \$999,999.99	none
	Deposits above \$2,000 should be rejected in ATM mode (max \$999,999.99 in agent mode). For ATM, the daily deposit limit is \$5,000 per account	R12T2	Agent mode deposit <= \$999,999.99	Verify agent can deposit less than or equal to \$999999.99	login agent deposit 1234567 999999999	1234567 0000000	Transaction successful	DEP 1234567 99999999 0000000 *** EOS 0000000 000 0000000 ***
		R12T3	ATM deposit > \$2,000	ATM deposits can't be greater than \$2000	login atm deposit 1234567 200001	1234567 0000000	Error prompting user to enter a deposit amount less than \$2000	none
		R12T4	ATM deposit <= \$2,000	Verify atm deposits below \$2000 can be made	login atm deposit 1234567 200000	1234567 0000000	Transaction successful	DEP 1234567 200000 0000000 *** EOS 0000000 000 0000000 ***
		R12T5	Multiple ATM deposits totalling > \$5,000, one account	ATM desposits over a single day can not total greater than \$5000	login atm deposit 1234567 2000000 deposit 1234567 2000000 deposit 1234567 1000001	1234567 0000000	Error telling user to deposit less than \$5000 daily	DEP 1234567 200000 0000000 *** DEP 1234567 200000 0000000 *** DEP 1234567 100001 0000000 ***
	Withdrawals above \$1,000 should be rejected in ATM mode (max \$999,999.99 in agent mode)	R13T1	ATM withdraw invalid account	Prevent withdrawals from invalid accounts	login atm withdraw 1234567	none	Error telling user invalid account	none
		R13T2	ATM withdraw invalid number	Prevent withdrawals of invalid amounts	login atm withdraw 1234567 a12	1234567 0000000	Error telling user amount invalid	none
		R14T1	ATM withdraw > \$1,000	ATM withdrawals can't be above \$1000	login atm withdraw 1234567 100001	1234567 0000000	Error prompting user to enter a withdrawal amount less than \$1000	none
		R14T2	ATM withdrawl <= \$1,000	Verify ATM withdrawl less than \$1,000 work	login atm withdraw 1234567 100000 logout	1234567 0000000	Transaction successful	WDR 1234567 100000 0000000 *** EOS 0000000 000 0000000 ***
		R14T3	Agent withdraw > \$999,999.99	Agent withdrawals can't be greater than \$999999.99	login agent withdraw 1234567 100000000	1234567 0000000	Error prompting user to enter a withdrawal amount less than \$999,999.99	none
		R14T4	Agent withdraw <= \$999,999.99	Verify agent withdrawals <=\$999,999.99 work	login agent withdraw 1234567 999999999 logout	1234567 0000000	Transaction successful	WDR 1234567 99999999 0000000 *** EOS 0000000 000 0000000 ***
		R15T1	ATM withdraw multiple times, total > \$5,000	ATM withdrawals over a single day can not total greater than \$5000	login atm withdraw 1234567 100000 withdraw 1234567 100000 withdraw 1234567 100000 withdraw 1234567 100000 withdraw 1234567 100000 withdraw 1234567 100000 withdraw 1234567 100000	1234567 0000000	Error telling user they cannot withdraw more than \$5000 daily	WDR 1234567 100000 0000000 *** WDR 1234567 100000 0000000 *** WDR 1234567 100000 0000000 *** WDR 1234567 100000 0000000 *** WDR 1234567 100000 0000000 ***
		R16T1	Transfer invalid to account	Prevent transfers from invalid accounts	login atm transfer 1234567	0000000	Error telling user invalid from account	none
	Should check that the from account number, the to account number and that the amount is valid	R16T2	Transfer from invalid account	Prevent tansfers to invalid account	login atm transfer 1234567 1234566	1234567 0000000	Error telling user invalid to account	none
		R16T3	Transfer invalid amount	Prevent withdrawals of invalid amounts	login atm transfer 1234567 1234566 12fg	1234567 0000000	Error telling user amount invalid	none
		R17T1	ATM transfer > \$10,000	ATM transfers can't be greater than \$10000	login atm transfer 1234567 1000001	1234567 1234566 0000000	Error prompting user to enter a transfer amount less than \$10,000	none

Informal grouping	Requirement	Test No.	Test Name	Purpose	Input	Input Files	Output	Output Files
transfer	Transfer amounts of more than \$10,000 should be rejected in ATM mode (max \$999,999.99 in agent mode). Daily limit for transferring out of a single account is \$10,000 for ATM	R17T2	ATM transfer <= \$10,000	Atm transfers should work for <=\$10000	login atm transfer 1234567 1234566 1000000 logout	1234567 1234566 0000000	Successful transaction	XFR 1234567 1000000 1234566 *** EOS 1234567 000 0000000 ***
		R17T3	ATM transfers totalling > \$10,000	Total number of ATM transfers out of an account cannot be >\$10,000	login atm transfer 1234567 1234566 500000 transfer 1234567 1234566 500001	1234567 1234566 0000000	Error message stating you can't transfer more than \$10,000 from an account	XFR 1234567 500000 1234566 ***
		R17T3	Agent transfer > \$999,999.99	Teller mode transfers can't be greater than \$999999.99	login atm transfer 1234567 1234566 100000000 logout	1234567 1234566 0000000	Error prompting user to enter a transfer amount less than \$999,999.99	none
		R17T5	Agent transfer <= \$999,999.99	Teller should be able to transfer <= 999,999.99	login atm transfer 1234567 1234566 99999999 logout	1234567 1234566 0000000	Successful transaction	XFR 1234567 99999999 1234566 *** EOS 1234567 000 0000000 ***