



CSCI 3060U – Software Quality Assurance

Phase 01 - Front End Requirements

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Part 1 - Test Cases Table (Malhar Singh 100829423, Suthashan Tharmarajah 100748346):

General Notes:

- ***We are testing these together (login, withdraw, logout = one transaction), so once logged, don't need to check if logged in for each transaction code.***
- ***For the big transaction keywords we can do two tests, like if empty or invalid string, but for name, number..., we just combine into one and just say invalid input.***

Transaction	Test Name	Intention
Login	login1	Test that no other transaction is accepted before login.
	login2	Test for empty inputs to begin transactions.
	login3	Test if input is valid (no numbers or special characters: "login").
	login4	Test that "login" transaction is accepted. (account exists)
	login5	Test that user cannot login again without logging out first.
	login6	Test for empty inputs for transactions. (after logging in)
	login7	Test empty inputs for "standard" and "admin".
	login8	Test if input is valid (no numbers or special characters): "standard" or "admin".
	login9	Test that user can login as standard.
	login10	Test that user can login as admin.
	login11	Test that standard can only access unprivileged transactions.
	login12	Test that admin can access all transactions.
	login13	Test that user enters valid account holder's name (no empty string, no numbers or special characters) if standard account.

	login14	Test that user can see and access all accounts once logged in.
	login15	Test that login only works if account is active
Withdrawal	withdrawal1	Test if input is valid (no numbers or special characters: "withdrawal").
	withdrawal2	Test that user enters valid account holder's name (no empty string, no numbers or special characters) if admin.
	withdrawal3	Test that account number is valid for current user.
	withdrawal4	Test if user withdrawal is between \$1-\$500 for standard.
	withdrawal5	Test that user has enough money to withdraw that amount (so cannot have -ve balance).
	withdrawal6	Test that multiple withdrawals do not exceed \$500 for standard.
	withdrawal7	Test that withdrawal only works if account is active
	withdrawal8	Test that withdrawal only works if account is not deleted in current session
Transfer	transfer1	Test if input is valid (no numbers or special characters: "transfer").
	transfer2	Test that user enters valid account holder's name (no empty string, no numbers or special characters) if admin.
	transfer3	Test that "from" account number is valid for current user.
	transfer4	Test that "from" account number is a valid for any account in system.

	transfer5	Test that user is not transferring to the same account
	transfer6	Test if max amount is \$1-\$1000 if standard user.
	transfer7	Test that the account balance cannot be negative after transfer for “from” user
	transfer8	Test that the account balance cannot be negative after transfer for “to” user
	transfer9	Test that multiple transfers do not exceed \$1000 for standard.
	transfer10	Test that transfer only works if both accounts are active
Paybill	paybill1	Test if input is valid (no numbers or special characters: “paybill”.
	paybill2	Test that user enters valid account holder’s name (no empty string, no numbers or special characters) if admin.
	paybill3	Test that account number is valid for current user.
	paybill4	Test to validate company name
	paybill5	Test amount is \$1-\$2000 if standard
	paybill6	Test that account balance cannot be negative
	paybill7	Test that multiple paybills do not exceed \$2000 for standard.
	paybill8	Test that paybill only works if both accounts are active
Deposit	deposit1	Test if input is valid (no numbers or special characters: “deposit”.
	deposit2	Test that user enters valid account holder’s name (no empty string, no numbers or special characters) if admin.

	deposit3	Test that account number is valid for current user.
	deposit4	Test that deposit amount is valid (positive)
	deposit5	Test that user cannot access recently deposited funds for this session
	deposit6	Test that deposit only works if account is active
Create	create1	Test if input is valid (no numbers or special characters: "create").
	create2	Test that only admin can create an account
	create3	Test validation of account holder's name (≤ 20 chars, no numbers/special chars)
	create4	Ensure initial balance is between \$1 - \$99999.99
	create5	Verify that every account number is unique.
	create6	Test that this account cannot access other transactions in this session
Delete	delete1	Test if input is valid (no numbers or special characters: "delete").
	delete2	Check that only the admin can delete an account.
	delete3	Verify the account holder exists before deletion.
	delete4	Ensure the account number matches the account holder.
	delete5	Block any transactions on a deleted account.
	delete6	Only works if account is not disabled
	delete7	Test that user is automatically timed out of session (since no other transaction is accepted)

Disable	disable1	Test if input is valid (no numbers or special characters: “disable”.
	disable2	Check that only admin can disable an account
	disable3	Verify account holder’s name
	disable4	Verify account number exists for specified account
	disable5	Ensure account status changes from Active to Disabled
	disable6	Block transactions on a disabled account
	disable7	Test that user is automatically timed out of session (since no other transaction is accepted)
Changeplan	changeplan1	Test if input is valid (no numbers or special characters: “changeplan”.
	changeplan2	Check that only admin can change the payment plan
	changeplan3	Verify account holder’s name
	changeplan4	Verify account number exists for specified account
	changeplan5	Ensure plan switches state from Student plan to non-student plan correctly and vice versa
	changeplan6	Ensure the new plan is not active during the session
	changeplan7	Deny plan change on disabled/deleted accounts
	changeplan8	Only works if account is active
Logout	logout1	Test if input is valid (no numbers or special characters: “logout”.
	logout2	Test that user is logged in to log out
	logout3	Test that no transaction is accepted after logout

	logout4	Test multiple logout attempts
	logout5	Verify that both admin and standard logout behave the same
Total Test Cases: 80		

Part 2 – Expected Test I/O (Rania Rejdal 100881485):

Background

Each test case will include the following:

- Current Accounts File (input)
 - o A file containing the initial state of bank accounts.
- Transaction Log (input)
 - o A file containing the sequence of transactions to be processed.
- Transaction Summary File (output)
 - o The expected output file containing the summary of transactions after processing.
- Terminal Output (output)
 - o The expected output displayed on the terminal during the session.

Organization

Each test case is stored in a separate directory under the 'tests/' folder

Files are named consistently for clarity, as follows:

- 'current_accounts.txt': Initial state of bank accounts
- 'transaction_log.inp': Sequence of transactions
- 'expected_transaction_summary.etf': Expected transaction summary file
- 'expected_terminal_output.bto': Expected terminal output

Each test case will be organized into separate files and directories for clarity. The following demonstrates the directory structure.

tests/

├─ login/

| └─ login1/

| | └─ current_accounts.txt

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| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ login2/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ withdrawal/
| └─ withdrawal1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ transfer/
| └─ transfer1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ ...

```

- Note: For this assignment, all the test cases will be in this document file for the sake of convenience.

Test Cases

Login

Test Case: login1

- Intention: Test that no other transaction is accepted before login.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login1 input file login1.inp

withdrawal

login

admin

logout

3. Expected Transaction Summary File (Output): login1 expected bank account transaction file output login1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login1 expected terminal output login1.bto

Welcome to the Banking System.

Error: You must login first.

Enter session type:

Login accepted.

Session terminated.

Test Case: login2

- Intention: Test for empty inputs to begin transactions.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login2 input file login2.inp

(empty input)

login

admin

logout

3. Expected Transaction Summary File (Output): login2 expected bank account transaction file output login2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login2 expected terminal output login2.bto

Welcome to the Banking System.

Error: Invalid input.

Enter session type:

Login accepted.

Session terminated.

Test Case: login3

- Intention: Test if input is valid (no numbers or special characters: "login").
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login3 input file login3.inp

log1n

login

admin

logout

3. Expected Transaction Summary File (Output): login3 expected bank account transaction file output login3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login3 expected terminal output login3.bto

Welcome to the Banking System.

Error: Invalid input.

Enter session type:

Login accepted.

Session terminated.

Test Case: login4

- Intention: Test that “login” transaction is accepted (account exists).
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login4 input file login4.inp

login

standard

John Doe

logout

3. Expected Transaction Summary File (Output): login4 expected bank account transaction file output login4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login4 expected terminal output login4.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Session terminated.

Test Case: login5

- Intention: Test that user cannot login again without logging out first.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login5 input file login5.inp

login

standard

John Doe

login

logout

3. Expected Transaction Summary File (Output): login5 expected bank account transaction file output login5.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login5 expected terminal output login5.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Error: Already logged in.

Session terminated.

Test Case: login6

- Intention: Test for empty inputs for transactions (after logging in).
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login6 input file login6.inp

login

standard

John Doe

(empty input)

logout

3. Expected Transaction Summary File (Output): login6 expected bank account transaction file output login6.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login6 expected terminal output login6.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Error: Invalid input.

Session terminated.

Test Case: login7

- Intention: Test empty inputs for “standard” and “admin”.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login7 input file login7.inp

login

(empty input)

logout

3. Expected Transaction Summary File (Output): login7 expected bank account transaction file output login7.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login7 expected terminal output login7.bto

Welcome to the Banking System.

Enter session type:

Error: Invalid input.

Session terminated.

Test Case: login8

- Intention: Test if input is valid (no numbers or special characters): “standard” or “admin”.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login8 input file login8.inp

login

st@ndard

logout

3. Expected Transaction Summary File (Output): login8 expected bank account transaction file output login8.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login8 expected terminal output login8.bto

Welcome to the Banking System.

Enter session type:

Error: Invalid input.

Session terminated.

Test Case: login9

- Intention: Test that user can login as standard.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login9 input file login9.inp

login

standard

John Doe

logout

3. Expected Transaction Summary File (Output): login9 expected bank account transaction file output login9.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login9 expected terminal output login9.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Session terminated.

Test Case: login10

- Intention: Test that user can login as admin.
- Files:
- 1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login10 input file login10 .inp

login

admin

logout

3. Expected Transaction Summary File (Output): login10 expected bank account transaction file output login10 .etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login10 expected terminal output login10 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Session terminated.

Test Case: login11

- Intention: Test that standard can only access unprivileged transactions.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login11 input file login11 .inp

login

standard

John Doe

create

logout

3. Expected Transaction Summary File (Output): login11 expected bank account transaction file output login11 .etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login11 expected terminal output login11 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Error: Unauthorized transaction.

Session terminated.

Test Case: login12

- Intention: Test that admin can access all transactions.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login12 input file login12 .inp

login

admin

create

Alice Brown

200.00

logout

3. Expected Transaction Summary File (Output): login12 expected bank account transaction file output login12 .etf

05_Alice_Brown_____00003_00200.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): login12 expected terminal output login12 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter initial balance:

Account created successfully.

Session terminated.

Test Case: login13

- Intention: Test that user enters valid account holder's name (no empty string, no numbers or special characters) if standard account.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login13 input file login13 .inp

login

standard

John@Doe

logout

3. Expected Transaction Summary File (Output): login13 expected bank account transaction file output login13 .etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login13 expected terminal output login13 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Error: Invalid name.

Session terminated.

Test Case: login14

- Intention: Test that user can see and access all accounts once logged in.
 - Files:
1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login14 input file login14 .inp

login

standard

John Doe

withdrawal

00001

50.00

logout

3. Expected Transaction Summary File (Output): login14 expected bank account transaction file output login14 .etf

01_John_Doe_____00001_00050.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): login14 expected terminal output login14 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Withdrawal successful.

Session terminated.

Test Case: login15

- Intention: Test that login only works if account is active.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): login15 input file login15 .inp

login

standard

John Doe

logout

3. Expected Transaction Summary File (Output): login15 expected bank account transaction file output login15 .etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): login15 expected terminal output login15 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Error: Account is disabled.

Session terminated.

Withdrawal

Test Case: withdrawal1

- Intention: Test if input is valid (no numbers or special characters: “withdrawal”).
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal1 input file withdrawal1.inp

login

standard

John Doe

w1thdr@wal

logout

3. Expected Transaction Summary File (Output): withdrawal1 expected bank account transaction file output withdrawal1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal1 expected terminal output withdrawal1.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Error: Invalid transaction type.

Session terminated.

Test Case: withdrawal2

- Intention: Test that user enters valid account holder’s name (no empty string, no numbers or special characters) if admin.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal2 input file withdrawal2.inp

login

admin

withdrawal

John@Doe

00001

50.00

logout

3. Expected Transaction Summary File (Output): withdrawal2 expected bank account transaction file output withdrawal2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal2 expected terminal output withdrawal2.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Error: Invalid name.

Session terminated.

Test Case: withdrawal3

- Intention: Test that account number is valid for current user.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal3 input file withdrawal3.inp

login

standard

John Doe

withdrawal

00003

50.00

logout

3. Expected Transaction Summary File (Output): withdrawal3 expected bank account transaction file output withdrawal3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal3 expected terminal output withdrawal3.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Error: Invalid account number.

Session terminated

Test Case: withdrawal4

- Intention: Test if user withdrawal is between \$1-\$500 for standard.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal4 input file withdrawal4.inp

login

standard

John Doe

withdrawal

00001

600.00

logout

3. Expected Transaction Summary File (Output): withdrawal4 expected bank account transaction file output withdrawal4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal4 expected terminal output withdrawal4.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Error: Withdrawal amount exceeds limit.

Session terminated

Test Case: withdrawal5

- Intention: Test that user has enough money to withdraw that amount (so cannot have -ve balance).
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal5 input file withdrawal5.inp

login

standard

John Doe

withdrawal

00001

150.00

logout

3. Expected Transaction Summary File (Output): withdrawal5 expected bank account transaction file output withdrawal5.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal5 expected terminal output withdrawal5.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Error: Insufficient funds.

Session terminated

Test Case: withdrawal6

- Intention: Test that multiple withdrawals do not exceed \$500 for standard.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal6 input file withdrawal6.inp

login

standard

John Doe

withdrawal

00001

200.00

withdrawal

00001

200.00

withdrawal

00001

150.00

logout

3. Expected Transaction Summary File (Output): withdrawal6 expected bank account transaction file output withdrawal6.etf

01_John_Doe_____00001_00200.00__

01_John_Doe_____00001_00200.00__

01_John_Doe_____00001_00100.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal6 expected terminal output withdrawal6.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Withdrawal successful.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Withdrawal successful.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Withdrawal successful.

Session terminated

Test Case: withdrawal7

- Intention: Test that withdrawal only works if account is active.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal7 input file withdrawal7.inp

login

standard

John Doe

withdrawal

00001

50.00

logout

3. Expected Transaction Summary File (Output): withdrawal7 expected bank account transaction file output withdrawal7.etf

06_John_Doe_____00001_00000.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal7 expected terminal output withdrawal7.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account number:

Error: Account is disabled.

Session terminated

Test Case: withdrawal8

- Intention: Test that withdrawal only works if account is not deleted in current session.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00
00002_Jane_Smith_____A_00500.00
END_OF_FILE_____A_00000.00

2. Transaction Log (Input): withdrawal8 input file withdrawal8.inp

login
admin
delete
John Doe
00001
withdrawal
00001
50.00
logout

3. Expected Transaction Summary File (Output): withdrawal8 expected bank account transaction file output withdrawal8.etf

06_John_Doe_____00001_00000.00__
00_____00000_00000.00__

4. Expected Terminal Output (Output): withdrawal8 expected terminal output withdrawal8.bto

Welcome to the Banking System.
Enter session type:
Login accepted.
Enter transaction type:
Enter account holder's name:
Enter account number:
Account deleted successfully.
Enter transaction type:
Enter account number:
Error: Account is deleted.
Session terminated

Transfer

Test Case: transfer1

- Intention: Test if input is valid (no numbers or special characters: “transfer”).
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer1 input file transfer1.inp

login

standard

John Doe

transfer

transfer123

logout

3. Expected Transaction Summary File (Output): transfer1 expected bank account transaction file output transfer1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer1 expected terminal output transfer1.bto:
transfer1 expected terminal output transfer1.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Invalid input. Input contains numbers or special characters.

Session terminated.

Test Case: transfer2

- Intention: Test that user enters a valid account holder's name (no empty string, no numbers or special characters) if admin.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer2 input file transfer2.inp

login

admin

John_Doe123

logout

3. Expected Transaction Summary File (Output): transfer2 expected bank account transaction file output transfer2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer2 expected terminal output transfer2.bto:
transfer2 expected terminal output transfer2.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Invalid account holder's name. Name cannot contain numbers or special characters.

Session terminated.

Test Case: transfer3

- Intention: Test that "from" account number is valid for the current user.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer3 input file transfer3.inp

login

standard

John Doe

transfer

00002

00001

50.00

logout

3. Expected Transaction Summary File (Output): transfer3 expected bank account transaction file output transfer3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer3 expected terminal output transfer3.bto:
transfer3 expected terminal output transfer3.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Invalid account number. The 'from' account is not valid for the current user.

Session terminated.

Test Case: transfer4

- Intention: Test that “from” account number is valid for any account in the system.
 - Files:
1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer4 input file transfer4.inp

login

standard

John Doe

transfer

999999

00002

50.00

logout

3. Expected Transaction Summary File (Output): transfer4 expected bank account transaction file output transfer4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer4 expected terminal output transfer4.bto:
transfer4 expected terminal output transfer4.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Invalid account number. The 'from' account does not exist in the system.

Session terminated.

Test Case: transfer5

- Intention: Test that user is not transferring to the same account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer5 input file transfer5.inp

login

standard

John Doe

transfer

00001

00001

50.00

logout

3. Expected Transaction Summary File (Output): transfer5 expected bank account transaction file output transfer5.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer5 expected terminal output transfer5.bto:
transfer5 expected terminal output transfer5.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Enter account number to transfer to:

Cannot transfer to the same account.

Session terminated.

Test Case: transfer6

- Intention: Test if max amount is \$1-\$1000 if standard user.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer6 input file transfer6.inp

login

standard

John Doe

transfer

00001

00002

1500.00

logout

3. Expected Transaction Summary File (Output): transfer6 expected bank account transaction file output transfer6.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer6 expected terminal output transfer6.bto:
transfer6 expected terminal output transfer6.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Enter account number to transfer to:

Enter amount to transfer:

Invalid amount. Transfer amount must be between \$1 and \$1000 for standard users.

Session terminated.

Test Case: transfer7

- Intention: Test that the account balance cannot be negative after transfer for the “from” user.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer7 input file transfer7.inp

login

standard

John Doe

transfer

00001

00002

150.00

logout

3. Expected Transaction Summary File (Output): transfer7 expected bank account transaction file output transfer7.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer7 expected terminal output transfer7.bto:
transfer7 expected terminal output transfer7.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Enter account number to transfer to:

Enter amount to transfer:

Insufficient funds in the 'from' account to complete the transfer.

Session terminated.

Test Case: transfer8

- Intention: Test that the account balance cannot be negative after transfer for the “to” user.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer8 input file transfer8.inp

login

standard

John Doe

transfer

00001

00002

600.00

logout

3. Expected Transaction Summary File (Output): transfer8 expected bank account transaction file output transfer8.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer8 expected terminal output transfer8.bto:
transfer8 expected terminal output transfer8.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Enter account number to transfer to:

Enter amount to transfer:

The 'to' account cannot have a negative balance after the transfer.

Session terminated.

Test Case: transfer9

- Intention: Test that multiple transfers do not exceed \$1000 for standard users.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer9 input file transfer9.inp

login

standard

John Doe

transfer

00001

00002

600.00

transfer

00001

00002

500.00

logout

3. Expected Transaction Summary File (Output): transfer9 expected bank account transaction file output transfer9.etf

02_John_Doe_____00001_00600.00_00002

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer9 expected terminal output transfer9.bto:
transfer9 expected terminal output transfer9.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number to transfer from:

Enter account number to transfer to:

Enter amount to transfer:

Transfer successful.

Enter transaction type:

Enter account number to transfer from:

Enter account number to transfer to:

Enter amount to transfer:

Total daily transfer limit of \$1000 exceeded for standard users.

Session terminated.

Test Case: transfer10

- Intention: Test that transfer only works if both accounts are active.
- Files:
- 1. Current Accounts File (Input):

00001_John_Doe_____I_00100.00
00002_Jane_Smith_____A_00500.00
END_OF_FILE_____A_00000.00

2. Transaction Log (Input): transfer10 input file transfer10 .inp

login
standard
John Doe
transfer
00001
00002
50.00
logout

3. Expected Transaction Summary File (Output): transfer10 expected bank account transaction file output transfer10 .etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): transfer10 expected terminal output transfer10 .bto

Welcome to the Banking System.
Enter session type:
Enter account holder's name:
Login accepted.
Enter transaction type:
Enter account number to transfer from:
Enter account number to transfer to:
Transfer cannot be completed. One or both accounts are inactive.
Session terminated

Test Case: paybill1

- Intention: Test if input is valid (no numbers or special characters: "paybill").
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill1 input file paybill1.inp

login

standard

John Doe

p@yb1ll

logout

3. Expected Transaction Summary File (Output): paybill1 expected bank account transaction file output paybill1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill1 expected terminal output paybill1.bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Error: Invalid transaction type.

Session terminated.

Test Case: paybill2

- Intention: Test that user enters valid account holder's name (no empty string, no numbers or special characters) if admin.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill2 input file paybill2.inp

login

admin

paybill

John@Doe

00001

EC

50.00

logout

3. Expected Transaction Summary File (Output): paybill2 expected bank account transaction file output paybill2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill2 expected terminal output paybill2.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Error: Invalid name.

Session terminated.

Test Case: paybill3

- Intention: Test that account number is valid for current user.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill3 input file paybill3.inp

login

standard

John Doe

paybill

00003

EC

50.00

logout

3. Expected Transaction Summary File (Output): paybill3 expected bank account transaction file output paybill3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill3 expected terminal output paybill3 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Error: Invalid account number.

Session terminated.

Test Case: paybill4

- Intention: Test to validate company name.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill4 input file paybill4.inp

login

standard

John Doe

paybill

00001

InvalidCompany

50.00

logout

3. Expected Transaction Summary File (Output): paybill4 expected bank account transaction file output paybill4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill4 expected terminal output paybill4 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter company name:

Error: Invalid company name.

Session terminated.

Test Case: paybill5

- Intention: Test amount is \$1-\$2000 if standard.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill5 input file paybill5.inp

login

standard

John Doe

paybill

00001

EC

2500.00

logout

3. Expected Transaction Summary File (Output): paybill5 expected bank account transaction file output paybill5.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill5 expected terminal output paybill5 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter company name:

Enter amount to pay:

Error: Payment amount exceeds limit.

Session terminated.

Test Case: paybill6

- Intention: Test that account balance cannot be negative.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill6 input file paybill6.inp

login

standard

John Doe

paybill

00001

EC

150.00

logout

3. Expected Transaction Summary File (Output): paybill6 expected bank account transaction file output paybill6.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): expected terminal output paybill6 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter company name:

Enter amount to pay:

Error: Insufficient funds.

Session terminated.

Test Case: paybill7

- Intention: Test that multiple paybills do not exceed \$2000 for standard.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_02000.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill7 input file paybill7.inp

login

standard

John Doe

paybill

00001

EC

1000.00

paybill

00001

CQ

1000.00

paybill

00001

FI

100.00

logout

3. Expected Transaction Summary File (Output): paybill7 expected bank account transaction file output paybill7.etf

03_John_Doe_____00001_01000.00_EC

03_John_Doe_____00001_01000.00_CQ

03_John_Doe_____00001_00100.00_FI

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill7 expected terminal output paybill7 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter company name:

Enter amount to pay:

Bill payment successful.

Enter transaction type:

Enter account number:

Enter company name:

Enter amount to pay:

Bill payment successful.

Enter transaction type:

Enter account number:

Enter company name:

Enter amount to pay:

Bill payment successful.

Session terminated.

Test Case: paybill8

- Intention: Test that paybill only works if both accounts are active.
- Files:

1. Current Accounts File (Input):

00001_John_Doe_____D_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): paybill8 input file paybill8.inp

login

standard

John Doe

paybill

00001

EC

50.00

logout

3. Expected Transaction Summary File (Output): paybill8 expected bank account transaction file output paybill8.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): paybill8 expected terminal output paybill8 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Error: Account is disabled.

Session terminated.

Deposit

Test Case: deposit1

- Intention: Test if input is valid (no numbers or special characters: "deposit").

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): deposit1 input file deposit1.inp

login

standard

John Doe

d3p0s1t

logout

3. Expected Transaction Summary File (Output): deposit1 expected bank account transaction file output deposit1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): deposit1 expected terminal output deposit1 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Error: Invalid transaction type.

Session terminated.

Test Case: deposit2

- Intention: Test that user enters valid account holder's name (no empty string, no numbers or special characters) if admin.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): deposit2 input file deposit2.inp

login

admin

deposit

John@Doe

00001

50.00

logout

3. Expected Transaction Summary File (Output): deposit2 expected bank account transaction file output deposit2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): deposit2 expected terminal output deposit2 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Error: Invalid name.

Session terminated.

Test Case: deposit3

- Intention: Test that account number is valid for current user.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): deposit3 input file deposit3.inp

login

standard

John Doe

deposit

00003

50.00

logout

3. Expected Transaction Summary File (Output): deposit3 expected bank account transaction file output deposit3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): deposit3 expected terminal output deposit3 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Error: Invalid account number.

Session terminated.

Test Case: deposit4

- Intention: Test that deposit amount is valid (positive).

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): deposit4 input file deposit4.inp

login

standard

John Doe

deposit

00001

-50.00

logout

3. Expected Transaction Summary File (Output): deposit4 expected bank account transaction file output deposit4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): deposit4 expected terminal output deposit4 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter amount to deposit:

Error: Invalid deposit amount.

Session terminated.

Test Case: deposit5

- Intention: Test that user cannot access recently deposited funds for this session.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): deposit5 input file deposit5.inp

login

standard

John Doe

deposit

00001

200.00

withdrawal

00001

250.00

logout

3. Expected Transaction Summary File (Output): deposit5 expected bank account transaction file output deposit5.etf

04_John_Doe_____00001_00200.00__

01_John_Doe_____00001_00100.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): deposit5 expected terminal output deposit5 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Enter amount to deposit:

Deposit successful.

Enter transaction type:

Enter account number:

Enter amount to withdraw:

Error: Insufficient funds.

Session terminated.

Test Case: deposit6

- Intention: Test that deposit only works if account is active.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____D_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): deposit6 input file deposit6.inp

login

standard

John Doe

deposit

00001

50.00

logout

3. Expected Transaction Summary File (Output): deposit6 expected bank account transaction file output deposit6.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): deposit6 expected terminal output deposit6 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Error: Account is disabled.

Session terminated.

Create

Test Case: create1

- Intention: Test if input is valid (no numbers or special characters: "create").

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): create1 input file create1.inp

login

admin

cr3@te

logout

3. Expected Transaction Summary File (Output): create1 expected bank account transaction file output create1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): create1 expected terminal output create1.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Error: Invalid transaction type.

Session terminated.

Test Case: create2

- Intention: Test that only admin can create an account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): create2 input file create2.inp

login

standard

John Doe

create

Alice Brown

200.00

logout

3. Expected Transaction Summary File (Output): create2 expected bank account transaction file output create2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): create2 expected terminal output create2 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Error: Unauthorized transaction.

Session terminated.

Test Case: create3

- Intention: Test validation of account holder's name (≤ 20 chars, no numbers/special chars).

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): create3 input file create3.inp

login

admin

create

Alice@Brown

200.00

logout

3. Expected Transaction Summary File (Output): create3 expected bank account transaction file output create3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): create3 expected terminal output create3 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Error: Invalid name.

Session terminated.

Test Case: create4

- Intention: Ensure initial balance is between \$1 - \$99999.99.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): create4 input file create4.inp

login

admin

create

Alice Brown

100000.00

logout

3. Expected Transaction Summary File (Output): create4 expected bank account transaction file output create4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): create4 expected terminal output create4 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter initial balance:

Error: Invalid initial balance.

Session terminated.

Test Case: create5

- Intention: Verify that every account number is unique.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): create5 input file create5.inp

login

admin

create

Alice Brown

200.00

create

Bob Smith

300.00

logout

3. Expected Transaction Summary File (Output): create5 expected bank account transaction file output create5.etf

05_Alice_Brown_____00002_00200.00__

05_Bob_Smith_____00003_00300.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): create5 expected terminal output create5 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter initial balance:

Account created successfully.

Enter transaction type:

Enter account holder's name:

Enter initial balance:

Account created successfully.

Session terminated.

Test Case: create6

- Intention: Test that this account cannot access other transactions in this session.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): create6 input file create6.inp

login

admin

create

Alice Brown

200.00

withdrawal

00002

50.00

logout

3. Expected Transaction Summary File (Output): create6 expected bank account transaction file output create6.etf

05_Alice_Brown_____00002_00200.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): create6 expected terminal output create6 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter initial balance:

Account created successfully.

Enter transaction type:

Enter account number:

Error: Account not available for transactions in this session.

Session terminated.

Delete

Test Case: delete1

- Intention: Test if input is valid (no numbers or special characters: "delete").

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete1 input file delete1.inp

login

admin

delete123

logout

3. Expected Transaction Summary File (Output): delete1 expected bank account transaction file output delete1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete1 expected terminal output delete1.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Invalid input. Input contains numbers or special characters.

Session terminated.

Test Case: delete2

- Intention: Check that only the admin can delete an account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete2 input file delete2.inp

login

standard

John Doe

delete

00001

logout

3. Expected Transaction Summary File (Output): delete2 expected bank account transaction file output delete2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete2 expected terminal output delete2.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Invalid transaction type for standard user. Only admin can delete accounts.

Session terminated.

Test Case: delete3

- Intention: Verify the account holder exists before deletion.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete3 input file delete3.inp

login

admin

delete

Alice Brown

00002

logout

3. Expected Transaction Summary File (Output): delete3 expected bank account transaction file output delete3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete3 expected terminal output delete3.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account holder does not exist.

Session terminated.

Test Case: delete4

- Intention: Ensure the account number matches the account holder.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

00002_Jane_Smith_____A_00500.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete4 input file delete4.inp

login

admin

delete

John Doe

00002

logout

3. Expected Transaction Summary File (Output): delete4 expected bank account transaction file output delete4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete4 expected terminal output delete4.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account number does not match the account holder.

Session terminated.

Test Case: delete5

- Intention: Block any transactions on a deleted account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete5 input file delete5.inp

login

admin

delete

John Doe

00001

transfer

00001

00002

50.00

logout

3. Expected Transaction Summary File (Output): delete5 expected bank account transaction file output delete5.etf

06_John_Doe_____00001_00000.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete5 expected terminal output delete5.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account deleted successfully.

Enter transaction type:

Transactions cannot be performed on a deleted account.

Session terminated.

Test Case: delete6

- Intention: Only works if account is not disabled.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____D_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete6 input file delete6.inp

login

admin

delete

John Doe

00001

logout

3. Expected Transaction Summary File (Output): delete6 expected bank account transaction file output delete6.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete6 expected terminal output delete6.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account is already disabled and cannot be deleted.

Session terminated.

Test Case: delete7

- Intention: Test that user is automatically timed out of session (since no other transaction is accepted).

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): delete7 input file delete7.inp

login

admin

delete

John Doe

00001

(no further input for 2 minutes)

3. Expected Transaction Summary File (Output): delete7 expected bank account transaction file output delete7.etf

06_John_Doe_____00001_00000.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): delete7 expected terminal output delete7.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account deleted successfully.

Session timed out due to inactivity.

Disable

Test Case: disable1

- Intention: Test if input is valid (no numbers or special characters: “disable”).

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable1 input file disable1.inp

login

admin

d1s@ble

logout

3. Expected Transaction Summary File (Output): disable1 expected bank account transaction file output disable1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable1 expected terminal output disable1 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Error: Invalid transaction type.

Session terminated.

Test Case: disable2

- Intention: Check that only admin can disable an account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable2 input file disable2.inp

login

standard

John Doe

disable

John Doe

00001

logout

3. Expected Transaction Summary File (Output): disable2 expected bank account transaction file output disable2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable2 expected terminal output disable2 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Error: Unauthorized transaction.

Session terminated.

Test Case: disable3

- Intention: Verify account holder's name.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable3 input file disable3.inp

login

admin

disable

John@Doe

00001

logout

3. Expected Transaction Summary File (Output): disable3 expected bank account transaction file output disable3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable3 expected terminal output disable3 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Error: Invalid name.

Session terminated.

Test Case: disable4

- Intention: Verify account number exists for specified account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable4 input file disable4.inp

login

admin

disable

John Doe

00002

logout

3. Expected Transaction Summary File (Output): disable4 expected bank account transaction file output disable4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable4 expected terminal output disable4 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Error: Invalid account number.

Session terminated.

Test Case: disable5

- Intention: Ensure account status changes from Active to Disabled.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable5 input file disable5.inp

login

admin

disable

John Doe

00001

logout

3. Expected Transaction Summary File (Output): disable5 expected bank account transaction file output disable5.etf

07_John_Doe_____00001_00000.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable5 expected terminal output disable5 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account disabled successfully.

Session terminated.

Test Case: disable6

- Intention: Block transactions on a disabled account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____D_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable6 input file disable6.inp

login

standard

John Doe

withdrawal

00001

50.00

logout

3. Expected Transaction Summary File (Output): disable6 expected bank account transaction file output disable6.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable6 expected terminal output disable6 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Enter transaction type:

Enter account number:

Error: Account is disabled.

Session terminated.

Test Case: disable7

- Intention: Test that user is automatically timed out of session (since no other transaction is accepted).

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): disable7 input file disable7.inp

login

admin

disable

John Doe

00001

(no further input)

3. Expected Transaction Summary File (Output): disable7 expected bank account transaction file output disable7.etf

07_John_Doe_____00001_00000.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): disable7 expected terminal output disable7 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account disabled successfully.

Session timed out due to inactivity.

Changeplan

Test Case: changeplan1

- Intention: Test if input is valid (no numbers or special characters: “changeplan”).

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan1 input file changeplan1.inp

login

admin

changeplan123

logout

3. Expected Transaction Summary File (Output): changeplan1 expected bank account transaction file output changeplan1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan1 expected terminal output changeplan1.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Invalid input. Input contains numbers or special characters.

Session terminated.

Test Case: changeplan2

- Intention: Check that only admin can change the payment plan.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan2 input file changeplan2.inp

login

standard

John Doe

changeplan

00001

S

logout

3. Expected Transaction Summary File (Output): changeplan2 expected bank account transaction file output changeplan2.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan2 expected terminal output changeplan2.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Invalid transaction type for standard user. Only admin can change payment plans.

Session terminated.

Test Case: changeplan3

- Intention: Verify account holder's name.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan3 input file changeplan3.inp

login

admin

changeplan

Alice Brown

00001

S

logout

3. Expected Transaction Summary File (Output): changeplan3 expected bank account transaction file output changeplan3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan3 expected terminal output changeplan3.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Account holder does not exist.

Session terminated.

Test Case: changeplan4

- Intention: Verify account number exists for the specified account.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan4 input file changeplan4.inp

login

admin

changeplan

John Doe

999999

S

logout

3. Expected Transaction Summary File (Output): changeplan4 expected bank account transaction file output changeplan4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan4 expected terminal output changeplan4.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Account number does not exist.

Session terminated.

Test Case: changeplan5

- Intention: Ensure plan switches state from Student plan to non-student plan correctly and vice versa.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan5 input file changeplan5.inp

login

admin

changeplan

John Doe

00001

S

logout

3. Expected Transaction Summary File (Output): changeplan5 expected bank account transaction file output changeplan5.etf

08_John_Doe_____00001_00000.00_S

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan5 expected terminal output changeplan5.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Enter new plan (S for Student, N for Non-Student):

Payment plan changed successfully.

Session terminated.

Test Case: changeplan6

- Intention: Ensure the new plan is not active during the session.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan6 input file changeplan6.inp

login

admin

changeplan

John Doe

00001

S

transfer

00001

00002

50.00

logout

3. Expected Transaction Summary File (Output): changeplan6 expected bank account transaction file output changeplan6.etf

08_John_Doe_____00001_00000.00_S

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan6 expected terminal output changeplan6.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Enter new plan (S for Student, N for Non-Student):

Payment plan changed successfully.

Enter transaction type:

New payment plan is not active during the current session.

Session terminated.

Test Case: changeplan7

- Intention: Deny plan change on disabled/deleted accounts.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____D_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan7 input file changeplan7.inp

login

admin

changeplan

John Doe

00001

S

logout

3. Expected Transaction Summary File (Output): changeplan7 expected bank account transaction file output changeplan7.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan7 expected terminal output changeplan7.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Cannot change payment plan for a disabled or deleted account.

Session terminated.

Test Case: changeplan8

- Intention: Only works if account is active.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____I_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): changeplan8 input file changeplan8.inp

login

admin

changeplan

John Doe

00001

S

logout

3. Expected Transaction Summary File (Output): changeplan8 expected bank account transaction file output changeplan8.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): changeplan8 expected terminal output changeplan8.bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Enter account holder's name:

Enter account number:

Cannot change payment plan for an inactive account.

Session terminated.

Logout

Test Case: logout1

- Intention: Test if input is valid (no numbers or special characters: "logout").

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): logout1 input file logout1.inp

login

admin

l0g0ut

logout

3. Expected Transaction Summary File (Output): logout1 expected bank account transaction file output logout1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): logout1 expected terminal output logout1 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Enter transaction type:

Error: Invalid transaction type.

Session terminated.

Test Case: logout2

- Intention: Test that user is logged in to log out.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): logout1 input file logout2.inp

logout

login

admin

logout

3. Expected Transaction Summary File (Output): logout2 expected bank account transaction file output logout1.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): logout1 expected terminal output logout1 .bto

Welcome to the Banking System.

Error: You must login first.

Enter session type:

Login accepted.

Session terminated.

Test Case: logout3

- Intention: Test that no transaction is accepted after logout.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): logout3 input file logout3.inp

login

admin

logout

withdrawal

00001

50.00

3. Expected Transaction Summary File (Output): logout3 expected bank account transaction file output logout3.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): logout3 expected terminal output logout3 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Session terminated.

Error: You must login first.

Test Case: logout4

- Intention: Test multiple logout attempts.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): logout4 input file logout4.inp

login

admin

logout

logout

3. Expected Transaction Summary File (Output): logout4 expected bank account transaction file output logout4.etf

00_____00000_00000.00__

4. Expected Terminal Output (Output): logout4 expected terminal output logout4 .bto

Welcome to the Banking System.

Enter session type:

Login accepted.

Session terminated.

Error: You must login first.

Test Case: logout06

- Intention: Verify that both admin and standard logout behave the same.

- Files:

1. Current Accounts File (Input):

00001_John_Doe_____A_00100.00

END_OF_FILE_____A_00000.00

2. Transaction Log (Input): logout06 input file logout06.inp

login

standard

John Doe

logout

login

admin

logout

3. Expected Transaction Summary File (Output): logout06 expected bank account transaction file output logout06.etf

00_____00000_00000.00__

00_____00000_00000.00__

4. Expected Terminal Output (Output): logout06 expected terminal output logout06 .bto

Welcome to the Banking System.

Enter session type:

Enter account holder's name:

Login accepted.

Session terminated.

Enter session type:

Login accepted.

Session terminated.

Part 3 – Test File Organization (Abdul Rahim Mohsin - 100890247):

Requirements Problems:

Assumed: user can login in with disabled accounts, but not access any other transactions (otherwise admin cannot activate it again). This is necessary to allow the admin to reactivate the account. This requirement is not explicitly stated in the project description but is inferred from the need to handle disabled accounts gracefully.

Test Organization

The test files are organized into directories based on the transaction type and test case number. Each test case has its own directory containing the necessary input and expected output files. The directory structure is as follows:

tests/

├─ login/

| └─ login1/

| | └─ current_accounts.txt

| | └─ transaction_log.inp

| | └─ expected_transaction_summary.etf

| | └─ expected_terminal_output.bto

| └─ login2/

```
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.ETF
| | └─ expected_terminal_output.bto
| └─ ...
└─ withdrawal/
  | └─ withdrawal1/
  | | └─ current_accounts.txt
  | | └─ transaction_log.inp
  | | └─ expected_transaction_summary.ETF
  | | └─ expected_terminal_output.bto
  | └─ ...
└─ transfer/
  | └─ transfer1/
  | | └─ current_accounts.txt
  | | └─ transaction_log.inp
  | | └─ expected_transaction_summary.ETF
  | | └─ expected_terminal_output.bto
  | └─ ...
└─ paybill/
  | └─ paybill1/
  | | └─ current_accounts.txt
  | | └─ transaction_log.inp
  | | └─ expected_transaction_summary.ETF
  | | └─ expected_terminal_output.bto
  | └─ ...
└─ deposit/
  | └─ deposit1/
  | | └─ current_accounts.txt
  | | └─ transaction_log.inp
  | | └─ expected_transaction_summary.ETF
  | | └─ expected_terminal_output.bto
  | └─ ...
```

```
└─ create/
| └─ create1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ delete/
| └─ delete1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ disable/
| └─ disable1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ changeplan/
| └─ changeplan1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
| | └─ expected_terminal_output.bto
| └─ ...
└─ logout/
| └─ logout1/
| | └─ current_accounts.txt
| | └─ transaction_log.inp
| | └─ expected_transaction_summary.etf
```

| └─ expected_terminal_output.bto
└─ ...

Document description:

- **current_accounts.txt:** Contains the initial state of bank accounts for the test case.
- **transaction_log.inp:** Contains the sequence of transactions to be processed.
- **expected_transaction_summary.etf:** The expected output file containing the summary of transactions after processing.
- **expected_terminal_output.bto:** The expected output displayed on the terminal during the session.

Test Run Plan

The tests will be executed using a shell script that automates the process of running each test case, comparing the actual output with the expected output, and reporting any discrepancies. The script will follow these steps:

1. **Iterate through each test case directory:**
 - For each test case, the script will navigate to the corresponding directory.
2. **Run the Front End application:**
 - The script will execute the Front End application, passing the *current_accounts.txt* and *transaction_log.inp* files as inputs.
3. **Capture the output:**
 - The script will capture the terminal output and the generated transaction summary file.
4. **Compare the output:**
 - The script will compare the actual terminal output with the *expected_terminal_output.bto* file.
 - The script will compare the actual transaction summary file with the *expected_transaction_summary.etf* file.
5. **Report results:**
 - If there are any differences between the actual and expected outputs, the script will log the discrepancies.
 - If the outputs match, the script will log that the test case passed.
6. **Generate a summary report:**

- After all test cases have been executed, the script will generate a summary report indicating which test cases passed and which failed.

Example Shell Script

```
#!/bin/bash
```

```
# Directory containing all test cases
```

```
TEST_DIR="tests"
```

```
# Function to run a single test case
```

```
run_test_case() {
```

```
    local test_case_dir=$1
```

```
    echo "Running test case: $test_case_dir"
```

```
# Navigate to the test case directory
```

```
cd "$test_case_dir" || exit
```

```
# Run the Front End application with the test inputs
```

```
../../front_end current_accounts.txt transaction_log.inp > actual_terminal_output.bto
```

```
# Compare the actual and expected terminal outputs
```

```
diff actual_terminal_output.bto expected_terminal_output.bto > terminal_diff.txt
```

```
if [ $? -eq 0 ]; then
```

```
    echo "Terminal output matches expected output."
```

```
else
```

```
    echo "Terminal output does not match expected output. See terminal_diff.txt for details."
```

```
fi
```

```
# Compare the actual and expected transaction summary files
```

```
diff transaction_summary.etf expected_transaction_summary.etf > summary_diff.txt
```

```
if [ $? -eq 0 ]; then
```

```
    echo "Transaction summary matches expected output."
```

```
else
```

```

        echo "Transaction summary does not match expected output. See summary_diff.txt for details."
    fi

    # Clean up
    rm -f actual_terminal_output.bto terminal_diff.txt summary_diff.txt

    # Navigate back to the parent directory
    cd ../../
}

# Iterate through each transaction type directory
for transaction_type in "$TEST_DIR"/*; do
    if [ -d "$transaction_type" ]; then
        echo "Processing transaction type: $transaction_type"

        # Iterate through each test case directory
        for test_case in "$transaction_type"/*; do
            if [ -d "$test_case" ]; then
                run_test_case "$test_case"
            fi
        done
    fi
done

echo "All test cases have been executed."

```

Explanation of the Script

- The script iterates through each transaction type directory (e.g., login, withdrawal, etc.).
- For each transaction type, it iterates through each test case directory (e.g., login1, login2, etc.).
- For each test case, it runs the Front End application with the provided input files (*current_accounts.txt* and *transaction_log.inp*).
- It captures the terminal output and compares it with the expected terminal output (*expected_terminal_output.bto*).

- It compares the generated transaction summary file (*transaction_summary.etf*) with the expected transaction summary file (*expected_transaction_summary.etf*).
- If there are any discrepancies, the script logs them in *terminal_diff.txt* and *summary_diff.txt*.
- Finally, the script generates a summary report indicating which test cases passed and which failed.