UC 1 - Login

Input Element	Type	Value Specification	Valid	Invalid	Exceptional Cases
Username	String	Non-empty, alphanumeric	"user123"	"", "@user", " "	Excessively long input
Password	String	At least 8 characters, complex (contains at least one uppercase and one special character)	"Passw0rd!"	"pass", "1234", " "	Input with dangerous characters (i.e bad words)

Test Case Scenarios

Test Case	Username	Password	Expected Outcome
1	Valid	Valid	User logged in successfully
2	Valid	Invalid	Error: Invalid password
3	Invalid	Valid	Error: Invalid username
4	Invalid	Invalid	Error: Both values invalid
5	Exceptional	Valid	Error: Username exceeds length limit

Narrowed-Down Test Cases

Test Case	Username	Password	Expected Outcome

1	Valid	Valid	User logged in successfully
2	Valid	Invalid	Error: Invalid password
3	Invalid	Valid	Error: Invalid username

Concrete Values for Test Cases

Test Case	Username	Password	Expected Outcome
1	Valid	Valid	User logged in successfully
2	Valid	Invalid	Error: Invalid password
3	Invalid	Valid	Error: Invalid username

UC 10 - Set Recurring Income/Expenses

Input Element	Type	Value Specification	Valid	Invalid	Exceptional Cases
Income/Expense Amount	Float	Must be greater than 0	100.00, 50.00	-100.00, 0.00	Excessively large values causing overflow
Type	String	Either "income" or "expense"	"income", "expense"	"salary", empty string, anything other than income or expense	None
Frequency	String	Either "daily," "weekly," "monthly"	"weekly", "monthly"	"hourly", empty string	None

Test Case Scenarios

Test Case	Income/Expense Amount	Type	Frequency	Expected Outcome
1	Valid	Valid	Valid	Entry saved successfully
2	Valid	Valid	Invalid	Error: Invalid frequency
3	Valid	Invalid	Valid	Error: Invalid type
4	Invalid	Valid	Valid	Error: Invalid amount
5	Invalid	Invalid	Valid	Error: Both amount and type invalid
6	Valid	Invalid	Invalid	Error: Invalid type and

				frequency
7	Exceptional	Valid	Valid	Error: Overflow issue

Narrowed-Down Test Cases

Test Case	Income/Expense Amount	Type	Frequency	Expected Outcome
1	Valid	Valid	Valid	Entry saved successfully
2	Valid	Valid	Invalid	Error: Invalid frequency
3	Valid	Invalid	Valid	Error: Invalid type
4	Invalid	Valid	Valid	Error: Invalid amount
7	Exceptional	Valid	Valid	Error: Overflow issue

Concrete Test Cases

Test Case	Income/Expense Amount	Type	Frequency	Expected Outcome
1	100.00	"income"	"weekly"	Entry saved successfully
2	100.00	"income"	"hourly"	Error: Invalid frequency
3	100.00	"salary"	"weekly"	Error: Invalid type
4	-50.00	"income"	"weekly"	Error: Invalid amount
7	1e9	"expense"	"monthly"	Error: Overflow issue

UC 11 - View Financial Summary

Input Element	Type	Value Specification	Valid	Invalid	Exceptional Cases
Account Data	Database	Account with complete budget data	Account with complete budget data	No data found for the account	Database unavailable or unable to query data

Test Case Scenarios (Already narrowed down)

Test Case	Account Data	Expected Outcome
1	Valid	Budget summary displayed
2	Invalid	Error: No data found
3	Exceptional	Error: Database unavailable

Concrete Test Cases

Test Case	Account Data	Expected Outcome
1	Account exists with data (database is successfully queried)	Budget summary displayed
2	Account has no data after querying	Error: No data found
3	Database corrupted (database cannot be queried)	Error: Database unavailable

Environment Information

1. Java

2. IntelliJ Idea Community Edition 2023.2/VS Code works too

3. JUnit 5

4. I followed the same procedure for the unit testing and class implementation in class