Software Development EG2

Test Case Definitions:

F1:
Test Case: TC1
 Description: Valid transfer request
 Expected Result: Transfer is processed

Test Case: TC2
 Description: Transfer with minimums
 Expected Result: Transfer is processed

Test Case: TC3
 Description: Transfer with maximums
 Expected Result: Transfer is processed

Test Case: TC4
 Description: IBAN too short
 Expected Result: Exception is raised

Test Case: TC5
 Description: IBAN too long
 Expected Result: Exception is raised

Test Case: TC6
 Description: Wrong country code
 Expected Result: Exception is raised

Test Case: TC7
 Description: Non-numeric characters in IBAN
 Expected Result: Exception is raised

Test Case: TC8
 Description: One word concept
 Expected Result: Exception is raised

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Test Case: TC9
 Description: Words not separated by a space
 Expected Result: Exception is raised

Test Case: TC10
 Description: Concept too short
 Expected Result: Exception is raised

Test Case: TC11
 Description: Concept too long
 Expected Result: Exception is raised

Test Case: TC12
 Description: Invalid transfer type
 Expected Result: Exception is raised

Test Case: TC13
 Description: Invalid date format
 Expected Result: Exception is raised

Test Case: TC14
 Description: Invalid date
 Expected Result: Exception is raised

Test Case: TC15
 Description: Past date
 Expected Result: Exception is raised

Test Case: TC16
 Description: Date after 2050
 Expected Result: Exception is raised

Test Case: TC17
 Description: Below minimum amount
 Expected Result: Exception is raised

Test Case: TC18
 Description: Above maximum amount
 Expected Result: Exception is raised

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Test Case: TC19
 Description: Non float amount
 Expected Result: Exception is raised

Test Case: TC20
 Description: More than two decimal places
 Expected Result: Exception is raised

F2:
Test Case: test_valid
 Description: Valid JSON file
 Expected Result: Exception is raised

Test Case: test_dup_file
 Description: Duplicate entire file
 Expected Result: Exception is raised

Test Case: test_del_file
 Description: Delete entire file
 Expected Result: Exception is raised

Test Case: test_dup_begin_obj
 Description: Duplicate the first bracket
 Expected Result: Exception is raised

Test Case: test_del_begin_obj
 Description: Delete the first bracket
 Expected Result: Exception is raised

Test Case: test_dup_data
 Description: Duplicate the data
 Expected Result: Exception is raised

Test Case: test_del_data
 Description: Delete the data
 Expected Result: Exception is raised

Test Case: test_dup_end_obj
Description: Duplicate the final bracket
Expected Result: Exception is raised

Test Case: test_del_end_obj
Description: Delete the final bracket
Expected Result: Exception is raised

Test Case: test_mod_begin_obj
Description: Modify first bracket
Expected Result: Exception is raised

Test Case: test_dup_field1
Description: Duplicate field1
Expected Result: Exception is raised

Test Case: test_del_field1
Description: Delete field1
Expected Result: Exception is raised

Test Case: test_dup_comma
Description: Duplicate the comma
Expected Result: Exception is raised

Test Case: test_del_comma
Description: Delete the comma
Expected Result: Exception is raised

Test Case: test_dup_field2
Description: Duplicate field2
Expected Result: Exception is raised

Test Case: test_del_field2
Description: Delete field2
Expected Result: Exception is raised

Test Case: test_mod_end_obj
Description: Modify the final bracket
Expected Result: Exception is raised

Test Case: test_dup_label_field1
Description: Duplicate label for field1
Expected Result: Exception is raised

Test Case: test_del_label_field1
Description: Delete label for field1
Expected Result: Exception is raised

Test Case: test_dup_equals1
Description: Duplicate first equals
Expected Result: Exception is raised

Test Case: test_del_equals1
Description: Delete first equals
Expected Result: Exception is raised

Test Case: test_dup_val_field1
Description: Duplicate value for field1
Expected Result: Exception is raised

Test Case: test_del_val_field1
Description: Delete value for field1
Expected Result: Exception is raised

Test Case: test_mod_comma
Description: Modify the comma
Expected Result: Exception is raised

Test Case: test_dup_label_field2
Description: Duplicate label for field2
Expected Result: Exception is raised

Test Case: test_del_label_field2
Description: Delete label for field2
Expected Result: Exception is raised

Test Case: test_dup_equals2
Description: Duplicate second equals
Expected Result: Exception is raised

Test Case: test_del_equals2
 Description: Delete second equals
 Expected Result: Exception is raised

Test Case: test_dup_val_field2
 Description: Duplicate value for field2
 Expected Result: Exception is raised

Test Case: test_del_val_field2
 Description: Delete value for field2
 Expected Result: Exception is raised

Test Case: test_dup_quote1
 Description: Duplicate first quotation
 Expected Result: Exception is raised

Test Case: test_del_quote1
 Description: Delete first quotation
 Expected Result: Exception is raised

Test Case: test_dup_val_label1
 Description: Duplicate value for label1
 Expected Result: Exception is raised

Test Case: test_del_val_label1
 Description: Delete value for label1
 Expected Result: Exception is raised

Test Case: test_dup_quote2
 Description: Duplicate second quotation
 Expected Result: Exception is raised

Test Case: test_del_quote2
 Description: Delete second quotation
 Expected Result: Exception is raised

Test Case: test_mod_equals1
 Description: Modify first equals
 Expected Result: Exception is raised

Test Case: test_dup_quote3
 Description: Duplicate third quotation
 Expected Result: Exception is raised

Test Case: test_del_quote3
 Description: Delete third quotation
 Expected Result: Exception is raised

Test Case: test_dup_val1
 Description: Duplicate value1
 Expected Result: Exception is raised

Test Case: test_del_val1
 Description: Delete value1
 Expected Result: Exception is raised

Test Case: test_dup_quote4
 Description: Duplicate fourth quotation
 Expected Result: Exception is raised

Test Case: test_del_quote4
 Description: Delete fourth quotation
 Expected Result: Exception is raised

Test Case: test_dup_quote5
 Description: Duplicate fifth quotation
 Expected Result: Exception is raised

Test Case: test_del_quote5
 Description: Delete fifth quotation
 Expected Result: Exception is raised

Test Case: test_dup_val_label2
 Description: Duplicate value for label2
 Expected Result: Exception is raised

Test Case: test_del_val_label2
 Description: Delete value for label2
 Expected Result: Exception is raised

Test Case: test_dup_quote6
 Description: Duplicate sixth quotation
 Expected Result: Exception is raised

Test Case: test_del_quote6
 Description: Delete sixth quotation
 Expected Result: Exception is raised

Test Case: test_mod_equals2
 Description: Modify second equals
 Expected Result: Exception is raised

Test Case: test_dup_quote7
 Description: Duplicate seventh quotation
 Expected Result: Exception is raised

Test Case: test_del_quote7
 Description: Delete seventh quotation
 Expected Result: Exception is raised

Test Case: test_dup_curr
 Description: Duplicate currency
 Expected Result: Exception is raised

Test Case: test_del_curr
 Description: Delete currency
 Expected Result: Exception is raised

Test Case: test_dup_space
 Description: Duplicate the space
 Expected Result: Exception is raised

Test Case: test_del_space
 Description: Delete the space
 Expected Result: Exception is raised

Test Case: test_dup_number
 Description: Duplicate number
 Expected Result: Exception is raised

Test Case: test_del_number
 Description: Delete number
 Expected Result: Exception is raised

Test Case: test_dup_quote8
 Description: Duplicate eighth quotation
 Expected Result: Exception is raised

Test Case: test_del_quote8
 Description: Delete eighth quotation
 Expected Result: Exception is raised

Test Case: test_mod_quote1
 Description: Modify first quotation
 Expected Result: Exception is raised

Test Case: test_mod_iban
 Description: Modify the IBAN
 Expected Result: Exception is raised

Test Case: test_mod_quote2
 Description: Modify the second quotation
 Expected Result: Exception is raised

Test Case: test_mod_quote3
 Description: Modify the third quotation
 Expected Result: Exception is raised

Test Case: test_mod_valid_iban
 Description: Modify the valid IBAN
 Expected Result: Exception is raised

Test Case: test_mod_quote4
 Description: Modify fourth quote
 Expected Result: Exception is raised

Test Case: test_mod_quote5
 Description: Modify fifth quote
 Expected Result: Exception is raised

Test Case: test_mod_amount
 Description: Modify the amount
 Expected Result: Exception is raised

Test Case: test_mod_quote6
 Description: Modify the sixth quote
 Expected Result: Exception is raised

Test Case: test_mod_quote7
 Description: Modify the seventh quote
 Expected Result: Exception is raised

Test Case: test_mod_curr
 Description: Modify the currency
 Expected Result: Exception is raised

Test Case: test_mod_space
 Description: Modify the space
 Expected Result: Exception is raised

Test Case: test_dup_whole
 Description: Duplicate whole numbers
 Expected Result: Exception is raised

Test Case: test_del_whole
 Description: Delete whole numbers
 Expected Result: Exception is raised

Test Case: test_dup_dot
 Description: Duplicate decimal point
 Expected Result: Exception is raised

Test Case: test_del_dot
 Description: Delete the decimal point
 Expected Result: Exception is raised

Test Case: test_dup_dec
 Description: Duplicate decimal numbers
 Expected Result: Exception is raised

Test Case: test_del_dec
 Description: Delete the decimal numbers
 Expected Result: Exception is raised

Test Case: test_mod_quote8
 Description: Modify eighth quotation
 Expected Result: Exception is raised

Test Case: test_mod_whole
 Description: Modify whole numbers
 Expected Result: Exception is raised

Test Case: test_mod_dot
 Description: Modify decimal point
 Expected Result: Exception is raised

Test Case: test_mod_dec
 Description: Modify decimal points
 Expected Result: Exception is raised

F3:
Test Case: T1 – Valid Transaction
 Description: Valid IBAN with matching transaction
 Expected Result: Balance file is created and contains the correct IBAN and balance

Test Case: T2 – Invalid IBAN
 Description: IBAN is not in valid format
 Expected Result: Exception is raised with message "The JSON data does not have valid values"

Test Case: T3 – Missing Transactions File
 Description: transactions.json file is missing
 Expected Result: Exception is raised with message "The data file is not found"

Test Case: T4 – Invalid JSON Structure
 Description: JSON file does not contain expected keys
 Expected Result: Exception is raised with message "The JSON does not have the expected structure"

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Test Case: T5 – Invalid JSON Format
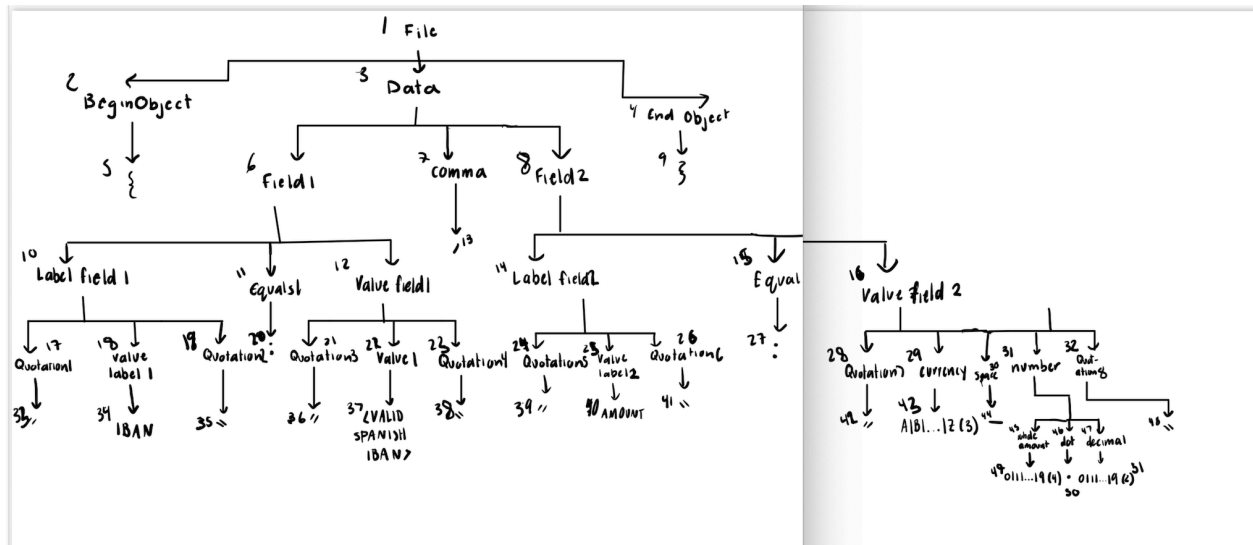Description: JSON file is not properly formatted
Expected Result: Exception is raised with message "The file is not in JSON format"

Test Case: T6 – Invalid Amount Format
Description: Transaction has an invalid amount value
Expected Result: Exception is raised with message "The JSON data does not have valid values"

F2 Derivation Tree:

F3 Control Flow Diagram:

Validate IBAN

[Valid] Load transactions.json

Initialise balance (= 0.0 0)

For each transaction:

Check if transaction.IBAN matches input IBAN

[Match] Convert amount to float and add to balance

[No Match] Skip

End of loop

Prepare balance_data (IBAN, timestamp, balance)

Append to balance.json

Return True

[FileNotFound] Handle missing file

[FileNotFound] Handle missing file

[JSONDecodeError] Handle invalid json

[Invalid] Raise "Invalid IBAN" exception

Valid test	1 → 2 → 3 → 4 → 5 → 6 → 8 → 9 → 10 → 11 → True
Invalid IBAN	1 → 15 Exception
Missing File	1 → 2 → 13 Exception
Balance.json	1 → 2 → 3 → 4 → 5 → 6 → 8 → 9 → 10 → 12 Exception
Invalid JSON	1 → 2 → 14 Exception
No Matching transactions	1 → 2 → 3 → 4 → 5 → 6 → 8 → 9 → 10 → 11 → True, balance = 0