Method Descriptions & UML Diagram

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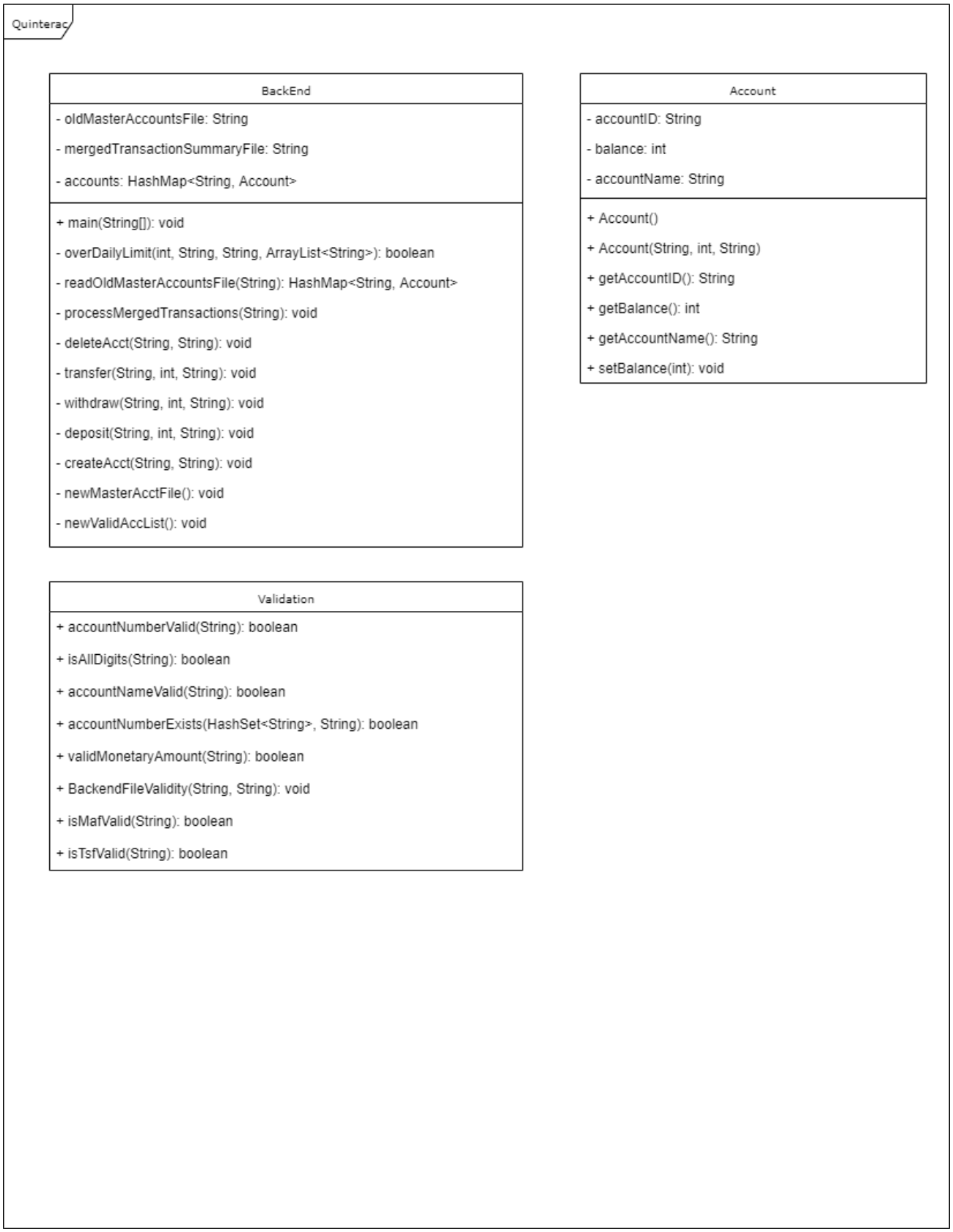

BackEnd.java

Main
This method takes in both the oldMasterAccountListFile location and mergedTransactionSummaryFile location via parameters, and calls other functions to begin the calculations and processing.

overDailyLimit
This method performs the necessary calculations regarding daily transaction limits, and returns whether a transaction is valid or not (based on whether it has surpassed the limit or not).

readOldMasterAccountsFile
This method reads the old master accounts file using parameters given from the main class, and every line into the accounts hash map.

processMergedTransactions
This method reads every line in the merged transaction file and calls on corresponding methods to apply the requested action (e.g. calling deleteAcct if a request was made to delete an account).

deleteAcct
This method takes in two parameters (the account number and name), and then deletes that account from the accounts hash map.

transfer
This method takes in three parameters (two account numbers and an amount), and then transfers the monetary amount from the first account to the second.

withdraw
This method takes in three parameters (an account number, name, and amount), and then deducts the amount from the total account balance.

deposit
This method takes in three parameters (an account number, name, and amount), and then adds the amount to the total account balance.

createAcct
This method takes in corresponding values needed to create an account, and then adds it to a new Account object, which is then added to the accounts hash map.

newMasterAcctFile
This method reads all Account objects within the accounts hash map, and adds their values to a new file named NewMasterAccountsFile.txt

newValidAccList
This method reads all Account objects within the accounts hash map, and adds all account numbers to a new file named newValidAccList.txt

Account.java

Account
This method assigns corresponding variables to their respective values, as outlined by the requirements (A constructor). There are two version of this constructor, with the first version assigning the variables their default values, and the second one assigning using user-defined values to their corresponding variables.

getAccountID
this method, when called, returns the ID of the specified Account object.

getBalance
this method, when called, returns the balance of the specified Account object.

getAccountNAme
this method, when called, returns the name of the specified Account object.

setBalance
this method, when called, assigns the "balance" variable a new value depending on the parameter.

Validation.java

isAllDigits
This method is a common helper function that is called by multiple larger methods that verifies that the account number entered consists only of decimal digits.

accountNumberExists
This method is a common helper function that is called by multiple larger methods. This takes in a string as a parameter and verifies that the string is currently in the valid accounts list file. This is done by checking through the hash set that was created in the login method, ensuring O(1) efficiency.

accountNumberValid
This method is a common helper function that is called by multiple larger methods that verifies the account number is exactly seven decimal digits not beginning with 0.

accountNameValid
This method is a common helper function that is called by multiple larger methods that verifies the string follows all rules and constraints for account names such as no leading or trailing spaces.

validMonetaryAmount
This method is a small helper function that ensures no account has a balance of less than 0, or greater than 99999999. If an account has a balance out of those bounds, the method will return false.

BackendFileValidity
This method calls on corresponding methods that check the validity of the input files, ending the system if either of the called methods return false.

isMafValid
This method runs through every line within the old Master Account file, and checks the data to see if it's formatted correctly or not. If anything is considered invalid, the method will return false.

isTsfValid
This method runs through every line within the Merged Transaction Summary file, and checks the data to see if it's formatted correctly or not. If anything is considered invalid, the method will return a false.

The Validation class was created to support both frontend and backend classes. This class contains all validation methods, with which both frontend and backend can call in order to validate any data. Many of these methods were formerly in the frontEnd.java class.