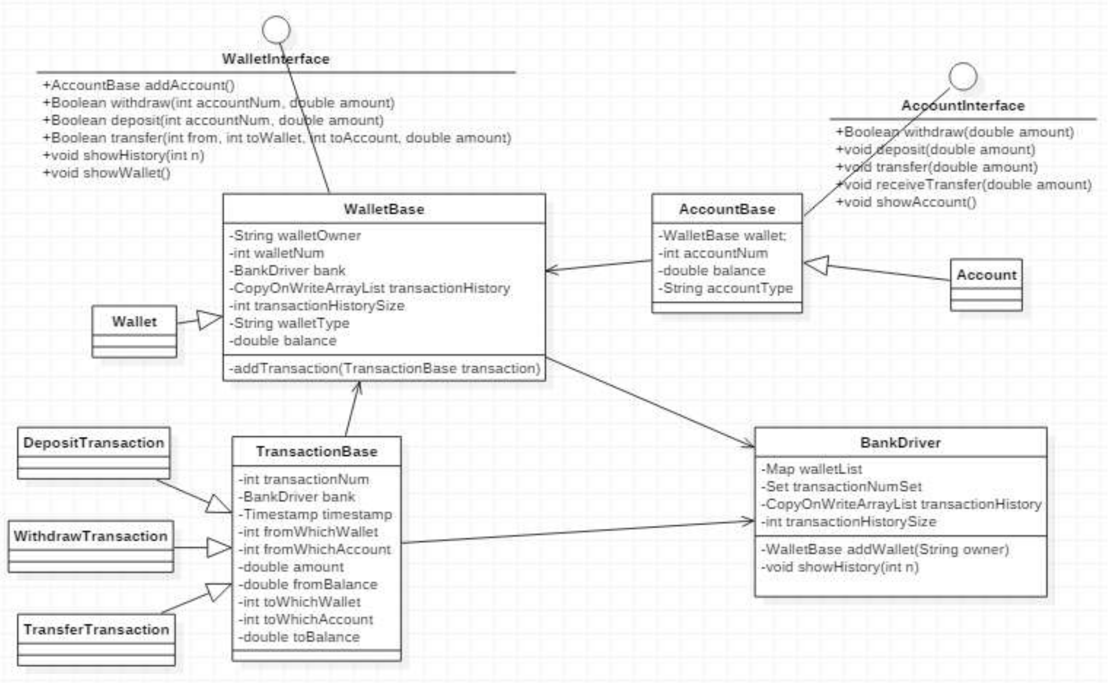
VirtualWallet Documentation

1. Features

a) Create wallet for a user.
b) Create one or more account in a wallet
c) Deposit (0-$5000) or withdraw (0-$800) to any account in any wallet
d) Transfer (0-$2000) between two accounts (in or not in the same wallet).
e) Track balance for any account and wallet.
f) Track transactions history for any account and wallet.
g) Multi-threaded safe.

2. Structure



3. API

BankDriver.class

- WalletBase addWallet(String owner)
  Create a Wallet for a user, assign with a random wallet number. The initial balance is 0.
  Parameter:
    owner: the name of owner of this wallet;
  return:
    an instance of WalletBase

- void showHistory(int n)

Show the n most recent transaction history for all wallets in this bank
Parameter:
n: the number of history to show
return:
void

WalletInterface.class

- AccountBase addAccount()
  Create an account for a wallet, assign with a random account number. The initial balance is 0.
  Parameter:
  none
  return:
  an instance of AccountBase

- Boolean withdraw(int accountNum, double amount)
  Withdraw money from an account.
  If successful, add a transaction to transaction history.
  Throw InvalidWithdrawAmountException if the amount is less than 0 or bigger 800.
  Throw NoAccountNumException if the account doesn't exist.
  Throw NoEnoughBalanceException if the account doesn't have enough balance.
  Parameter:
  accountNum: account to withdraw
  amount: amount to withdraw
  return:
  true if withdraw successful
  false if failed

- Boolean deposit(int accountNum, double amount)
  deposit money from to an account.
  If successful, add a transaction to transaction history.
  Throw InvalidDepositAmountException if the amount is less than 0 or bigger 5000.
  Throw NoAccountNumException if the account doesn't exist.
  Parameter:
  accountNum: account to deposit
  amount: amount to deposit
  return:
  true if deposit successful
  false if failed

- Boolean transfer(int from, int toWallet, int toAccount, double amount)
  Transfer money between account.
  If successful, add a transaction to transaction history.
  Throw InvalidDepositAmountException if the amount is less than 0 or bigger 2000.

Throw NoAccountNumException if one of the accounts doesn’t exist.
Throw NoEnoughBalanceException if the transfered account doesn’t have enough balance.
Parameter:
from: transfered account
toWallet: recipient wallet
toAccount; recipient account
amount: amount to transfer
return:
true if transfer successful
false if failed

- void showHistory(int n)
  Show the n most recent transaction history for all account in this wallet
  Parameter:
  n: the number of history to show
  return:
  void

- void showWallet()
  Show all accounts in this wallet.
  Parameter:
  None.
  return:
  void

AccountInterface.class

- Boolean withdraw(double amount)
  Withdraw money from this account.
  Throw NoEnoughBalanceException if the account doesn’t have enough balance.
  Parameter:
  amount: amount to withdraw
  return:
  true if withdraw successful
  false if failed

- void deposit(double amount)
  deposit money from to this account.
  Parameter:
  amount: amount to deposit
  return:
  void

- void transfer(double amount)
  Withdraw money from this account for transfer.
  Throw NoEnoughBalanceException if the transfered account doesn’t have enough balance.
  Parameter:
  amount: amount to transfer
  return:
  void

- void receiveTransfer (double amount)
  same to void deposit(double amount)

- void showAccount()
  Show account information
  Parameter:
  None.
  return:
  void

4. Exception

a) ExceptionBase: super class for all exceptions.
b) InvalidAmountException: super class for all invalid amount exceptions.
c) InvalidDepositAmountException: Throwed when the deposit amount is less than 0 or bigger than 5000
d) InvalidTransferAmountException: Throwed when the transfer amount is less than 0 or bigger than 2000
e) InvalidWithdrawAmountException: Throwed when the withdraw amount is less than 0 or bigger than 800
f) NoAccountNumException: Throwed when the account user tried to deposit, withdraw or transfer doesn’t exist.
g) NoWalletNumException: Throwed when the wallet user tried to deposit, withdraw or transfer doesn’t exist.
h) NoEnoughBalanceException: Throwed when the account user tried to withdraw or transfer doesn’t have enough balance.

5. JUnit Test

a) BankDriverTest: Test the overall high level functionality for the whole library
b) WalletInterfaceTest: Test for WalletInterface: deposit, withdraw, transfer, multiple time of transfer and the transaction history.
c) AccountInterfaceTest: Test for AccountInterface: deposit, withdraw, transfer and exception throwing.
d) ConcurrentTest: Test for muti-threaded: concurrent deposit, withdraw, transfer.