ELEC 2543 Object-Oriented Programming and Data Structures

Programming Exercise 9

Topics: Exceptions

Released: April 11, 2025 (Friday)

Due Date: 9:30am, April 25, 2025 (Friday)

Overview: In this exercise, you will process the checks you develop in Lab 6. Exceptions should be thrown when the account does not have enough fund for cashing a check. You need Check.java of Lab 6 to finish this exercise.

Class NotEnoughFundException

This class is extended from class Exception. An object of this class will be thrown whenever the balance of the account does not have enough money to cash a check. Define the no-argument constructor that invokes the parent no-argument constructor. You do not have to define other constructor.

class Account

This class represents a bank account. The instance variable int balance and the constructor have been defined. Without declaring other instance variables, define the following methods:

public void processCheck(Check check) throws NotEnoughFundException

This method checks whether the balance of the account is enough to cash check. If yes, the balance is updated; otherwise, NotEnoughFundException exception is thrown.

public void processTransaction(ArrayList<Check> checks)

This method processes a list of checks. For simplicity, you can assume the checks are arranged in ascending date order. Moreover, all the dates are unique. When the account has enough fund to cash a check, the balance is updated and appropriate message should be printed out. If the current balance of the account is less than the check amount, a message is printed out and the balance will be increased by 500. The check should be processed again. **You have to call method processCheck and use the try … catch statement in this method.**

Please refer to the sample output of Lab9CheckDriver.java for the format of the messages.

Sample Output (only part of the sample output is presented below)

The current balance is 500

Processing Check No: 1001, Payee: Peter, Amount: 100, Date: 11/8/2018

The current balance is 400

Processing Check No: 1002, Payee: Mary, Amount: 200, Date: 17/8/2018

The current balance is 200

Processing Check No: 1003, Payee: John, Amount: 600, Date: 1/9/2018

check cannot be cleared due to not enough fund.

add 500 to the account...

The current balance is 700

Processing Check No: 1003, Payee: John, Amount: 600, Date: 1/9/2018

The current balance is 100

Processing Check No: 1004, Payee: John, Amount: 400, Date: 12/10/2018

check cannot be cleared due to not enough fund.

add 500 to the account...

The current balance is 600

The program should first print out the balance of the account. To process a check, the check information should be printed. If the check can be cleared, the new balance is provided. If the check cannot be cleared due to insufficient fund, a message is printed out, the balance is increased by 500, and the new balance is printed out. The check (e.g. Check No. 1003 in the sample output) has to be processed again.

Handin

Follow the instructions on Moodle.