Lab # 3

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CPSC 1150 - 003

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Lab Title: Bank Account Lab

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Department: CSIS

Program Bank Account

File Name: Lab3.java

Purpose: Calculate how long to deplete an account with interest rate and education expense.

Input: Account balance

Output: Time to deplete account

Technical Information:

Compiler: Java SDK 17.0.1

Computer: Intel i5 3.70GHz, 16GB RAM

Operating System: Window 10

Language: Java

Program Logic (Pseudocode)

Algorithm: How many years and months it takes to deplete an account with a given initial balance and interest rate.

(definition)

0.1 balance: the intial balace of the account

0.2 interestRate: interst rate per month

0.3 month: number of months to deplete account

0.4 year: number of years to deplete account

0.5 interest applies at the end of each month

START

1. If balance = 0, exit immediately.
2. If balance < 0, return error.
3. While balance > 0
   1. Increase month by 1
   2. If month = 12, reset month to 0 and increase year by 1
   3. Apply interest rate
   4. Take education expense
4. If month != 0
   1. If month = 1, then print month (without ‘s’), else print month (with ‘s’)
5. If year != 0
   1. If year = 1, then print year (without ‘s’), else print year (with ‘s’)

END

Generate your test cases based on the specifications in your lab assignment. Follow following format for each test case: (Refer to external document of your first lab)

*purpose*

*input*

*output*

*expected value*

*passed or failed*

Test Cases:

**Test integer number**

Input: 500

Output: 2 months

Expect: 2 months

Passes

**Test decimal number**

Input: 7523.12

Output: 4 months 1 year

Expect: 4 months 1 year

Passed

**Test number smaller than education expense**

Input: 321

Output: 1 month

Expect: 1 month

Passed

**Test empty balance**

Input: 0

Output: 0 month

Expect: 0 month

Passed

**Test negative balance**

Input: -4567.89

Output: Invalid balance

Expect: Invalid balance

Passed