Payments re-imagined

A good piece of code works, but a brilliant one is like poetry, innovative, logical, well structured and crafted with passion.

We'd appreciate your effort if you could show us the aesthetics of programming, and we are expecting to see:

1. A well designed **OO model**;
2. **Production level** software engineering practices with tests and build script included;
3. The correct usages of **software design patterns**;
4. Your understanding of **SOLID principles**.

Airwallex

Programming Exercise – RPN Calculator

Some of the best calculators in the world have an ‘RPN’ (reverse polish notation) mode.
We would like you to write a command-line based RPN calculator.

Requirements

The calculator has a stack that can contain real numbers.

• The calculator waits for user input and expects to receive strings containing whitespace separated lists of numbers and operators.

• Numbers are pushed on to the stack. Operators operate on numbers that are on the stack.

• Available operators are +, -, *, /, sqrt, undo, clear.

• Operators pop their parameters off the stack, and push their results back onto the stack.

• The ‘clear’ operator removes all items from the stack.

• The ‘undo’ operator undoes the previous operation. “undo undo” will undo the previo us two operations.

• sqrt performs a square root on the top item from the stack.

• The ‘+’, ‘-’, ‘*’, ‘/’ operators perform addition, subtraction, multiplication and division respectively on the top two items from the stack.

• After processing an input string, the calculator displays the current contents of the stack as a space-separated list.

• Numbers should be stored on the stack to at least 15 decimal places of precision, but displayed to 10 decimal places (or less if it causes no loss of precision).

• All numbers should be formatted as plain decimal strings (ie. no engineering formatting).

• If an operator cannot find a sufficient number of parameters on the stack, a warning is displayed:

operator <operator> (position: <pos>): insufficient parameters

• After displaying the warning, all further processing of the string terminates and the current state of the stack is displayed.

Deliverables

The solution submitted should include structure, source code, configuration and any tests or test code you deem necessary - no need

• to package class files.

• Solve the problem in Java or Kotlin.

• Solve the problem as though it were “production level” code.

• It is not required to provide any graphical interface.

In order to get around firewall issues we recommend the solution be packaged as a

password protected zip file or Github repository link.

Airwallex Examples

Example 1
5 2
stack: 5 2

Example 2
2 sqrt
stack: 1.4142135623
clear 9 sqrt
stack: 3

Example 3
5 2 -
stack: 3
3 -
stack: 0
clear
stack:

Example 4
5 4 3 2
stack: 5 4 3 2
undo undo *
stack: 20
5 *
stack: 100
undo
stack: 20 5

Example 5
7 12 2 /
stack: 7 6
*
stack: 42
4 /
stack: 10.5

Example 6
1 2 3 4 5
stack: 1 2 3 4 5
*
stack: 1 2 3 20
clear 3 4 -
stack: - 1

Example 7
1 2 3 4 5
stack: 1 2 3 4 5
* * * *
stack: 120

Example 8
1 2 3 * 5 + * * 6 5
operator * (position: 15): insucient parameters
stack: 11
(the 6 and 5 were not pushed on to the stack
due to the previous error)

Airwallex is...

Payments Re-imagined

Using advanced technology to deliver seamless end to end solutions that transcend borders and industries; we relentlessly challenge the industry for the better of our customers, creating opportunity without exception.

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