CS 2003 Fundamentals of Algorithms and Computer Applications

Lab7: Use a Stack to evaluate a Postfix expression

Write a class `Lab7` that reads and evaluates postfix expressions contained in a file. Each line of the file contains a postfix expression with integers as operands and '+', '−', '*' and '/' as operators. Consecutive operands and operators are separated by spaces.

Note the following requirements for the lab:

- The main method in `Lab7.java` should do the following.

    1. ask the user for the name of the file containing the expressions,

    2. for each line of the file, read the postfix expression, call the method `evaluatePostfix` on this expression, and print the expression and its evaluation on the console.

- The method to evaluate the postfix expression in `Lab7.java` must have the following signature: `public static int evaluatePostfix(String expr)`. Your implementation must use the `Scanner` class to parse each line of the file to obtain the postfix expressions and then use a stack to evaluate each of these expressions.

Test your code using lab7.dat from the directory `~class_sandip/2003/` as your input data file. You will also need the following files : `StackInterface.java`, `StackVectorBased.java`, `StackException.java`.

Submission: Submit only the file Lab7.java via Harvey.

This assignment must be your own work and you should include your name and student ID in the submissions.