Just “Stack” It Next to Me

Programming Assignment #3

Overview. In Assignment 2, you used the Array class to design and implement a Stack. Likewise, we have covered the algorithm for converting an Infix expression to a Postfix expression in class. The motivation for this is it allows the expression to be processed in O(n) time.

For this assignment, you will complete the first implementation of the basic expression evaluator using the Stack created in Assignment 2 and the Infix to Postfix algorithm discussed in class. Moreover, to improve the design of your expression evaluator, you will use the Command Pattern (as explained in class) to evaluate the Postfix expression, and the (Abstract) Factory to create the commands based on parsing the Infix expression to convert it to a Postfix expression.

Runtime Requirements. You are to create a complete program. The expression evaluator must be able to handle the following operators/tokens: +, -, /, *, %, (,), integers (positive and negative). All expression will have a space between each token to simplify parsing. All input should come from the STDIN. The program must loop until the user types QUIT—notice the all caps. All output should go to STDOUT. Failure to follow the required input/output method will result in an automatic 25-point deduction. All assignments must run on telsa.cs.iupui.edu.

Assignment files. No files will be provided for this assignment. You are to update your MPC file accordingly so that you can build your expression evaluator. The name of the MPC file must be **assignment3.mpc**. It is highly recommended that you do not place all your classes in a single file and take advantage of modularization.

Submissions. All submissions must be placed on IU Github by the deadline. The Github repository must be **private** under your account and named **cs363-[semester][year]-assignment3**. Failure to upload all your source code and project files to a Github repo with this name will receive an automatic zero (0). You must add the TA and me (hilljh) as collaborators to the project. Failure to add the TA or me as a collaborator will result in an automatic zero (0).