

Spreadsheet Evaluation

A spreadsheet can be a powerful but easy to use tool for repetitive tabulation. In particular, cells of a spreadsheet can contain formulas which consisting of mathematical operations and references to other cells. The goal of this problem is to write a program to evaluate the cells of a spreadsheet.

For example, the spreadsheet:

	A	B
1	1	2 3 +
2	2 A1 *	B1 A2 /

would evaluate to:

	A	B
1	1	5
2	2	2.5

For this problem, you may assume that every cell of a matrix contains a mathematical expression in postorder notation (meaning the operator follows the operands) which can be comprised of the following:

- 1) The binary operators {+, -, *, /}
- 2) Numbers: these can be either integers or decimal numbers, and may be signed
- 3) References to other cells: these will be of the form <column><row>, for example A1

INPUT AND OUTPUT

Your program should take two command line parameters, <inputfile> and <outputfile>. The <inputfile> will be a plaintext representation of a single spreadsheet, in which each line corresponds to a single row containing the comma delimited values of each cell in that row. Furthermore, if the spreadsheet can be successfully evaluated, your program should write the evaluated spreadsheet to <outputfile> using a similar format. If there are any errors during evaluation, your program should print a descriptive error message instead of writing an output file. It is safe to assume that any input file will contain no more than 500,000 cells.

In the example spreadsheet above, the input and output files would look like:

input.txt	output.txt
1,2 3 +	1,5
2 A1 *,B1 A2 /	2,2.5