

Expression Evaluator

Lab Assignment 1

Objective

Write a program in ARM Assembly for evaluating arithmetic expressions involving integer constants and operators add (+), subtract (-) and multiply (*). The program takes an expression represented as a null terminated ASCII string. Evaluation is performed in left to right order. There is no operator precedence. Assume that the program is to work only with expressions that do not cause an overflow at any stage.

Program

We stored the input in a register using the "asciz" command and we loaded the character byte by byte and converted the numbers into decimals by subtracting "#0x48" and performed the operations on the operands whenever we encountered an operator. Once a null character was encountered we exited the program.

Assumptions

If a null expression is given, the resultant value is 0

Invalid expressions will be evaluated to the extent where they are valid.

Eg. "98+2-" will be evaluated to 100

Also if multiple operators are entered in sequence it will consider the last operator

Eg. "98+-2" will be evaluated to 96

Sample Inputs:

Input: $98+-2$ Output: 96

Input: $98+2-$ Output: 100

Input: $98+2$ Output: 100

Input: $98*2$ Output: 196

Input: $98-2$ Output: 96