CSI 3130 - Assignment 3

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Question 3: A working calculator which handles multiple variables.

1) The BNF

See the full assignment report or browse the project files

2) The Tokens

Addition operator +

Adds the succeeding value to the preceding value, from left to right.

Subtraction operator -

Subtracts the succeeding value from the preceding value, from left to right.

Modulus operator %

Gets the remainder of dividing the succeeding value to the preceding value, from left to right.

Multiplication operator *

Multiplies the succeeding value by the preceding value, from left to right.

Division operator /

Divides the succeeding value by the preceding value, from left to right.

Open parenthesis symbol (

Evaluates the succeeding expression (until the close parenthesis symbol) first, from left to right.

Close parenthesis symbol)

Evaluates the preceding expression (until the open parenthesis symbol) first, from left to right.

Equal sign =

Gives the preceding variable the value of the succeeding integer.

Semicolon ;

Return the evaluation of the preceding statement according to the BNF grammar.

3) Regular Expressions and examples

print

Outputs the return of the succeeding expression to console

Example: `print 1+2;` outputs `Calculator output: 3`

Single alphabet characters [a-z, A-Z] as variables

Treated as variables that store the value succeeding an equal sign

Example: `x = 2; y = 3; print x + y;` outputs `Calculator output: 5`

4) Compiling and using the calculator

Step 1

In bash run the build_partial script by running inside the project main directory sh build_partial.sh

Step 2

Run the calculator inside the build directory by running build/calculator_partial

Step 3

Use the calculator as described above. i.e. print 1+2;

Step 4

Exit the calculator with ctrl+c

Step 5

Clean up the generated files by running the clean-up script inside the project main directory sh clean_partial.sh