Data_structure Exam

Calculator

- Input: {number} {operator} {number}
- For example:

  2 + 3
  3 - 2
  5 * 3
  6 / 4

Calculator

- Output: {number}
- For example:

  5

  1

  15

  1.5
- The result of input.

Calculator(Bonus)

- Please consider how to deal with bad input.
- Ex:
  2 3 + +,
  1 2 3,
  + 2 3,…
- Return error.

2 x 2 matrix multiplication

- Input: {2 * 2 Integers} * {2 * 2 Integers}
- For example:
  1 2 3 4 * 1 0 0 1

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \cdot \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

2 x 2 matrix multiplication

- Ouput: {2 * 2 Integers}
- For example:

  1 2 3 4

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$$

N x M x L matrix multiplication(Bonus)

- Input: {N} {M} {L} : {N * M Integers } * {M * L Integers }
- For example:

  2 2 3 : 1 2 3 4 * 1 0 1 0 0 1

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \cdot \begin{pmatrix} 1 & 0 & 1 \\ 0 & 0 & 1 \end{pmatrix}$$

M * N * L matrix multiplication(Bonus)

- Ouput: {N * L Integers}
- For example:

  1 0 3 3 0 7

$$\begin{pmatrix} 1 & 0 & 3 \\ 3 & 0 & 7 \end{pmatrix}$$

Hint : $\begin{pmatrix} 1\cdot 1+2\cdot 0 & 1\cdot 0+2\cdot 0 & 1\cdot 1+2\cdot 1 \\ 3\cdot 1+4\cdot 0 & 3\cdot 0+4\cdot 0 & 3\cdot 1+4\cdot 1 \end{pmatrix}$