# I Irritating Interruption II

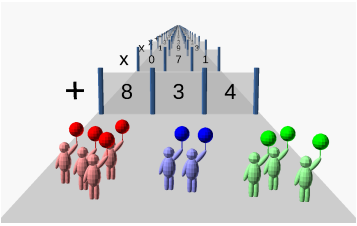
Time limit: 1s

Tonias has successfully determined that the last mobile game ad he looked at was a total scam. He has managed to get back on track with his thesis, and is determined to not get distracted again.

He will just take a 5-minute break.

...

Do you know those mobile game ads where you control an army that must repeatedly choose between different gates, each applying a mathematical operation to the army's strength (such as $\times 3$, $+10$ or $-4$)?




The high-quality multi-army version of the game, sporting many polygons and at least one texture that is definitely not a rendering artefact.

Tonias is now stuck playing the multi-army version: He starts with $k$ armies, each with a strength of 1. In each round, a mathematical operation ($+$ or $\times$) is given, along with $k$ gates displaying their corresponding integers.

Each of the armies must go through a *different* gate. When an army goes through a gate with value $a$, the army's strength is either increased or multiplied by $a$ (depending on the operation of that round). Your objective is to help Tonias maximize the *sum of strengths* of all his armies after all rounds, so he can get back to his thesis.

## Input

The input consists of:

- One line with two integers $n$ and $k$ ($1 \leq n \cdot k \leq 10^4$), the number of rounds and the number of armies.
- $n$ lines, each containing an operator (either '+' or '$\star$') and $k$ integers $a$ ($0 \leq a \leq 10^{12}$), the value of each gate in this round.

It is guaranteed that, for any given input, no army strength can ever exceed $10^{12}$.

## Output

Output the maximum achievable sum of strengths of the armies.

| Sample Input 1 | Sample Output 1 |
|---|---|
| 3 1<br>+ 3<br>* 10<br>+ 2 | 42 |

| **Sample Input 2** | **Sample Output 2** |
| --- | --- |
| 3 3<br>+ 1 2 3<br>* 3 2 2<br>+ 7 6 7 | 42 |