## \*Inferno III

Your game studio’s next triple A big-budget-killer app is the Hack and Slash Action RPG Inferno III. The main purpose of the game is well, to hack and slash things. But the secondary purpose is to craft items and recently the main fan base has started complaining that once you craft an item you can’t change it. So your next job is to implement a feature for one time reforging an item.

On the first line you are given the gems already inserted in the form of numbers, representing their power. On the next lines, until you receive the "Forge" command, you can receive commands in the following format **{command;filter type;filter parameter}**:

Commands can be: "Exclude", "Reverse" or "Forge". The possible filter types are: "Sum Left", "Sum Right" and "Sum Left Right". All filter parameters will be an integer.

"Exclude" marks a gem for exclusion from the set if it meets a given condition. "Reverse" deletes a previous exclusion.

"Sum Left" tests if a gems power summed with the gem standing to its right gives a certain value. "Sum Right" is the same but looks to a gems right peer. "Sum Left Right" sums the gems power with both its left and right neighbors. If a gem has no neighbor to its right or to its left (first or last element), then simply add 0 to the gem.

Note that changes on to the item are made only after forging. This means that the gems are fixed at their positions and every function occurs on the original set, so every gems power is considered, no matter if it is marked or not.

To better understand the problem, see the examples below:

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 1 2 3 4 5  Exclude;Sum Left;1  Exclude;Sum Left Right;9  Forge | 2 4 | 1. Marks for exclusion all gems for which the sum with neighbors to their left equals 1, e.g. 0 + **1** = 1  2. Marks for exclusion all gems for which the sum with neighbors to their left and their right equals 9, e.g.  2 + **3** + 4 = 9  4 + **5** + 0 = 9 |
| 1 2 3 4 5  Exclude;Sum Left;1  Reverse;Sum Left;1  Forge | 1 2 3 4 5 | 1. Marks for exclusion all gems for which the sum with their gem peers to the left equals 1, e.g. 0 + 1 = 1  2. Reverses the previous exclusion. |