UVa Online Judge

11507 Bender B. Rodríguez Problem

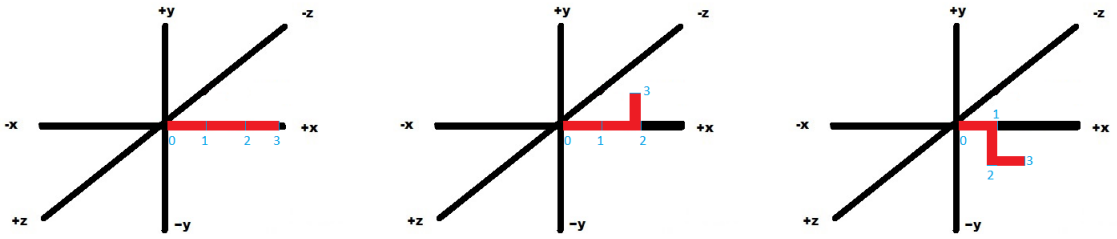
Bender is a robot built by *Mom's Friendly Robot Company* at its plant in Tijuana, Mexico in 2996. He is a `Bending-Unit 22`, serial number 2716057 and chassis number 1729. He was created for the task of bending metal wires.

Bender needs to bend a wire of length L ($L \geq 2$ an integer). The wire is represented in the Bender's brain (a `MOS Technology 6502` microprocessor) as a line stucked in the origin of a tridimensional cartesian coordinate system, and extended along the x positive axis (`+x`), so that the fixed extreme of the wire is in the coordinate $(0, 0, 0)$ and the free extreme of the wire is in the coordinate $(L, 0, 0)$.

Bender bends the wire at specific points, starting at the point $(L-1, 0, 0)$ and ending at the point $(1, 0, 0)$. For each i from $L-1$ to 1, Bender can take one of the following decisions:

- Not to bend the wire at point $(i, 0, 0)$.
- To bend the wire at point $(i, 0, 0)$ an angle of $\frac{\pi}{2}$ to be parallel to the axis `+y`, `-y`, `+z` or `-z`.

For example, if $L = 3$ and Bender bends the wire at $(2, 0, 0)$ on the `+y` axis direction, and at $(1, 0, 0)$ on the `-y` axis direction, the result would be:



Initial | After bend `+y` at $(2, 0, 0)$ | After bend `-y` at $(1, 0, 0)$

Given a sequence of bends, you must determine what direction is pointed by the last segment of the wire (`+x` in the example). You can suppose that the wire can intercept itself, after all it is the future!

Input

The first line of each test case gives an integer L ($2 \leq L \leq 100000$) indicating the length of the wire.

The second line of each test case contains the $L-1$ decisions taken by Bender at each point, separated by spaces. The j-th decision in the list (for each $1 \leq j \leq L-1$) corresponds to the decision taken at the point $(L-j, 0, 0)$, and must be one of the following:

- '`No`' if the wire isn't bended at point $(L-j, 0, 0)$.
- '`+y`' if the wire is bended at point $(L-j, 0, 0)$ on the `+y` axis.
- '`-y`' if the wire is bended at point $(L-j, 0, 0)$ on the `-y` axis.
- '`+z`' if the wire is bended at point $(L-j, 0, 0)$ on the `+z` axis.
- '`-z`' if the wire is bended at point $(L-j, 0, 0)$ on the `-z` axis.

The end of the input is indicated when $L = 0$.

Output

For each case in the input, print one line with the direction pointed by the last segment of the wire, '`+x`', '`-x`', '`+y`', '`-y`', '`+z`' or '`-z`' depending on the case.

Sample Input

```
3
+z -z
3
+z +y
2
+z
4
+z +y +z
5
No +z No No
0
```

Sample Output

```
+x
+z
+z
-x
+z
```