Order Strings

Given a list of n strings $s_0, s_1, \ldots, s_{n-1}$, each consisting of digits and containing the same number of spaces, the goal is to implement a variation of a sort command implemented in Unix-like operating systems. None of the strings contains consecutive spaces. Also, no string starts with a space nor ends with it. Spaces are used to divide string into columns, which can be used as keys in comparisons.

The program has to support the required parameters:

key: integer denoting the column used as a key in comparisons. The left-most column is denoted by 1.

reversed: boolean variable indicating whether to reverse the result of comparisons

comparison-type: either `lexicographic` or `numeric`. Lexicographic means that we use Lexicographical order where for example $122 < 13$. Numeric means that we compare the strings by their numerical values, so $13 < 122$. If the comparison type is `numeric` and numeric values of s_i and s_j are equal for $i < j$, then s_i is considered strictly smaller than s_j because it comes first.

Input Format

In the first line, there is a single integer n denoting the number of strings to sort. In the i-th of the following n lines there is a string s_i. In the last line, there are 3 space-separated values, denoting the values of variables key, $reversed$, $comparison\text{-}type$

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq |s_i| \leq 50$
- $1 \leq key \leq \text{number of spaces in each string} + 1$
- $\text{reversed} \in \{\text{true}, \text{false}\}$
- $\text{comparison-type} \in \{\text{lexicographical}, \text{numeric}\}$
- None of the strings contains consecutive spaces
- No string starts with a space nor ends with it
- All column values in all the strings are unique

Output Format

Print exactly n lines. In the i-th of them, print the i-th string in the resulting order.

Sample Input 0

```
3
122
12
13
1 false lexicographic
```

Sample Output 0

```
12
122
13
```

Explanation 0

There is only 1 key, reversal is false and the order of comparison is lexicographic. Therefore, the output is 12, 122 and 13.

Sample Input 1

```
3
122
12
13
1 true lexicographic
```

Sample Output 1

```
13
122
12
```

Explanation 1

There is only 1 key, reversal is true and comparison is lexicographic. The lexicographic order is 12, 122, 13. Therefore, the output is the reverse of this which is 13, 122, 12.

Sample Input 2

```
3
92 022
82 12
77 13
2 false numeric
```

Sample Output 2

```
82 12
77 13
92 022
```

Explanation 2

The key for ordering is 2, reversal is false and ordering is numeric. Therefore, the keys 022, 12 and 13 should be ordered as 12, 13 and 022. Therefore, the final output is 82 12, 77 13 and 92 022.