Mock CCC '22 Contest 2 J4 - Hockey Bracket

Time limit: 1.0s **Memory limit:** 256M

The hockey event at the Winter Olympics will be happening soon! UselessLeaf will bet with his friends about how the countries will place.

The tournament will be operating in a round-robin fashion. There are N countries competing, numbered from 1 to N, and they will be split into groups of size S. $\frac{S(S-1)}{2}$ matches will then occur in each group, where each country in their group play against each other country in the group once, resulting in a total of $\frac{(S-1)N}{2}$ matches. After a match, the winning country gains 3 points, while the losing country gains 0. If it is a tie, both countries gain 1 point.

The tournament ends when all $\frac{S(S-1)}{2} \times \frac{N}{S} = \frac{(S-1)N}{2}$ matches have been played. The countries in each group will then be ranked by their points. If there is a tie, the lower-numbered country should be ranked better (for example, if country i and country j where $i < j$ got the same number of points, country i should be ranked better than country j).

A time traveller has suddenly appeared and provided UselessLeaf with the results of the $\frac{(S-1)N}{2}$ matches. He provides the two countries in the match, a and b, and the result of the match, an uppercase letter R where `W` means country a won the match, `L` means country b won the match, and `T` means the match ended in a tie.

UselessLeaf is participating in a bet where he has to guess the country that places K^{th} in each group and needs your help figuring this out!

Constraints

$1 \leq N \leq 2 \times 10^3$

$1 \leq S \leq N$

$N \equiv 0 \pmod{S}$

$1 \leq K \leq S$

$1 \leq a, b \leq N$

$R \in \{\texttt{W}, \texttt{L}, \texttt{T}\}$

Subtask 1 [5/15]

$S = N$

Subtask 2 [10/15]

No additional constraints.

Input Specification

The first line will contain two space-separated integers N, the number of countries competing, and S, the number of countries in each group.

The next $\frac{N}{S}$ lines will contain S space-separated integers, the i^{th} line containing the countries that are in the i^{th} group.

The next $\frac{(S-1)N}{2}$ lines will contain two space-separated integers a and b, the countries involved in this match, and one character R, the result of the match between country a and country b.

The next line will contain one integer K, where UselessLeaf must figure out which country placed K^{th} in each group.

Output Specification

Output $\frac{N}{S}$ space-separated integers, the i^{th} integer being the country that placed K^{th} in the i^{th} group.

Sample Input

```
4 2
3 1
2 4
1 3 W
2 4 T
2
```

Sample Output

```
3 4
```

Explanation

In group 1, since `1` beat `3`, `1` is ranked 1, while `3` is ranked 2. In group 2, there is a tie for first and second in terms of points between `2` and `4`, but `2` is the lower numbered country so is ranked 1, meaning `4` is ranked 2.