# COCI '15 Contest 4 #5 Galaksija

A long time ago in a galaxy far, far away, there were $N$ planets. There were also $N - 1$ interplanetary paths that connected all the planets (directly or indirectly). In other words, the network of planets and paths formed a tree. Additionally, each path was enumerated with an integer that denoted the **curiosity** of the path.

A pair of planets $A, B$ is boring if the following holds:

- A and B are different planets
- travelling between planet $A$ and $B$ is possible using one or more interplanetary paths
- binary **XOR** of the curiosity of all the paths in that travel is equal to 0

Alas, the times have changed and an evil emperor is ruling the galaxy. He decided to use the Force to destroy all the interplanetary paths in a certain order.

Determine the number of boring pairs of planets before the emperor started the destruction and after each destruction.

## Input

The first line of input contains the integer $N$ $(1 \leq N \leq 100\,000)$.

Each of the following $N - 1$ line contains three integers $A_i$, $B_i$, $Z_i$ $(1 \leq A_i, B_i \leq N, 0 \leq Z_i \leq 1\,000\,000\,000)$ that denote that planets $A_i$ and $B_i$ are directly connected with a path of curiosity $Z_i$.

The following line of input contains the permutation of the first $N - 1$ integers that denote the order in which the emperor is destroying the paths. If the $i^{th}$ element of the permutation is $j$, then the emperor destroyed the path between planets $A_j$ and $B_j$ in the $i^{th}$ step.

## Output

The output must contain $N$ lines, the $k^{th}$ line containing the number of boring pairs $A, B$ from the task after the emperor destroyed exactly $k - 1$ paths.

## Scoring

In test cases worth 20% of total points, it will hold $N \leq 1\,000$.

In test cases worth at least 30% of total points, every path's curiosity will be equal to 0.

## Sample Input 1

```
2
1 2 0
1
```

## Sample Output 1

```
1
0
```

## Explanation for Sample Output 1

Before the destruction, the path between planets 1 and 2 is boring. After destruction, the path between them doesn't exist anymore.

## Sample Input 2

```
3
1 2 4
2 3 4
1 2
```

## Sample Output 2

```
1
0
0
```

## Explanation for Sample Output 2

Before the destruction, pair of planets (1, 3) is boring. Travel between 1 and 3 is no longer possible after the first and after the second destruction, and none of the remaining pairs of planets is boring.

## Sample Input 3

```
4
1 2 0
2 3 0
2 4 0
3 1 2
```

## Sample Output 3

```
6
3
1
0
```

## Explanation for Sample Output 3

Notice that in this example each pair of planets with a possible path between them is boring because all paths have the curiosity 0.