

# IOI Training Camp 2018 Practice Test 5

## Product On Tree

Chef is going to leave his home town and shift to a new city. The new city contains exactly  $N$  houses. There are roads connecting the houses in such a way that there is exactly one way to go from a house to any other house. Length of each of the roads is known to Chef.

Chief is doing a lot of research before shifting to the new city. He wants to know how many pairs of houses  $(a,b)$  are there, such that if we multiply length of all the roads on the path from  $a$  to  $b$ , the product will be divisible by  $M$ .

## Input

First line of the input contains a pair of integers  $N$  and  $M$ , where  $N$  denotes the number of houses. Each of the next  $(N-1)$  lines contains a triplet of numbers  $(a, b, c)$  which will denote that the length of the road between houses  $a$  and  $b$  is  $c$ .

## Output

A single integer denoting the number of pair of houses.

## General Constraints

Unless otherwise mentioned, the following constraints are met throughout all subtasks:

- $1 \leq M \leq 500$
- $1 \leq \text{weight of road} \leq 10^9$

## Subtasks

### Subtask 1 (20 Points):

- $1 \leq N \leq 10^5$
- $M$  is a prime.

### Subtask 2 (20 Points):

- $1 \leq N \leq 1000$

### Subtask 3 (60 Points):

- $1 \leq N \leq 10^5$

## Sample Input 1

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

**Sample Output 1**

6

**Explanation**

If we multiply the lengths of the roads on the path between any pair of the vertices, it will be divisible by 2.

**Limits**

Time: 2 seconds

Memory: 512 MB