

C. Digit Tree

time limit per test: 3 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

ZS the Coder has a large tree. It can be represented as an undirected connected graph of n vertices numbered from 0 to $n - 1$ and $n - 1$ edges between them. There is a single **nonzero** digit written on each edge.

One day, ZS the Coder was bored and decided to investigate some properties of the tree. He chose a positive integer M , which is **coprime** to 10, i.e. $\gcd(M, 10) = 1$.

ZS consider an **ordered pair** of distinct vertices (u, v) *interesting* when if he would follow the shortest path from vertex u to vertex v and write down all the digits he encounters on his path in the same order, he will get a decimal representaion of an integer divisible by M .

Formally, ZS consider an ordered pair of distinct vertices (u, v) interesting if the following states true:

- Let $a_1 = u, a_2, \dots, a_k = v$ be the sequence of vertices on the shortest path from u to v in the order of encountering them;
- Let d_i ($1 \leq i < k$) be the digit written on the edge between vertices a_i and a_{i+1} ;
- The integer $\overline{d_1 d_2 \dots d_{k-1}} = \sum_{i=1}^{k-1} d_i \cdot 10^{k-1-i}$ is divisible by M .

Help ZS the Coder find the number of interesting pairs!

Input

The first line of the input contains two integers, n and M ($2 \leq n \leq 100\,000$, $1 \leq M \leq 10^9$, $\gcd(M, 10) = 1$) — the number of vertices and the number ZS has chosen respectively.

The next $n - 1$ lines contain three integers each. i -th of them contains u_i, v_i and w_i , denoting an edge between vertices u_i and v_i with digit w_i written on it ($0 \leq u_i, v_i < n$, $1 \leq w_i \leq 9$).

Output

Print a single integer — the number of interesting (by ZS the Coder's consideration) pairs.

Examples

input	Copy
<pre>6 7 0 1 2 4 2 4 2 0 1 3 0 9 2 5 7</pre>	
output	Copy
<pre>7</pre>	
input	Copy

```
5 11
1 2 3
2 0 3
3 0 3
4 3 3
```

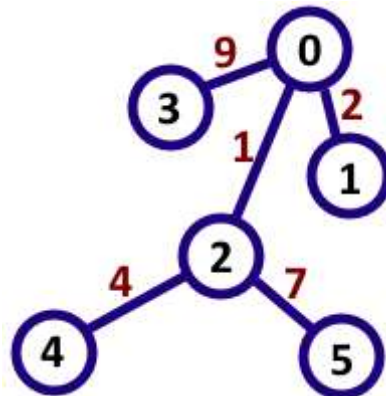
output

Copy

8

Note

In the first sample case, the interesting pairs are (0, 4), (1, 2), (1, 5), (3, 2), (2, 5), (5, 2), (3, 5). The numbers that are formed by these pairs are 14, 21, 217, 91, 7, 7, 917 respectively, which are all multiples of 7. Note that (2, 5) and (5, 2) are considered different.



In the second sample case, the interesting pairs are (4, 0), (0, 4), (3, 2), (2, 3), (0, 1), (1, 0), (4, 1), (1, 4), and 6 of these pairs give the number 33 while 2 of them give the number 3333, which are all multiples of 11.

