Problem F. Funny Salesman

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

You are given a tree, and each edge has a non-negative integer weight.

Let $d(u, v)$ — The maximum of the edge weights on the unique simple path between vertices u and v.

Find the largest $\sum_{i=2}^{n} 2^{d(p_{i-1},p_i)}$ among all permutations of vertices $p_1, p_2, \ldots, p_n$.

Input

The first line contains one integer n ($2 \le n \le 100\,000$): the number of vertices in the tree.

Each of the next $n-1$ lines contains three integers u, v, w ($1 \le u, v \le n, 0 \le w \le 30$), an edge in the tree with endpoints u, v having weight w.

Output

Print one integer: the largest $\sum_{i=2}^{n} 2^{d(p_{i-1},p_i)}$.

Examples

standard input	standard output
5 1 2 0 2 3 0 3 4 0 4 5 1	6
10 2 1 1 3 1 1 1 4 0 5 1 2 6 4 1 2 7 2 8 4 2 8 9 3 6 10 0	42

Note

In the first example, one of the optimal permutations is $\{4, 5, 3, 2, 1\}$.