XorFun

SEASON 2021/2022 – FORTH ROUND

Sashka loves to regularly visit your class in informatics on Thursdays, where you always cover interesting topics. The last class was with a deputy teacher, who taught the whole class about bitwise operations. They emphasized on the *excluding or* (XOR) operation. Sashka, impressed by the capabilites of the operation, decided to open her older brother's notebook, full of interesting tasks, searching for XOR ones. Initially, she solved the easier problems, but now she stumbled upon the following exotic task:

You are gived a tree of N vertices, with weighted edges. You are allowed to make K changes of the values of the edges in order to minimize the count of *unpleasant* simple paths in the tree. A simple path is a path, which doesn't contain a vertex more than once. A path is *unpleasant*, when the *excluding or* of the values of the edges it contains, has an odd parity of set bits in its bitwise representation. Find the minimal possible count of *unpleasant* paths, after optimal use of operations.

Sashka used all of her knowedge in informatics, and was able to solve the task! At least that's what she thought, until next Thursday, when you said that she always uses $K + 1$ operations. Now she is very unhappy, which gives you the opportunity to cheer her up, by writing a program `xorfun.cpp`, which solves the mentioned task.

Input

The first line of `xorfun.in` constains two natural numbers N and K. The next $N - 1$ lines contain 3 natural numbers – the two endpoints of an edge v_i и u_i, and its weight – w_i.

Output

On one line in `xorfun.out` you should print one number – the minimal count of *unpleasant* paths.

Constaints

$1 \leq N \leq 5\,000$

$1 \leq K \leq 500$

$1 \leq v_i, u_i \leq N$

$0 \leq w_i \leq 2^{31} - 1$

Time Limit: 3 sec.
Memory Limit: 256 MB.

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Sample testcases

Input (xorfun.in)	Output (xorfun.out)
9 3 1 2 6 1 7 4 2 3 7 3 4 12 3 5 14 3 6 13 5 8 2 5 9 11	8
10 3 5 2 938707311 6 5 312182765 7 5 952433887 1 5 1630822531 3 5 1850473008 9 1 510193547 8 6 1465047925 10 8 1237069467 4 9 1320045850	9
15 4 1 3 1936267205 3 10 1050608599 15 1 1084713226 15 6 327822164 10 8 1085192654 1 9 479650095 12 9 16193632 12 11 1114880438 8 5 1011320449 8 13 2012210084 14 3 47220444 7 15 1406284003 4 1 16038788 13 2 733939625	36