Cover

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	1024 megabytes

You are given a tree with n vertices and $n-1$ edges. The degree of each vertex is at most k.

There are m undirected simple paths; the i-th path starts at vertex a_i, ends at vertex b_i, and carries a weight of w_i. We say an edge e is covered by a path (x, y) if and only if vertices x and y are disconnected when we remove edge e.

Please find a subset S of these paths such that each edge is covered by S at most once. Your goal is to maximize $\sum_{i \in S} w_i$.

Input

The first line of the input contains three integers n, m, k ($2 \leq n \leq 10^5, 0 \leq m \leq 5 \times 10^5, 1 \leq k \leq 12$).

The next $n-1$ lines, each line contains two integers x, y ($1 \leq x, y \leq n$), denoting there is an edge connecting vertex x and y in the given tree.

The i-th of the next m lines contains three integers a_i, b_i, w_i ($1 \leq a_i, b_i \leq n, 0 \leq w_i \leq 10^9, a_i \neq b_i$).

Output

Output a single line contains a single integer, indicating the answer.

Example

standard input	standard output
5 7 3 1 2 1 3 2 4 2 5 3 2 8 5 4 10 3 1 2 1 2 7 2 1 2 1 2 1 5 2 3	19