paint

You are given a tree of n nodes connected by $n-1$ weighted edges. The distance between two nodes in the tree is the sum of edge weights on the single path connecting them.

There are Q missions. In each mission, there are two integers K and D given. You can use K colors to paint the nodes in the tree. There is a special requirement that any two nodes within a distance at most D must be painted in different colors. Your task for the mission is to count the number of ways to paint the vertices following the requirement. Two ways differ if at least one node is colored differently.

Input

The first line in the input contains two integers n and Q $(1 \le n \le 10^5, 1 \le Q \le 5)$: the number of nodes and missions.

The i^{th} of the following $n-1$ lines contains three integers $u_i, v_i, w_i (1 \le u_i \ne v_i \le n,\ 1 \le w_i \le 10\text{^}4)$ where there is an edge connecting u_i and v_i of weight w_i.

The i^{th} of the following Q lines contains two integers D and K $(1 \le D \le 10^9, 1 \le K \le n)$: the required distance and the number of colors in the i^{th} mission.

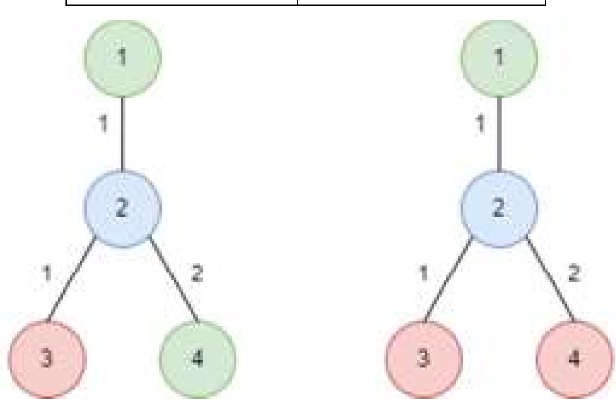
Output

For each mission, print a single line containing the number of different colorings satisfying the given conditions. If the number is too large, print it modulo 10^9+7

Subtasks

- 30% of the points: for every $1 \le i < n$, there is an edge between two vertices i and $i+1$
- 40% of the points: $n \le 2000$

Sample input	Sample output
5 2 1 2 2 1 3 3 3 4 1 3 5 2 3 3 4 4	24 144
4 1 1 2 1 2 3 1 2 4 2 2 3	12



In the second example, vertex 1, 2 and 3 must be colored differently. Also, vertex 2 and vertex 4 must have different colors. Hence, vertex 4 can either have vertex 1's color or vertex 3's color. We also have 6 ways to permute the colors, so the answer is 12.