

Strange Sorting 2

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

Little Cyan Fish and Little Kevinfish are playing a game of sorting sequences. Little Kevinfish has a tree T with n vertices, where the vertices are numbered with integers from 1 to n .

For a sequence A consisting of integers from 1 to n , Little Kevinfish defines a swap operation as:

- Choose indices i, j , such that the vertices numbered A_i and A_j are directly connected by an edge in T .
- Swap the positions of A_i and A_j .

Little Kevinfish asks Little Cyan Fish the following question:

- For a given constant m , for each $\ell = 1, 2, \dots, m$, solve the following problem:
 - Consider a sequence A of length ℓ consisting of integers from 1 to n (there are n^ℓ such sequences in total), how many sequences A can be transformed into a sequence that is monotonically non-decreasing through some number of the above swap operations.

Please help Little Cyan Fish answer Little Kevinfish's question. Since the answer may be very large, you only need to output the answer modulo $10^9 + 7$.

Input

There are multiple test cases. The first line of the input contains a single integer T ($1 \leq T$), indicating the number of test cases.

For each test case, the first line of the input contains two integers n and m ($1 \leq n \leq 200, 1 \leq m \leq 10^5$).

The next $(n - 1)$ lines each contain two integers u_i and v_i ($1 \leq u_i, v_i \leq n, u_i \neq v_i$), indicating an edge connecting vertex u_i and v_i . It is guaranteed that these $(n - 1)$ edges form a valid tree.

It is guaranteed that the sum of n over all test cases does not exceed 200, and the sum of m over all test cases does not exceed 10^5 .

Output

For each test case, output a single line containing m integers. The i -th ($1 \leq i \leq m$) integer represents the answer when $\ell = i$, modulo $10^9 + 7$.

Example

standard input	standard output
3	3 8 23 70
3 4	4 13
1 2	1 1 1 1 1 1 1 1 1 1
2 3	
4 2	
1 2	
1 3	
3 4	
1 10	