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Birthday Assignment

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by ma5termind

Problem

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Nikita has a family tree T consisting of N members number from 1 to N. Each of the N-1 edges in the tree represents a directed relationship. Basically if there is an edge from member A to B, it means B was born before A. Now, Nikita knows that these N members were born in last M days and only 1 person was born on a single day, She is interested in calculating the number of ways to assign birthdays to each of the N family members.

Since the required answer can be quite large, print it modulo $10^9 + 7$.

Input Format

First line of input contains a single integer $m{T}$ denoting the number of test cases.

First line of each test case contains 2 space separated integers denoting N and M respectively.

Next N-1 lines of each test case contains ${\bf 2}$ space separated integers ${\bf A}$ and ${\bf B}$ denoting a direct relationship from ${\bf A}$ to ${\bf B}$.

Constraints

- $1 \le T \le 5$
- $1 \le N \le 1000$
- $1 \leq A, B \leq N$
- $1 \le M \le 10^9$

Scoring

- $1 \le N = M \le 9$ for 20% test data.
- $1 \le N \le 100$ for 20% test data.
- $1 \le N \le 1000$ for 60% test data.

Output Format

Output consists of only T line. For each line, Print required answer modulo $10^9 + 7$.

Sample Input 0

- 2
- 3 4
- 1 2
- 3 4
- 1 2 3 2

Sample Output 0

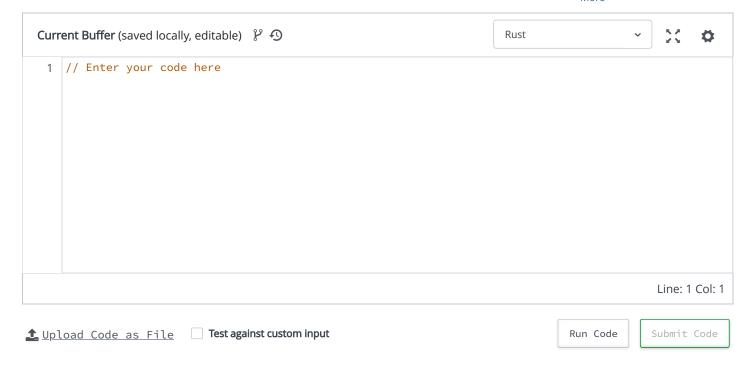
4 8

Explanation 0

- ullet For $oldsymbol{1^{st}}$ test case, birthdays can be assigned as follows.
 - {3, 2, 1}, $\mathbf{1}^{st}$ member was born on day $\mathbf{3}$, $\mathbf{2}^{nd}$ on day $\mathbf{2}$, $\mathbf{3}^{rd}$ on day $\mathbf{1}$.
 - {4, 3, 1}, $\mathbf{1}^{st}$ member was born on day $\mathbf{4}$, $\mathbf{2}^{nd}$ on day $\mathbf{3}$, $\mathbf{3}^{rd}$ on day $\mathbf{1}$.
 - {4, 2, 1}, $\mathbf{1}^{st}$ member was born on day $\mathbf{4}$, $\mathbf{2}^{nd}$ on day $\mathbf{2}$, $\mathbf{3}^{rd}$ on day $\mathbf{1}$.
 - {4, 3, 2}, $\mathbf{1}^{st}$ member was born on day $\mathbf{4}$, $\mathbf{2}^{nd}$ on day $\mathbf{3}$, $\mathbf{3}^{rd}$ on day $\mathbf{2}$.

Submissions: 146
Max Score: 70
Difficulty: Hard

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