Problem A. Rikka with Intersections of Paths

Input file:	`standard input`
Output file:	`standard output`
Time limit:	6 seconds
Memory limit:	1024 megabytes

Rikka has a tree T with n vertices numbered from 1 to n.

Meanwhile, Rikka has marked m simple paths in T, the i-th of which is between the vertices x_i and y_i, where some of them could be the same path.

Now, Rikka wants to know in how many different strategies she can select k paths from the marked paths such that those selected paths share at least one common vertex.

Input

The input contains several test cases, and the first line contains a single integer T ($1 \le T \le 200$), the number of test cases.

For each test case, the first line contains three integers n ($1 \le n \le 3 \times 10^5$), the size of the tree T, m ($2 \le m \le 3 \times 10^5$), the number of marked paths, and k ($2 \le k \le m$).

The following $(n-1)$ lines describe the tree T. Each of them contains two integers u and v ($1 \le u, v \le n$, $u \ne v$), representing an edge between the vertices u and v.

The following m lines describe all marked simple paths in the tree. The i-th of them contains two integers x_i and y_i ($1 \le x_i, y_i \le n$).

The input guarantees that the sum of n and the sum of m in all test cases are at most 2×10^6 respectively.

Output

For each test case, output a single line with a single integer, the number of different strategies meeting the requirement modulo $(10^9 + 7)$.

Example

standard input	standard output
1 3 6 2 1 2 1 3 1 1 2 2 3 3 1 2 1 3 2 3	10