Tree Coloring

Submissions Attempted by: **156** | Solved by: **69** | Partially Solved by: **23** |

Algorithms Combinatorics Dynamic Programming Medium Trees Edit

Nam draws a tree in a paper (Note: *tree* here is a sinple connected acyclic graph in Graph theory, not *tree* in reality). The tree consists of **N** nodes. Nam want to makes his tree more beautiful. Therefore, he decided to coloring all **N** nodes.

Nam numbering nodes from 1 to **N** for convinent. He firstly color node 1. Then he will color **N** - 1 remaining nodes, in any order which satisfied condition: node are chosen to color must be adjacent to one of nodes colored before. Two nodes are consider adjacent if there is a direct edge between them.

Nam wondering, how many ways of coloring the tree he possible make. Two ways are consider different if order of coloring nodes in 2 ways are different, because Nam uses only 1 color.

Input

The first line is **T** - the number of test cases. Then **T** test cases follow.

Each test consists of several lines.

- The first line is **N** - the number of nodes in tree.
- Then the next **N** - 1 lines, each line contains 2 integer **u** and **v** (1 ≤ **u**, **v** ≤ **N**), denoting there is a direct edge between node **u** and node **v**. It is guaranteed that these edges form a tree.

Output

For each test, print the number of ways coloring the tree in a single line. Since this number can very large, you must print it modulo $10^9 + 7$.

Constraints

- 1 ≤ **T** ≤ 10
- 1 ≤ **N** ≤ 100000

Sample Input (Plaintext Link)

```
3
3
1 2
2 3
3
1 2
1 3
4
1 2
2 3
```

```
1 4
```

Sample Output (Plaintext Link)

```
1
2
3
```

Explanation

In the first test, there is only 1 order of coloring the tree, that is (1, 2, 3). In the second test, there are 2 orders of coloring the tree, they are (1, 2, 3) and (1, 3, 2). In the third test, there are 3 orders of coloring the tree, they are (1, 2, 3, 4), (1, 2, 4, 3) and (1, 4, 2, 3).

Time Limit: 2 sec(s) for each input file.

Memory Limit: 256 MB

Source Limit: 1024 KB

Marking Scheme: Marks are awarded if any testcase passes.

Allowed languages: C, CPP, CLOJURE, CSHARP, GO, HASKELL, JAVA, JAVASCRIPT, JAVASCRIPT_NODE, LISP, OBJECTIVEC, PASCAL, PERL, PHP, PYTHON, RUBY, R, RUST, SCALA

Problem Author: Vuong Nguyen

Problem Tester: Anta

C ▼ Upload file: Choose File No file chosen Save

```c
#include <stdio.h>

int main()
{
    printf("Hello World!\n");
    return 0;
}

```

1

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