Problem H. Tree Shuffling

Input file:	standard input
Output file:	standard output
Time limit:	3 seconds
Memory limit:	256 megabytes

Froggy has an unrooted tree T with n vertices, where each vertex has an initial weight. Initially, the weight of vertex i is i.

Froggy can perform at most 1 operation sequentially as follows:

- Select several distinct vertices $x_1, x_2, \cdots, x_k$, such that for $i = 1, 2, \cdots, k-1$, there exists an edge in tree T connecting vertex x_i and vertex x_{i+1}.
- From the set $x_1, x_2, \cdots, x_k$, choose an even number of vertices $u_1, u_2, \cdots, u_{2l}$ (vertices can be chosen repeatedly). For $i = 1, 2, \cdots, l$, sequentially swap the weights of vertex u_{2i-1} and vertex u_{2i}.

Let a_i denote the weight of vertex i after all operations. How many distinct sequences $a_1, a_2, \cdots, a_n$ can Froggy obtain? Output the answer modulo 998244353.

Input

The first line contains a positive integer T ($1 \le T \le 10^3$), indicating the number of test cases.

For each test case, the first line contains an integer n ($1 \le n \le 3000$), representing the number of vertices in the tree.

The next $n-1$ lines each contain two positive integers x, y ($1 \le x, y \le n, x \ne y$), representing the two endpoints of an edge in tree T.

It is guaranteed that the sum of n over all test cases in a single test point does not exceed 1.5×10^4.

Output

For each test case, output one integer representing the answer modulo 998244353.

Example

standard input	standard output
3 5 1 2 1 3 1 4 1 5 6 1 2 1 3 1 4 2 5 2 6 6 1 2 2 3 2 4 3 5 4 6	23 80 155