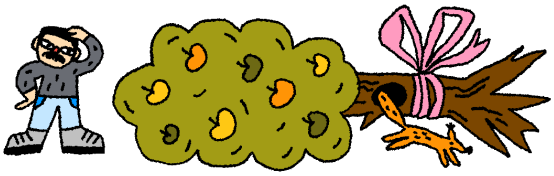
Apple Tree

Input file:	*standard input*
Output file:	*standard output*
Time limit:	8 seconds
Memory limit:	256 mebibytes



Aleksei received an apple tree of size n as a birthday present. As a competitive programmer himself, he decided to calculate the number of *k-apple pies* on the tree.

An *apple tree* of size n is defined as a rooted tree with n vertices, rooted at vertex 1, where each vertex has **strictly fewer** direct children than its parent (except the root that doesn't have any parent).

A *k-apple pie* is a pair (v, S) where:

- $v \in V$ is a vertex of the tree (the *center*),
- $S \subset V \setminus \{v\}$ is a set of vertices of size $k - 1$,
- there exists an integer d such that for every $u \in S$, $\text{dist}(v, u) = d$.

The distance $\text{dist}(u, v)$ is defined as the number of edges on the simple path between vertices u and v.

In other words, a k-apple pie consists of one vertex v (the center) and $k - 1$ other vertices that are all at the same distance from v.

Your task is to compute the number of k-apple pies in the given tree.

Since the answer may be large, output it modulo 998 244 353.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 10^4$). The description of the test cases follows.

Each test case begins with a line containing two integers n and k ($2 \le n \le 5 \cdot 10^5$, $1 \le k \le n$): the number of vertices in the apple tree and the size of the apple pie.

The next line contains $n - 1$ integers $p_2, p_3, \ldots, p_n$ ($1 \le p_i < i$), where p_i denotes the parent of vertex i in the apple tree.

The sum of n over all test cases does not exceed $5 \cdot 10^5$.

Output

For each test case, output a single integer: the number of k-apple pies modulo 998 244 353.

Example

standard input	*standard output*
3 3 3 1 1 5 2 1 1 2 3 6 3 1 1 1 2 2	1 20 16

Note

In the first test case, the only existing pie is centered at vertex 1, and the corresponding set is $S = \{2, 3\}$.