Problem L. Tree

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

You are given a tree T with n nodes. The tree is rooted at 1. Define $\text{subtree}(u)$ as the set of nodes in the subtree of u.

Call a subset of nodes S good if and only if S satisfies at least one of the following contidions:

- For all $u, v \in S$ where $u \neq v$, either $u \in \text{subtree}(v)$ or $v \in \text{subtree}(u)$.
- For all $u, v \in S$ where $u \neq v$, both $u \notin \text{subtree}(v)$ and $v \notin \text{subtree}(u)$.

You need to partition all nodes of T into several good subsets. Calculate the minimum number of subsets.

Input

The first line contains a single integer Q ($1 \leq Q \leq 10^5$), denoting the number of test cases.

For each test case, the first line contains an integer n ($1 \leq n \leq 10^6$). The next line contains $n-1$ integers $p_2, p_3, \ldots, p_n$ ($1 \leq p_i < i$), indicating that there is an edge between p_i and i for each $i = 2, 3, \ldots, n$.

It is guaranteed that the sum of n over all test cases is no more than 10^6.

Output

For each test case, output a single integer representing the answer.

Example

standard input	standard output
2 7 1 1 2 2 2 3 5 1 2 3 4	3 1