

Problem H. Monkeys

Input file: *standard input*
Output file: *standard output*
Time limit: 4 seconds
Memory limit: 512 mebibytes

Given is a tree with N vertices. There are K monkeys in the tree. The monkeys want to occupy some vertices of the tree so that each monkey is in some vertex and each vertex contains at most one monkey. Then, they want to remove some edges of the tree so that each monkey can still move to at least one other monkey using only the remaining edges.

Your task is to find the minimum possible number of remaining edges.

Input

The first line of input contains an integer T , the number of test cases ($1 \leq T \leq 100$).

Each test case begins with a line containing two integers N and K ($2 \leq K \leq N \leq 10^5$). The next line contains $N - 1$ space-separated integers a_1, a_2, \dots, a_{N-1} ($1 \leq a_i \leq i$). They mean that, for each i , there is an edge between vertex a_i and vertex $i + 1$.

Output

For each test case, print the minimum possible number of remaining edges.

Example

standard input	standard output
2	2
4 4	2
1 2 3	
4 3	
1 1 1	