
Divide a Tree

Input file: **standard input**
Output file: **standard output**
Time limit: 1.5 seconds
Memory limit: 256 megabytes

Fish has a tree with N nodes numbered from 1 to N , and for each node there is a label attached to it. These labels are integers ranging from 1 to N . Now Fish wants to divide the tree into many parts and each part is a connected component in the tree. There are so many ways to achieve it, right? But now Fish defines a part as a **good** part if there is at least one label appears only in this part.

Please tell Fish how many **good** parts he can get at most in one division.

Input

The first line of input contains an integer T , representing the number of test cases.

Then for each test case:

The first line contains one integer N as mentioned above.

The second line contains N integers, representing the label for each node.

Then $N - 1$ lines follow, each line containing two numbers a, b , which means that there is an edge connecting node a and node b .

Output

For each test case, you should output **Case x : y** , where x indicates the case number starting from 1, and y is the number of **good** parts Fish can get at most in one division.

Example

standard input	standard output
2	Case 1: 2
6	Case 2: 3
1 1 2 2 3 3	
1 2	
2 3	
2 4	
1 5	
5 6	
6	
1 1 2 2 3 3	
1 2	
1 3	
3 4	
1 5	
5 6	

Note

$$1 \leq T \leq 100$$

$$1 \leq N \leq 10^5$$

$$1 \leq a, b \leq N$$

For 90% test cases: $N \leq 1000$