Electricity

Problem

Ben works as an engineer in a city with N electric junctions. These junctions form a network and can be visualised as a connected graph with N vertices and $N - 1$ edges. The city is facing a power outage, due to which none of the junctions are receiving electricity, and Ben is in charge of handling the situation.

Each junction has a fixed electric capacity. A_i is the electric capacity of the i-th junction. Due to resource constraints, Ben can provide electricity to *only one* junction, but other junctions can receive electricity depending on their connections and capacities. If the i-th junction receives electricity, then it will also get transmitted to all the junctions directly connected to the i-th junction whose capacity is *strictly less* than A_i. Transmission stops if no eligible junction is present. Help Ben determine the maximum number of junctions that can receive electricity.

Input

The first line of the input gives the number of test cases, T. T test cases follow.
The first line of each test case contains an integer N which represents the number of junctions in the city.
The next line contains N integers. The i-th integer is A_i, which is the electric capacity of the i-th junction.
The next $N - 1$ lines each contain two integers X_i and Y_i, meaning that the junctions X_i and Y_i are directly connected to each other.

Output

For each test case, output one line containing `Case #x:` y, where x is the test case number (starting from 1) and y is the maximum number of junctions that can receive electricity.

Limits

Time limit: 40 seconds.
Memory limit: 1 GB.
$1 \le T \le 100$.
$1 \le A_i \le 10^9$, for all i.
$1 \le X_i, Y_i \le N$, for all i.
All the junctions are part of a single connected network.

Test Set 1
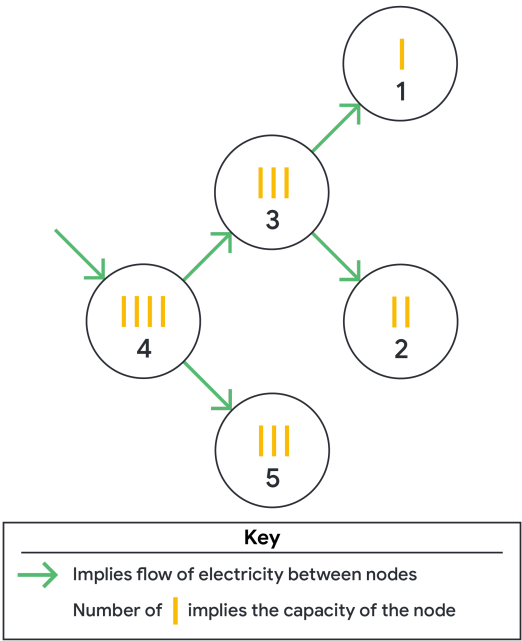
$1 \le N \le 10^3$.

Test Set 2

For at most 15 cases:
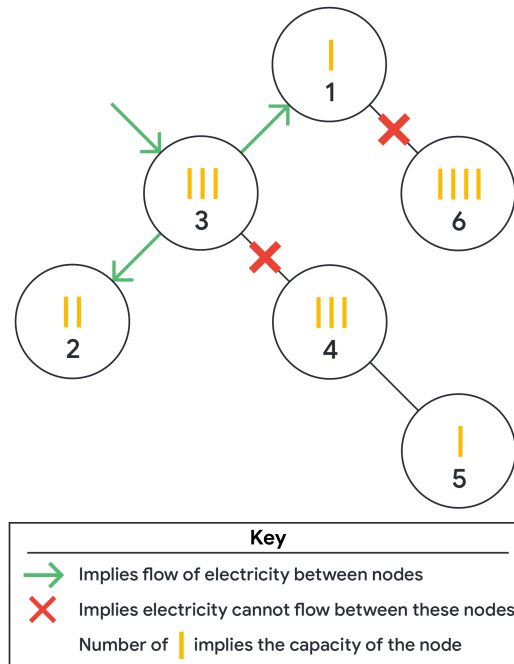$1 \le N \le 2 \times 10^5$.
For the remaining cases:
$1 \le N \le 10^3$.

Sample

Sample Input

```
2
5
1 2 3 4 3
1 3
2 3
4 3
4 5
6
1 2 3 3 1 4
3 1
3 2
3 4
4 5
1 6
```

Sample Output

```
Case #1: 5
Case #2: 3
```

Key

→ Implies flow of electricity between nodes

Number of | implies the capacity of the node

In Sample Case #1, the optimal solution is to provide electricity to the fourth junction. This will transmit electricity to all the junctions eventually.

If the electricity is provided to the third junction, it will transmit it to the first and second junction, but not to the fourth junction. In that case, only three junctions can finally receive electricity.

Key

→ Implies flow of electricity between nodes

✗ Implies electricity cannot flow between these nodes

Number of | implies the capacity of the node

In Sample Case #2, the optimal solution is to provide electricity to the third junction. This will transmit it to the first and second junctions. Note that electricity will not be transmitted to the fourth junction, since its capacity is not *strictly less* than that of the third junction.
If electricity is provided to the sixth junction, it will only be transmitted to the first junction.
If electricity is provided to the fourth junction, it will only be transmitted to the fifth junction.