(Adv.) Competitive Programming

Submit until 24.05.2019 13:30, via the judge interface

Problem: gummi-bears (1 second timelimit)

You and a friend of you are playing a game. At some huge wall several cups with gummi bears inside are placed at different heights. Some cups are connected with wires, but only from higher levels to lower levels. All cups are connected with at least one other cup and there is no cycle of wires.

Your game has a pretty simple rule: You can collect as many cups as you want, but if you take a cup, you are not allowed to take one of the connected ones.

Try to get the highest number of gummi bears by selecting cups respecting that rule.

Input The input starts with a single number in the first line, containing the number of cups n ($5 \leq n \leq 200.000$). Afterwards n lines follow. Each line contains a integer k_i ($k_i < 20000$). k_i is the number of gummi bears inside cup i (the row number is i). Afterwards $n-1$ lines follow. Each line contains the two integers a and b ($a, b < n$). a is the id of the higher cup having a connection to the lower one b.

Output Just print the number of gummi bears that you can collect respecting the rules in a single line.

Sample input

```
5
4
8
1
1
7
1 4
4 0
4 3
1 2
```

Sample output

```
13
```

```
10
11
18
6
17
4
5
3
13
0
18
5 3
6 5
5 9
9 1
7 0
7 8
9 4
2 7
3 2
```

```
55
```

```
15
36
32
25
38
32
32
13
0
31
26
28
34
15
5
37
11 10
13 0
8 4
12 6
13 1
12 11
8 2
7 14
0 7
6 8
8 3
1 5
4 13
6 9
```

```
269
```