Lighthouse

After 150 years of working the lighthouse near the city of Shabla stopped working and the lights went out. That's why the people of Shabla started searching for people to fix it. They hired craftsmen, they hired engineers, and they hired you. Your job is to tell them the maximum amount of lights that can be turned on.

The lighthouse consists of n lights, numbered from 1 to n, connected with n-1 connections. Every connection, connecting light i with light j, also connects light j with light i. Also "travelling" through the connections every light can be reached from every other light.

Because the lighthouse is old and its cables aren't well connected, every light i has a coefficient b_i , meaning that if light i is turned on, then a maximum of b_i lights connected to it can be turned on. (Or else the lighthouse will go out again.)

Write a program, which receives n, the list of connections and the coefficients b_i for every light, then finds the maximum amount of lights which can be turned on, while keeping to the rules of the coefficients.

Input

The first line of the file **lighthouse.in** contains the number n – the amount of lights the lighthouse has.

The next line has n integers: b_1 b_2 …. b_n , showing the coefficients of the lights in order of numeration.

The next n-1 lines contain two number – i j, showing that light number i is connected to lamp number j. (And the opposite)

Output

On the only line of the file **lighthouse.out** print 1 number – the maximum amount of lights which can be turned on.

Constraints

$2 \leq n \leq 10^5$

$0 \leq b_i \leq n$

Time Limit: 0.4 sec.

Memory Limit: 256 MB.

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2023/2024 SEASON – SECOND ROUND

Sample Test

Input (lighthouse.in)	Output (lighthouse.out)
8 1 1 1 2 2 1 1 1 2 4 2 3 8 4 3 5 5 6 2 1 7 4	7

Example Explanation

If we turn on every light but number 2, the rules of the coefficients are kept. That is the maximum amount, because turning on all the lights breaks the coefficient of number 4.