Related questions

Problem Statement

For the purposes of this problem, suppose Quora has N questions, and question i ($1 \leq i \leq N$) takes T_i time to read. There exists exactly one path from any question to another, and related questions form undirected pairs between themselves. In other words, the graph of related questions is a tree.

Each time Steve reads a question, he will see a list of related questions and navigate to one that he hasn't read yet at random. Steve will stop reading once there are no unread related questions.

Which question should we show first to Steve so that we minimize his total expected reading time? It is guaranteed that there is one unique question that is optimal.

Input Format

- Line 1: A single integer, N
- Line 2: N integers, T_i
- Line 3...$N+1$: Each line contains two integers A, B indicating that question A and B are related

Output Format

- Line 1: A single integer, X, the best question to show first.

Constraints

- $1 \leq N \leq 10^5$
- $1 \leq T_i \leq 10^6$

Sample Input

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

Sample Output

```
3
```