

Gasqutvå

Problem ID: gasqutva

Gasquen is antiquated so Gasqutvå shall now be crowdfunded by the Chalmers students. The N students communicate along a tree where the students are nodes. Students are arbitrarily numbered from 1 to N . The i th student's generosity is described by one integer a_i . You are to choose the first student to donate to the campaign, who will begin by donating 100 kr and then tell their neighbours in the tree about the campaign. When a student i tells a neighbour j about the campaign, and student j hasn't already donated, they will donate $d_j = d_i + a_j$ kr where d_i is the amount i donated. Student j will then go on to tell their neighbours in the tree about the campaign. Which student should donate first to maximize the total amount raised?

Input

The first line of input contains one integer $2 \leq N$, the number of students in the tree. Each of the following N lines contains one integer $0 \leq a_i \leq 10^9$ describing how generous the i th student is. After that, each of the following $N - 1$ lines contains two integers $1 \leq i, j \leq N$ denoting that students i and j are neighbours in the tree. It is guaranteed that the connections form a tree.

Output

Print the number of the student that should donate first to maximize the total amount raised. If there are multiple suitable students, choose the one with the lowest number.

Scoring

Your solution will be tested on a set of test groups, each worth a number of points. To get the points for a test group you need to solve all test cases in the test group. Your final score will be the maximum score of a single submission.

Group	Points	Constraints
1	60	$N \leq 100$
2	40	$N \leq 10^5$

Sample Input 1

```
3
50
60
100
2 1
1 3
```

Sample Output 1

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2
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