

Split

Problem Statement

There were N towns numbered from 1 to N , connected by $N - 1$ roads. Every town produces cheese, with the i -th town producing cheese of quality C_i . Pingu the tiny, cute, cheese-hating, blue penguin has been promoted to Archduke, and the King grants him a present. He must split the country into t(h)ree connected groups of towns by removing 2 roads, and choose one group to rule over. Since the smell of cheese spreads far and wide, Pingu will feel sadness equal to the maximum quality of cheese in the group he chooses. Help Pingu to minimise the amount of sadness he feels.

Input Format

The first line contains integer N , the number of towns.

The second line contains N integers, with the i -th integer representing C_i .

The next $N - 1$ lines contains 2 integers each, a and b , which means there's a road connecting town a to town b .

Output Format

Output a single integer, the minimum sadness that Pingu will feel.

Constraints

$$3 \leq N \leq 10^6$$

$$0 \leq C_i \leq 10^9$$

Subtasks

Subtask	Score	Constraints
1	3	$N = 3$
2	5	Towns are in a line, $N \leq 100$
3	11	Towns are in a line, $N \leq 2000$
4	16	Towns are in a line
5	10	$N \leq 100$
6	20	$N \leq 2000$

7	35	No further constraints
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Sample Input 1

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

Sample Output 1

2