I. Omar and Trees

time limit per test: 1 second
memory limit per test: 256 megabytes

When Omar was at school, his teacher gave him a challenge, and Omar accepted it.

The teacher gave Omar a tree of n nodes (node 1 is the root). The i_{th} node has a value a_i.

Then the teacher asked Omar q queries of two types:

- Update the value in every node in the subtree rooted with u to val (u included).
- Determine if the sum of all nodes in the subtree with root u can be represented as the sum of two prime numbers or not (u included).

Omar asks for your help in this challenge.

Input

The first line contains one integer n $(1 \leq n \leq 10^5)$.

The second line contains n integers $(1 \leq a_i \leq 10^5)$—the value of each node.

For each $n-1$ lines, it contains two integers u and v $(1 \leq u, v \leq n, u \neq v)$— indices of nodes connected by an edge.

Then the number of queries q $(1 \leq q \leq 10^5)$.

Each query format is one of the following:

- $1\ u\ val$: Update the value in every node in the subtree rooted with u to val $(1 \leq val \leq 10^5)$.
- $2\ u$: Determine if the sum of all nodes in the subtree with root u can be represented as the sum of two prime numbers or not.

Output

For each query of the second type, print "YES" without quotes if the sum of all nodes in the subtree with root u can be represented as the sum of two prime numbers or not, "NO" without quotes otherwise.

Example

input Copy

```
9
3 5 2 7 10 6 1 4 3
1 2
2 3
1 4
4 5
5 6
4 7
7 8
7 9
6
2 7
2 2
1 7 10
2 7
1 7 9
2 7
```

output Copy

```
YES
YES
YES
NO
```