PROBLEMSET GROUPS RATING EDU API CALENDAR HELP HOME TOP CATALOG CONTESTS GYM

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS STANDINGS CUSTOM INVOCATION

F. Trees and XOR Queries Again

time limit per test: 6.5 seconds memory limit per test: 512 megabytes

You are given a tree consisting of n vertices. There is an integer written on each vertex; the i-th vertex has integer a_i written on it.

You have to process q queries. The i-th query consists of three integers x_i, y_i and k_i . For this query, you have to answer if it is possible to choose a set of vertices v_1, v_2, \ldots, v_m (possibly empty) such that:

- every vertex v_i is on the simple path between x_i and y_i (endpoints can be used as well);
- $a_{v_1}\oplus a_{v_2}\oplus \cdots \oplus a_{v_m}=k_i$, where \oplus denotes the bitwise XOR operator.

Input

The first line contains one integer n ($2 \le n \le 2 \cdot 10^5$).

The second line contains n integers a_1, a_2, \ldots, a_n ($0 \le a_i \le 2^{20} - 1$).

Then n-1 lines follow. Each of them contains two integers u and v ($1 \le u, v \le n$; $u \ne v$) denoting an edge of the tree.

The next line contains one integer q ($1 \le q \le 2 \cdot 10^5$) — the number of queries.

Then q lines follow. The i-th of them contains three integers x_i, y_i and k_i ($1 \le x_i, y_i \le n$; $0 \le k_i \le 2^{20} - 1$).

Output

For each query, print YES if it is possible to form a set of vertices meeting the constraints. Otherwise, print NO.

You can print each letter in any case.

Example

input	Сору
4	
0 1 2 10	
2 1	
3 2	
4 2	
8	
3 3 0	
3 4 1	
3 4 7	
1 3 1	
1 3 2	
1 3 10	
1 4 10	
1 4 11	
output	Сору
YES	
YES	
NO	
YES	
YES	
NO	
YES	
YES	

Educational Codeforces Round 159 (Rated for Div. 2)

Finished

Practice



→ Virtual participation

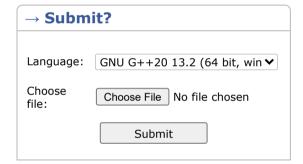
Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest



→ Last submissions		
Submission	Time	Verdict
284435763	Oct/05/2024 13:04	Accepted
284434813	Oct/05/2024 12:57	Accepted
284434316	Oct/05/2024 12:54	Memory limit exceeded on test 84
284427312	Oct/05/2024 12:07	Accepted
284427214	Oct/05/2024 12:07	Wrong answer on test 1
284425543	Oct/05/2024 11:56	Accepted
284423855	Oct/05/2024 11:45	Accepted
284361338	Oct/04/2024 22:08	Accepted
284361104	Oct/04/2024 22:06	Accepted
284358633	Oct/04/2024 21:42	Accepted



→ Contest materials