CODEFORCES
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🚀 Codeforces Blitz Cup 2025 Final Rounds Have Started! Join the stream now: https://youtu.be/caoeMuNNQtg.   ✕

PROBLEMS   SUBMIT   STATUS   STANDINGS   CUSTOM TEST

G. SlavicG's Favorite Problem

time limit per test: 2 seconds
memory limit per test: 256 megabytes

You are given a weighted tree with n vertices. Recall that a tree is a connected graph without any cycles. A weighted tree is a tree in which each edge has a certain weight. The tree is undirected, it doesn't have a root.

Since trees bore you, you decided to challenge yourself and play a game on the given tree.

In a move, you can travel from a node to one of its neighbors (another node it has a direct edge with).

You start with a variable x which is initially equal to 0. When you pass through edge i, x changes its value to $x \text{ XOR } w_i$ (where w_i is the weight of the i-th edge).

Your task is to go from vertex a to vertex b, but you are allowed to enter node b if and only if after traveling to it, the value of x will become 0. In other words, you can travel to node b only by using an edge i such that $x \text{ XOR } w_i = 0$. Once you enter node b the game ends and you win.

Additionally, you can teleport **at most once** at any point in time to any vertex except vertex b. You can teleport from any vertex, even from a.

Answer with "`YES`" if you can reach vertex b from a, and "`NO`" otherwise.

Note that XOR represents the bitwise XOR operation.

Input
The first line contains a single integer t ($1 \le t \le 1000$) — the number of test cases.

The first line of each test case contains three integers n, a, and b ($2 \le n \le 10^5$), ($1 \le a, b \le n; a \ne b$) — the number of vertices, and the starting and desired ending node respectively.

Each of the next $n - 1$ lines denotes an edge of the tree. Edge i is denoted by three integers u_i, v_i and w_i — the labels of vertices it connects ($1 \le u_i, v_i \le n; u_i \ne v_i; 1 \le w_i \le 10^9$) and the weight of the respective edge.

It is guaranteed that the sum of n over all test cases does not exceed 10^5.

Output
For each test case output "`YES`" if you can reach vertex b, and "`NO`" otherwise.

Example

input
```
3
5 1 4
1 3 1
2 3 2
4 3 3
3 5 1
2 1 2
1 2 2
6 2 3
1 2 1
2 3 1
3 4 1
4 5 3
5 6 5
```

output
```
YES
NO
YES
```

Note
For the first test case, we can travel from node 1 to node 3, x changing from 0 to 1, then we travel from node 3 to node 2, x becoming equal to 3. Now, we can teleport to node 3 and travel from node 3 to node 4, reaching node b, since x became equal to 0 in the end, so we should answer "`YES`".

For the second test case, we have no moves, since we can't teleport to node b and the only move we have is to travel to node 2 which is impossible since x wouldn't be equal to 0 when reaching it, so we should answer "`NO`".

Codeforces Round 835 (Div. 4)
Finished
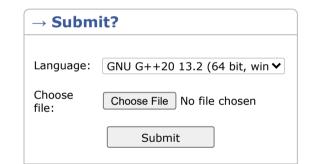Practice
⭐

→ 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]

→ Submit?

Language: [GNU G++20 13.2 (64 bit, win ⌄]
Choose file: [Choose File] No file chosen

[Submit]

→ Last submissions

Submission	Time	Verdict
279801718	Sep/04/2024 15:32	Accepted

→ Problem tags

bitmasks   dfs and similar   graphs
*1700

No tag edit access

→ Contest materials

- Announcement (en)   ✕
- Tutorial (en)   ✕