Problem A. Trees in the Pocket

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4 seconds
Memory limit:	512 megabytes

DreamGrid has just found two trees, both consisting of n vertices, in his right pocket. Each edge in each tree has its own weight. The i-th edge in the first tree has a weight of a_i, while the i-th edge in the second tree has a pair of weight, denoted by (b_i, c_i).

Let ${}^1u$ be the u-th vertex in the first tree, and ${}^2u$ be the u-th vertex in the second tree. Let $\mathbb{E}_1({}^1u, {}^1v)$ be the set containing the **indices** of all the edges on the path between the u-th and the v-th vertex in the first tree. Similarly, let $\mathbb{E}_2({}^2u, {}^2v)$ be the set containing the **indices** of all the edges on the path between the u-th and the v-th vertex in the second tree. Define the following values:

- $A_{\min}({}^1u, {}^1v) = \min\{a_k | k \in \mathbb{E}_1({}^1u, {}^1v)\}$
- $B_{\max}({}^2u, {}^2v) = \max\{b_k | k \in \mathbb{E}_2({}^2u, {}^2v)\}$
- $C_{\max}({}^2u, {}^2v) = \max\{c_k | k \in \mathbb{E}_2({}^2u, {}^2v)\}$

As DreamGrid is bored, he decides to count the number of good indices. DreamGrid considers an index i ($1 \le i \le n$) is good, if for all $1 \le j \le n$ and $j \ne i$, $A_{\min}({}^1i, {}^1j) \ge \min(B_{\max}({}^2i, {}^2j), C_{\max}({}^2i, {}^2j))$. Please help DreamGrid figure out all the valid indices.

Input

There are multiple test cases. The first line contains an integer T, indicating the number of test cases. For each test case:

The first line contains an integer n ($2 \le n \le 10^5$), indicating the number of vertices in both trees.

For the following $(n-1)$ lines, the i-th line contains three integers ${}^1u_i$, ${}^1v_i$ and a_i ($1 \le {}^1u_i, {}^1v_i \le n$, $1 \le a_i \le 10^9$), indicating that there is an edge, whose weight is a_i, connecting vertex u_i and v_i in the first tree.

For the following $(n-1)$ lines,the i-th line contains four integers ${}^2u_i$, ${}^2v_i$, b_i and c_i ($1 \le {}^2u_i, {}^2v_i \le n$, $1 \le b_i^2, c_i^2 \le 10^9$), indicating that there is an edge, whose weight is (b_i, c_i), connecting vertex u_i and v_i in the second tree.

It's guaranteed that the sum of n of all test cases does not exceed 1.5×10^5.

Output

For each test case output k integers (k is the number of valid indices) in one line separated by a space in increasing order, indicating the indices of the valid vertices.

Note that if there is no valid vertex, you should print "-1" instead.

Example

standard input	standard output
2 2 1 2 1 1 2 2 3 4 1 2 7 1 3 8 1 4 12 1 2 8 8 2 3 9 7 2 4 6 4	-1 3 4