Kharbanda and his friends

Assignment 2
DSA

Problem Statement: Kharbanda is a very meticulous and diligent student. His favourite subject is Computer Networks and thus he tries to visualize everything as a system of networks.

Although Kharbanda is a very good student but he has a bad habit of categorizing his friends as "GT"(represented as 0) or "BT" (represented as 1). He can represent his network of friends as a weighted tree where each node is either 0 or 1 and weight on each edge denotes the closeness between those two nodes.

Kharbanda would like to know the sum of the goodness of all the simple paths whose endpoints are same (i.e. both end nodes of the simple path belong to same category). The goodness of a simple path is defined as the sum of weights of all the edges covered by that path.

Input
The first line of input contains a single integer N ($1 <= N <= 10^5$)
The second line of input contains N integers indicating the category of each node. Each integer is either 0 for GT or 1 for BT.
Each of the next N-1 lines contains 3 integers a_i, b_i, c_i indicating there is a weighted bidirectional edge from node a_i to b_i with weight c_i (nodes are zero based indexed). ($0 <= a_i, b_i < 10^5, 1 <= c_i <= 10^9$)
It is guaranteed that given edges form a tree.
Output
Output a single integer : the sum of the goodness of all the simple paths whose endpoints are of same category. Since the answer will be very large, print answer modulo $10^9 + 7$
Time Limit: 1 sec
Memory Limit: 256 MB

Sample Test Case

Input	Output
4 1 0 1 0 1 2 5 0 2 3 0 3 2	13

Explanation
<consider paths and their lengths:
path 0 to 2 : 3
path 3 to 1 : 5 + 3 + 2
so final sum = 13 >