B.Bro and Trees

Time limit : 1 sec
Memory Limit : 256 MB

Problem Statement

Bro likes weighted red-black trees. A red-black tree is a tree where each node is either red or black. Bro wants to find the sum of the lengths of all simple paths whose endpoints are of same color. The length of a simple path is defined as the sum of weights of all edges covered by that path.

Input

The first line of input contains a single integer N ($1 \leq N \leq 10^5$).
The second line of input contains N integers indicating the color of each node. Each integer is either 0 for red or 1 for black.
Each of the next N - 1 lines contains 3 integers a_i, b_i, c_i indicating that there is a weighted bidirectional edge from node a_i to b_i with weight c_i. ($1 <= a_i, b_i <= N; 0 <= c_i <= 1000000000$)
It is guaranteed that the given edges form a tree.

Output

Output a single number : the sum of the lengths of all simple paths whose endpoints are of same color. As the answer can be large, print the answer modulo 1000000007.

Sample Input

6
0 1 0 1 1 1
1 2 1
1 3 2
1 4 3
3 5 4
3 6 5

Sample output

49

Explanation

Considered paths and their lengths :
1 to 3 : 2
2 to 5 : 1 + 2 + 4
2 to 6 : 1 + 2 + 5
2 to 4 : 1 + 3
4 to 5 : 3 + 2 + 4
4 to 6 : 3 + 2 + 5
5 to 6 : 4 + 5
sum is 49