Problem G. Weighted Beautiful Tree

Input file: `standard input`
Output file: `standard output`

A tree is a connected graph with n nodes and $n-1$ edges.

You are given a weighted tree with n nodes. The i-th node has a weight of wn_i and a cost of c_i. The i-th edge connecting node u_i and v_i has a weight of we_i. The edge is called beautiful if and only if it meets $\min(wn_{u_i}, wn_{v_i}) \le we_i \le \max(wn_{u_i}, wn_{v_i})$.

You can do the following operation several times.

- Choose a node u, then change its weight wn_u into wn'_u. The total cost adds $c_u \left|wn_u - wn'_u\right|$.

What is the minimum total cost to make all edges beautiful?

Input

The first line contains an integer T, denoting the number of test cases.

For each test case, the input format is as follows:

n				
c_1	c_2	c_3	...	c_n
wn_1	wn_2	wn_3	...	wn_n
u_1	v_1	we_1		
u_2	v_2	we_2		
$\vdots$	$\vdots$	$\vdots$		
u_{n-1}	v_{n-1}	we_{n-1}		

It is guaranteed that:

- $1 \le T \le 10^3$
- $1 \le n \le 10^5$, $\sum n \le 10^6$
- $1 \le c_i, wn_i, we_i \le 10^6$

Output

For each test case, output an integer in a single line, denoting the minimum total cost.

Example

standard input	standard output
2 3 2 1 2 9 9 10 1 2 10 1 3 11 3 1 1 2 9 9 10 1 2 10 1 3 11	3 2