Problem D. Divine Tree

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	1024 mebibytes

Consider a weighted tree with a gold or bronze coin placed at each vertex. Such a tree is called a *Divine Tree* if the following process is possible:

1. Zero or more times repeat the following action: select a pair of vertices that are directly connected by an edge, and swap the coins placed in those vertices.
2. Delete at most one edge from the tree. This operation may be done only once after all operations of type 1 are performed.
3. After the operation of type 2, the tree is divided into at most two trees, and for each resulting tree, the vertices contain the coins of the same metal.

The cost of each operation of type 1 is equal to the weight of the chosen edge. The cost of the Divine Tree is defined as the minimal total cost of all operations of type 1 required to transform the tree.

You are given a tree with n vertices, where n is odd. You may assume that the given tree is a Divine Tree. Let the i-th edge have weight w_i.

The tree grows in the following way: q growing events happen. In the j-th event, one of the edges e_j is chosen, and its weight is increased by d_j. The effect of growth is permanent.

Your task is to print the cost of the Divine Tree after each event.

Input

The first line of input contains an integer n: the number of vertices in the given Divine Tree ($3 \le n < 10^5$; n is odd).

The second line contains a string of length n consisting of capital letters `G` and `B`. If the i-th letter in the string is `G`, the vertex i initially contains a gold coin, and if it is `B`, the vertex contains a bronze coin.

Each of the following $n - 1$ lines contains three integers, u_i, v_i, and w_i, which mean that the i-th edge connects vertices u_i and v_i and has weight w_i ($1 \le u_i, v_i \le n$; $u_i \ne v_i$; $0 \le w_i \le 10^5$). You may assume that the given graph is a Divine Tree.

Then follows a line containing an integer q: the number of events ($1 \le q \le 10^5$).

Each of the following q lines contains two integers e_j and d_j: the number of the growing edge and the weight increase, respectively ($1 \le e_j \le n - 1$; $1 \le d_j \le 10^5$).

Output

Print q lines. On the j-th of these lines, print the cost of the Divine Tree after the j-th event.

Examples

standard input	*standard output*
5 BGGGG 1 3 0 2 1 0 5 2 0 2 4 0 5 2 1 1 3 4 4 3 10 1 2	0 1 1 3 5
5 GBBGB 3 2 0 2 1 0 1 4 0 1 5 1000 4 4 1 3 1 2 1 1 1	0 1 3 4
7 GGBBBBG 1 5 101 2 5 101 3 5 100 3 6 100 4 6 100 7 6 100 6 6 1 6 1 6 1 5 3 3 3 6 12345	301 302 303 303 306 711