Greatest Pair
Problem ID: greatestpair

You are given a tree with n vertices. Each edge has a **weight**, and each vertex has a **label**. We denote the label of vertex i as $label(i)$.

A simple path from vertex s to vertex t is defined as an ordered sequence of vertices $v_0 \to v_1 \to v_2 \to \ldots \to v_k$, where $v_0 = s, v_k = t$, and all v_i are unique. For each valid index i, v_i and v_{i+1} are connected directly by an edge. Note that there exists a simple path between every pair of vertices in a tree.

We define:

- $dist(u, v)$ as the sum of the **weight** of all edges on the simple path from u to v.
- $greatness(u, v) = dist(u, v) \cdot gcd(label(u), label(v))$.

Please find the two different vertices u and v with maximum $greatness(u, v)$.

Input

The input contains multiple test cases, each test case is presented as below:

- The first line contains a single integer n ($2 \leq n \leq 10^5$). The sum of n among all test cases does not exceed 10^5.
- The second line contains n integers, the i-th integer is $label(i)$ ($1 \leq label(i) \leq 5 \cdot 10^5$).
- In the next $n - 1$ lines, each line contains three integers u, v and w ($1 \leq u, v \leq n, 1 \leq w \leq 10^6$) describing an edge of weight w connecting two vertices u and v.

The input ends with a line containing a single 0 which is not a test case.

Output

For each test case, print a single line containing the maximum value of $greatness(u, v)$.

Sample Input 1	Sample Output 1
2 10 10 1 2 10 0	100