

Problem H

Managing a Tree Network

Time limit: 4 seconds

Paul, the manager of a computer network, encounters a problem as follows. The network managed by Paul is an undirected tree T , in which each vertex v has a positive integer weight $w(v)$ and each edge (u, v) has a positive integer length $l(u, v)$. Paul selects an integer bound b and wants to decompose the tree T into subtrees, each of which will be managed by a local administrator, according to the following conditions:

1. The subtrees are obtained by removing edges of T .
2. The total weight of any subtree is at least b .

To make a local administrator manage a subtree more simply, Paul hopes to have as many subtrees as possible. Paul also hopes that the total length of the removed edges should not be too large. More specifically, Paul wishes to maximize the number of subtrees; and in case there are several ways to maximize the number of subtrees, he wants the way that minimizes the total length of the removed edges.

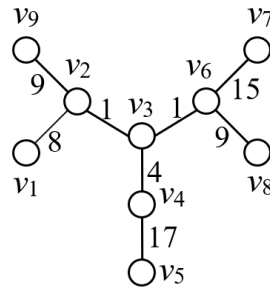


Figure 1: A tree T , in which $(w(v_1), w(v_2), \dots, w(v_9)) = (6, 3, 3, 8, 1, 2, 7, 5, 5)$.

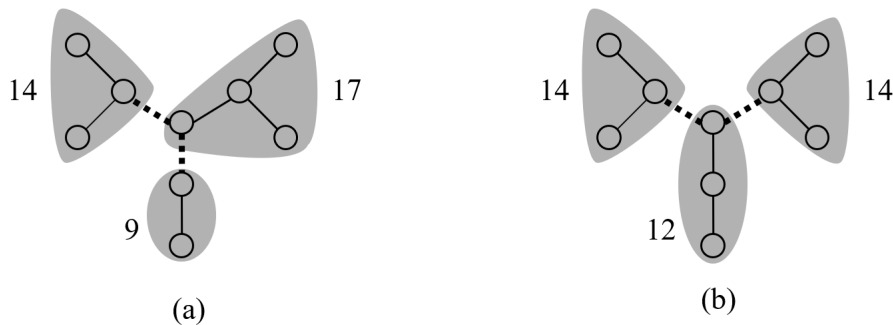


Figure 2: Two feasible decompositions, in which $b = 9$.

Consider the tree T in Figure 1. Let $b = 9$. Two feasible ways to decompose T are given in Figure 2. In Figure 2(a), there are three subtrees, whose total weights are 14, 9, and 17 respectively; and the total length of the removed edges is $1 + 4 = 5$. In Figure 2(b), there are also three subtrees, whose total weights are 14, 14, and 12 respectively; and the total length of the removed edges is $1 + 1 = 2$.

Your task is to help Paul to compute the maximum number of subtrees along with the minimum total length of the removed edges.

Technical Specification

1. The number, n , of vertices of T is an integer between 1 and 10^4 .
2. The bound, b , is an integer between 1 and 100.
3. The weight of each vertex is an integer between 1 and 10^3 .
4. The length of each edge is an integer between 1 and 10^3 .

Input File Format

The first line of the input file contains an integer indicating the number of test cases. Each test case begins with a line containing two integers n and b , where $1 \leq n \leq 10^4$ and $1 \leq b \leq 100$. The integer n indicates the number of vertices of T and the integer b is the minimum total weight of a subtree. Then, n lines follow, each containing an integer w_i , $1 \leq w_i \leq 1000$, indicating the weight of vertex v_i , $1 \leq i \leq n$. Then, $n - 1$ lines follow, each containing three integers i, j, l , $1 \leq i, j \leq n$, $1 \leq l \leq 1000$, indicating there is an edge of length l connecting vertices v_i and v_j .

Output Format

For each test case, print a line containing two integers k and l^* . The integer k indicates the maximum number of subtrees; and l^* indicates, when T is decomposed to k subtrees, the minimum total length of the removed edges. If there is no feasible way to decompose the tree T , print '-1' instead of two integers k and l^* .

Sample Input

```
4
9 9
6
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3
3
8
1
2
7
5
5
1 2 8
9 2 9
6 3 1
3 2 1
4 3 4
5 4 17
6 8 9
6 7 15
7 9
7
5
3
6
8
8
1
1 2 9
2 4 2
4 6 8
7 5 5
5 3 1
3 1 4
1 2
1
1 1
1

Output for the Sample Input

3 2
3 3
-1
1 0

