Train Depot

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

You are the chief of the train depot. The depot has n railroad switches and $n-1$ railroad tracks between them, so that all switches are connected by a single railroad network. The i-th railroad track connects switches a_i and b_i and has a length of c_i meters.

There are m trains that are going to be stored at the depot. The i-th train is going to enter the depot at switch 1 and go by the shortest path to switch s_i until it's first wagon reaches the switch s_i. All other wagons should follow each other in the consecutive order.

Unfortunately, each part of railroad track can be occupied by only one train, and all the trains may not fit inside the depot. You know that the i-th train has k_i wagons numbered from 1 to k_i. The j-th wagon has a value $v_{i,j}$ and a length of $l_{i,j}$ meters. When the wagon is inside the depot, it occupies $l_{i,j}$ meters of railroad (possibly of multiple tracks). For each train, only some (possibly zero or all) of it's first wagons can enter the depot. If the first t_i wagons of train i will enter the depot, they will occupy $\sum_{j=1}^{t_i} l_{i,j}$ consecutive meters of tracks directly from the switch s_i towards the switch 1. Note again, that all entered wagons should fit inside the depot, two wagons can touch, but cannot occupy the same part of railroad track.

You can choose the order in which trains will enter the depot, and you can choose how many first wagons of each train should enter the depot. Find the maximum total value of all the wagons that can be fit inside the depot.

Input

The first line contains two integers n and m ($2 \le n \le 200\,000$, $1 \le m \le 200\,000$) — the number of switches in the depot and the number of trains.

The next $n-1$ lines describe railroad tracks. Each line contains three integers a_i, b_i, and c_i ($1 \le a_i, b_i \le n$, $1 \le c_i \le 10^9$) — the switches that are connected by the railroad track and the length of the track.

The next $3m$ lines describe the trains. For each train, the first line contains two integers k_i and s_i ($1 \le k_i \le 200\,000$, $1 \le s_i \le n$) — the number of wagons in the train and the switch where the train will stop.

The second line contains k_i integers $v_{i,1}, v_{i,2}, \ldots, v_{i,k_i}$ ($1 \le v_{i,j} \le 10^9$) – the values of wagons for the i-th train.

The third line contains k_i integers $l_{i,1}, l_{i,2}, \ldots, l_{i,k_i}$ ($1 \le l_{i,j} \le 10^9$) — the lengths of wagons for the i-th train.

It is guaranteed that $\sum k_i \le 200\,000$.

Output

Output the maximum total value of all the wagons that can be fit inside the depot.

Examples

standard input	standard output
4 2 1 2 2 3 2 1 2 4 2 3 3 1 1 1 1 1 1 1 4 3 3	4
6 4 1 2 2 2 3 1 2 4 2 4 5 1 4 6 2 2 3 1 1 2 1 1 5 3 2 1 4 5 4 3 6 1 1 10 1 2 2	12