

## G. Path Queries

time limit per test: 3 seconds

memory limit per test: 256 megabytes

You are given a weighted tree consisting of  $n$  vertices. Recall that a tree is a connected graph without cycles. Vertices  $u_i$  and  $v_i$  are connected by an edge with weight  $w_i$ .

You are given  $m$  queries. The  $i$ -th query is given as an integer  $q_i$ . In this query you need to calculate the number of pairs of vertices  $(u, v)$  ( $u < v$ ) such that the maximum weight of an edge on a simple path between  $u$  and  $v$  doesn't exceed  $q_i$ .

### Input

The first line of the input contains two integers  $n$  and  $m$  ( $1 \leq n, m \leq 2 \cdot 10^5$ ) — the number of vertices in the tree and the number of queries.

Each of the next  $n - 1$  lines describes an edge of the tree. Edge  $i$  is denoted by three integers  $u_i, v_i$  and  $w_i$  — the labels of vertices it connects ( $1 \leq u_i, v_i \leq n, u_i \neq v_i$ ) and the weight of the edge ( $1 \leq w_i \leq 2 \cdot 10^5$ ). It is guaranteed that the given edges form a tree.

The last line of the input contains  $m$  integers  $q_1, q_2, \dots, q_m$  ( $1 \leq q_i \leq 2 \cdot 10^5$ ), where  $q_i$  is the maximum weight of an edge in the  $i$ -th query.

### Output

Print  $m$  integers — the answers to the queries. The  $i$ -th value should be equal to the number of pairs of vertices  $(u, v)$  ( $u < v$ ) such that the maximum weight of an edge on a simple path between  $u$  and  $v$  doesn't exceed  $q_i$ .

Queries are numbered from 1 to  $m$  in the order of the input.

### Examples

input	Copy
7 5 1 2 1 3 2 3 2 4 1 4 5 2 5 7 4 3 6 2 5 2 3 4 1	
output	Copy
21 7 15 21 3	

input	Copy
1 2 1 2	
output	Copy
0 0	

input	Copy
3 3 1 2 1 2 3 2 1 3 2	
output	Copy
1 3 3	

### Note

The picture shows the tree from the first example:

### Codeforces Round 582 (Div. 3)

**Finished**

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 Language: [GNU G++17 7.3.0](#)

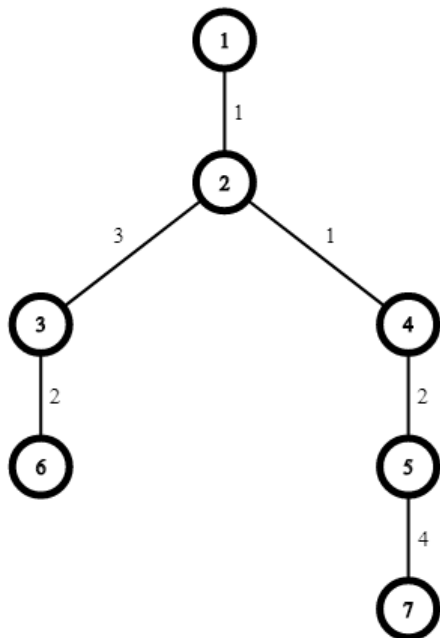
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