

## G. Path Queries

time limit per test: 3 seconds  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

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

Practice

Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Submit

Problem tags

divide and conquer dsu graphs sortings

trees \*2000

No tag edit access

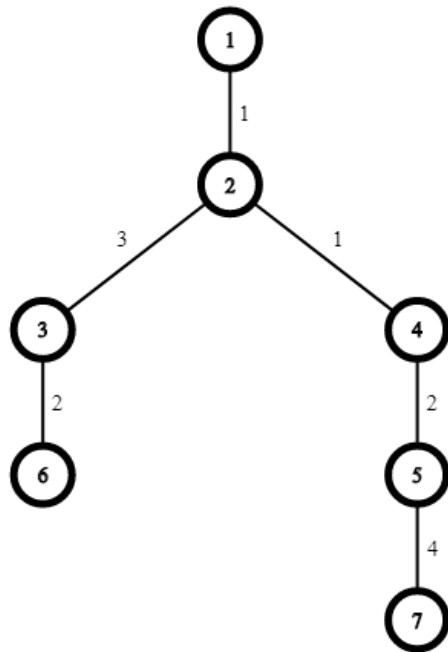
Contest materials

Announcement #1 (ru)

Announcement #2 (en)

Tutorial #1 (en)

Tutorial #2 (ru)



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