

D. Tree and Queries

time limit per test: 1 second
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

You have a rooted tree consisting of n vertices. Each vertex of the tree has some color. We will assume that the tree vertices are numbered by integers from 1 to n . Then we represent the color of vertex v as c_v . The tree root is a vertex with number 1.

In this problem you need to answer to m queries. Each query is described by two integers v_j, k_j . The answer to query v_j, k_j is the number of such colors of vertices x , that the subtree of vertex v_j contains at least k_j vertices of color x .

You can find the definition of a rooted tree by the following link:
[http://en.wikipedia.org/wiki/Tree_\(graph_theory\)](http://en.wikipedia.org/wiki/Tree_(graph_theory)).

Input

The first line contains two integers n and m ($2 \leq n \leq 10^5$; $1 \leq m \leq 10^5$). The next line contains a sequence of integers c_1, c_2, \dots, c_n ($1 \leq c_i \leq 10^5$). The next $n - 1$ lines contain the edges of the tree. The i -th line contains the numbers a_i, b_i ($1 \leq a_i, b_i \leq n$; $a_i \neq b_i$) — the vertices connected by an edge of the tree.

Next m lines contain the queries. The j -th line contains two integers v_j, k_j ($1 \leq v_j \leq n$; $1 \leq k_j \leq 10^5$).

Output

Print m integers — the answers to the queries in the order the queries appear in the input.

Examples

input	Copy
<pre>8 5 1 2 2 3 3 2 3 3 1 2 1 5 2 3 2 4 5 6 5 7 5 8 1 2 1 3 1 4 2 3 5 3</pre>	
output	Copy
<pre>2 2 1 0 1</pre>	

input	Copy
<pre>4 1 1 2 3 4 1 2 2 3 3 4 1 1</pre>	
output	Copy
<pre>4</pre>	

Note

Codeforces Round #221 (Div. 1)

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++14 6.4.0

Choose file: No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Last submissions

Submission	Time	Verdict
80901853	May/22/2020 07:51	Accepted

→ Problem tags

[data structures](#) [dfs and similar](#) [trees](#)

*2400

No tag edit access

→ Contest materials

A subtree of vertex v in a rooted tree with root r is a set of vertices

$\{u : \text{dist}(r, v) + \text{dist}(v, u) = \text{dist}(r, u)\}$. Where $\text{dist}(x, y)$ is the length (in edges) of the shortest path between vertices x and y .

- Announcement (en) ☐
- Statements #1 (pl) ☐
- Statements #2 (ko) ☐
- Tutorial (en) ☐

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