

Attack

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 64 megabytes

Bobo lived in a country consisting of n cities conveniently labeled by $1, 2, \dots, n$. The i -th city lived a_i citizens. There were $(n - 1)$ roads to guarantee that each city was reachable from any other cities via roads.

Bobo knew some terrorists were planning to attack his country. The terrorists had q possible attack plans where the i -th plan was to destroy k_i roads numbered $c_{i,1}, c_{i,2}, \dots, c_{i,k_i}$. It was obvious that the country would be separated into $(k_i + 1)$ regions after the attack. For the region consisting of cities $R = \{r_1, r_2, \dots, r_m\}$, city $h \in R$ would be selected as headquarter to minimize $\sum_{i=1}^m a_{r_i} \cdot \delta(h, r_i)$ where $\delta(i, j)$ is the minimum number of roads needed to travel from city i to city j . In case of a tie, the city with smaller label would be chosen.

Bobo would like to know the labels of headquarters for each possible plan.

Input

The first line contains 2 integers n, q ($2 \leq n \leq 2 \times 10^5, 1 \leq q \leq 2 \times 10^4$).

The second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^4$).

The i -th of the following $(n - 1)$ lines contains 2 integers s_i, t_i ($1 \leq s_i, t_i \leq n$), denoting the i -th road connecting city s_i and t_i .

The i -th of the last q lines contains an integer k_i and k_i distinct integers $c_{i,1}, c_{i,2}, \dots, c_{i,k_i}$ ($1 \leq k_i \leq 10, 1 \leq c_{i,j} \leq n - 1$).

Output

The i -th of the q lines contains $(k_i + 1)$ integers $h_1, h_2, \dots, h_{k_i+1}$ which denote the label of headquarters after the attack in ascending order.

Examples

standard input	standard output
5 2 1 1 1 1 1 1 2 1 3 2 4 2 5 1 1 4 1 2 3 4	1 2 1 2 3 4 5