

Count on a tree

You are given a tree with N nodes. The tree nodes are numbered from 1 to N . Each node has an integer weight.

We will ask you to perform the following operation:

- $u v k$: ask for the k th minimum weight on the path from node u to node v

Input

In the first line there are two integers N and M . ($N, M \leq 100000$)

In the second line there are N integers. The i th integer denotes the weight of the i th node.

In the next $N-1$ lines, each line contains two integers $u v$, which describes an edge (u, v) .

In the next M lines, each line contains three integers $u v k$, which means an operation asking for the k th minimum weight on the path from node u to node v .

Output

For each operation, print its result.

Example

Input:

```
8 5
105 2 9 3 8 5 7 7
1 2
1 3
1 4
3 5
3 6
3 7
4 8
2 5 1
2 5 2
2 5 3
2 5 4
7 8 2
```

Output:

```
2
8
9
105
7
```