Problem L. Spicy Restaurant

Time limit	2000 ms
Mem limit	262144 kB
OS	Windows

There are n hotpot restaurants numbered from 1 to n in Chengdu and the i-th restaurant serves hotpots of a certain spicy value w_i. A higher spicy value indicates a hotter taste, while a lower spicy value is more gentle (still need to be very careful, though).

We can consider these n restaurants as nodes on an undirected graph with m edges. Now we have q tourists who want to give the hotpots a try. Given the current positions of the tourists and the maximum spicy value they can bear, your task is to calculate the shortest distance between a tourist and the closest restaurant he can accept.

In this problem we define the distance of a path as the number of edges in the path.

Input

There is only one test case in each test file.

The first line contains three integers n, m and q ($1 \leq n, m \leq 10^5, 1 \leq q \leq 5 \times 10^5$) indicating the number of restaurants, the number of edges and the number of tourists.

The second line contains n integers $w_1, w_2, \cdots, w_n$ ($1 \leq w_i \leq 100$) where w_i indicates the spicy value of the i-th restaurant.

For the following m lines, the i-th line contains two integers u_i and v_i ($1 \leq u_i, v_i \leq n$, $u_i \neq v_i$) indicating an edge connecting restaurant u_i and v_i.

For the following q lines, the i-th line contains two integers p_i and a_i ($1 \leq p_i \leq n, 1 \leq a_i \leq 100$) indicating that the i-th tourist is currently at restaurant p_i and that the maximum spicy value he can accept is a_i.

Output

Output q lines where the i-th line contains one integer indicating the shortest distance between the i-th tourist and the closest restaurant he can accept. If there is no such restaurant, output '-1' instead.

Examples

Input	Output
4 4 5 5 4 2 3 1 2 2 3 3 4 4 1 1 1 1 2 1 3 1 4 1 5	-1 2 1 1 0