



Crystals of Mykros

Problem Statement

In the mystical realm of Mykros, Oski is the Grand Mage responsible for safeguarding the land's ancient magical barrier. The barrier is powered by N floating **Mykronic Crystals**. Each crystal i has a specific **mana level** (P_i) representing its raw magical power.

The crystals can be bound using special magical threads. A thread directly binds two distinct crystals, weaving their magical field together. If two crystals are connected, either directly by a single thread or indirectly through a chain of multiple threads, they resonate in perfect harmony to form a single unified **elemental core**.

Within each core, the magical energy is channeled through the single most powerful crystal. Therefore, the **effective power** of an elemental core is determined by the maximum P_i value among all currently active crystals belonging to that core.

The total strength of the barrier is simply the **sum of the effective powers** of all active elemental cores.

There are M threads used to bind the crystals, where the j -th thread connects crystals A_j and B_j .

Suddenly, an evil force begins shattering the crystals one by one!

A sequence of Q crystals is destroyed in a specific chronological order. Whenever a crystal is shattered, it turns into dust and loses its magic instantly. Any magical threads connected to the shattered crystal can no longer transmit energy to or from it.

As the Grand Mage, Oski needs to monitor the barrier's status. Your task is to help Oski calculate the **total remaining barrier strength** immediately after each crystal destruction event.

Input Format

The first line contains three integers N , M , and Q ($1 \leq N \leq 10^5, 0 \leq M \leq 10^5, 1 \leq Q \leq N$), denoting the number of crystals, the number of threads, and the number of destructions.

The second line contains N integers $P_1, P_2, \dots, P_N$ ($1 \leq P_i \leq 10^9$), denoting the mana level of each crystal.

The next M lines describe the threads. The j -th line contains two integers A_j and B_j ($1 \leq A_j, B_j \leq N, A_j \neq B_j$), representing a magical thread binding crystal A_j and B_j .

The next line contains Q integers ($X_1, X_2, \dots, X_Q$) ($1 \leq X_i \leq N$), denoting the crystals shattered in order. All elements in X are distinct.

Output Format

Print Q space-separated integers representing the total remaining barrier strength immediately after each crystal destruction event.

Sample Input 1

```
4 3 2
10 20 5 15
1 2
2 3
3 4
2 3
```

Sample Output 1

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25 25
```

Sample Input 2

```
5 3 3
10 40 30 50 20
1 2
2 3
4 5
3 2 4
```

Sample Output 2

```
90 60 30
```

Explanation of Sample 2

The barrier was initially powered by two cores.

The first core was formed by crystals with mana levels of 10, 40, and 30, having an effective power of 40.

The second core was formed by crystals with mana levels of 30 and 50, making it the most powerful core with an effective power of 50.

So, the barrier initially had a total strength of 90.

After the first destruction, the first core still had an effective power of 40, and the second core remained untouched. Hence, the barrier still had a total strength of 90.

After the second destruction, the first core was damaged, causing its effective power to be reduced to 10 while the second core was still safe. Hence, the barrier had a total strength of 60.

After the third destruction, the second core was now damaged, and its effective power reduced to 20. Hence, the barrier had a final total strength of 30.