TN 2 - 0 - 2 - 2 SYSTEM

In a distant universe, there are n planets connected by m **one-way** wormholes. The chief administrator of "Transcendent Nebula 2 - 0 - 2 - 2"(TN 2 - 0 - 2 - 2), Captain Lynn, is tasked with ensuring the safety of all the planets.

To guarantee security, the Captain must deploy space surveillance stations. These stations can only be established on a planet. A station on planet i can protect planet j if either $i = j$ or the space patrol spaceship can travel to j from i and then return to i.

Establishing surveillance stations incurs certain costs. Due to variations in cosmic real estate values, constructing a station on some planets might be more expensive than on others.

Captain Lynn's target is to determine the minimum expenditure required to ensure the security of all planets. Additionally, she needs to identify the number of ways to achieve security at the lowest cost and with **the fewest number of surveillance stations**. Two solutions are considered different if any of the planets have a surveillance station in one solution and does not have one in the other.

You are a member of TN 2 - 0 - 2 - 2 and this is a chance for a promotion. Help your Captain and may the universe guide you in your quest!

1 Input

- In the first line, you will be given an integer n, number of planets ($1 \leq n \leq 10^5$). In the next line, n space-separated integers will be given. The i^{th} integer is the cost of station at the i^{th} planet (costs will be non-negative and will not exceed 10^9).
- The next line will contain an integer m ($0 \leq m \leq 3.10^5$). And each of the next m lines contains two integers u_i and v_i ($1 \leq u_i, v_i \leq n$; $u \neq v$). A pair u_i, v_i means, that there is a one-way wormhold which goes from u_i to v_i. There will not be more than one wormhold between two nodes in the same direction.

2 Output

Print two integers separated by spaces.

- The first one is the minimum possible cost needed to ensure the security of all the planets.
- The second one is the number of ways you can ensure the security modulo 1000000007 ($10^9 + 7$).

3 Example

Input:

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3
1 2 3
3
1 2
2 3
3 2
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Output:

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3 1
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