Building Improvements

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You have just been assigned to the CS Department's "Student Contentment Committee"and have been tasked with improving the comfort of Iribe (let us say nothing about CSIC).

The CS department is interested in adding more comfortable seating around Iribe to improve student happiness, but does not want to spend more money than necessary.

For this problem, let us model the building as a collection of areas (nodes) and one-way corridors between sitting areas (directed edges). Why one-way corridors? Well, just to make the problem more interesting...

Every area a_i has some cost c_i of building new seating in that area.

You learn from the building coordinator that if a student can get from an area a_i to another area a_j, and also get from a_j back to a_i, then there is no need to build seating at both a_i and a_j—it is sufficient to build seating at only one of the areas—and of course the cheaper option is better!

Your task is to determine the minimum total cost to ensure that every area either (1) has new seating built at its location, or (2) can reach (and can be reached) by an area with seating.

Input

The first line will contain an integer $1 \leq n \leq 10^5$ for the number of areas.

In the next line, n space-separated integers representing the costs c_i will be given where $\forall i, 0 \leq c_i \leq 10^9$.

The next line will contain an integer $0 \leq m \leq 10^6$ representing the number of one-way corridors. Each of the next m lines will contain two integers a_i and a_j representing the areas that the next corridor connects.

Note that there will be no corridors connecting an area to itself.

Output

Output the minimum possible cost required to ensure that each area (1) has new seating built at its location, or (2) can reach (and can be reached) by an area with seating.

Example

standard input	standard output
3 100 20 999 3 0 1 1 0 1 2	1019

Note

In the example, the first two areas can both reach each other, so only one seating location needs to be built. The cheaper option is to build on area 2 at a cost of 20. The third area also needs to have a seating location built, at a cost of 999. The total cost will be 1019.