Casinos

Mouse Stofl has figured out a bug in slot machines that enables him to get the jackpot on the first try every time. He plans on going to some casinos to make a bunch of money.

The casinos are obviously not a fan of this, hence they ban Stofl quite quickly. More precisely, whenever Stofl wins a jackpot in a casino, that casino bans him. Additionally, some casinos are working together and when Stofl gets banned in one of them, he automatically gets banned in the other one too. Note that this may lead to a series of banning (see samples).

If Stofl is banned from some casino, then he can't play there and is hence unable to get the jackpot money in it.

Input

The first line of input contains integers N and M – the number of casinos and the number of pairs of casinos working together.

The next N lines each contain an integer w_i, describing the size of the jackpot in the i-th casino. The last M lines each contain two integers a_j, b_j ($a_j \neq b_j$) describing that casinos a_j and b_j are working together.

Output

Print a single integer, the maximum amount of jackpot money Stofl can get.

Limits

There are 4 test groups, each of which is worth 25 points. In all test cases $1 \leq w_i \leq 1000$ and $0 \leq a_j, b_j < N$.

- In test group 1, we have $N \leq 100, M \leq 200$
- In test group 2, we have $N \leq 1\,000, M \leq 2\,000$
- In test group 3, we have $N \leq 10\,000, M \leq 20\,000$
- In test group 4, we have $N \leq 50\,000, M \leq 200\,000$

Examples

Input	Output
3 2 100 17 25 0 1 1 2	100

Stofl can get the jackpot at the first casino. He then gets banned from the first casino. As the first and second casino work together, he also gets banned from the second one. As the second and third casino work together too, he then also gets banned from the third one. He hence can't enter another casino, so he only get the jackpot from the first one.

Input	Output
4 2 12 17 25 1 0 3 1 2	37