

# Problem SAMEPROC: Same Procedure as last year

It's the same procedure as every year: in early December, the Dominik starts to plan his kick-ass New Year's party. It should be lots of fun: nice people, good food, and plenty of beer. Unfortunately, the Dominik has a problem: during the last year, several couples among his friends broke up, and as you know, it's never a good idea to invite someone and his/her ex-girlfriend/ex-boyfriend at the same time. Consequently, the Dominik won't be able to celebrate New Year's Eve with all his beloved friends. But still, he wishes to have a party with as many people as possible. To make things more complicated, not all his friends are equally important to him. For example, he would rather have his beautiful friend A coming to the party than A's three ex-boyfriends B, C, and D.

To formalize things, the Dominik assigns a love value  $v$  to each of his friends, where  $v$  is a positive integer. Your task is to help the Dominik choosing a feasible subset of his friends (i.e., a subset containing no ex-couples) with which he will be able to celebrate New Year's Eve. Of course, the love value of this set (the sum of all love values of the people in the set) should be as high as possible. Please note that the Dominik is a very tolerant person and might have gay people among his friends. So don't assume the break-up graph (yes, it's a graph problem, smarty) to be bipartite or anything else.

As you might have noted, this problem appears not to be easy. In fact, it is NP-complete. So what should the Dominik do? Should he be content with an approximate solution? No way! But look, since the Dominik doesn't have too many friends anyway, there is still hope for you to solve the problem optimally in a reasonable amount of time. Good luck!

## Input

The input consists of several test cases. The first line of each test case contains two integers  $n, m$ .  $n$  is the number of friends the Dominik has, i.e. the number of people among which he can choose whom to invite. Be assured that  $n$  will not exceed 20. The second number,  $m$ , denotes the number of ex-couples, i.e. the number of pairs of friends the cannot be invited both. The next  $n$  lines each contain a single positive integer  $v$ , the value in the  $k$ -th of this line being the love value of the Dominik's  $k$ -th friend. The next  $m$  lines each contain two integers  $0 \leq a, b \leq n - 1$ , telling you that  $a$  and  $b$  were dating each other some time ago but have broken up. So you cannot have both  $a$  and  $b$  at the party. The input is ended by a test case where  $n, m = 0$ , which should not be processed.

## Output

For each test case, print the maximal possible love value for this set in a single line.

### Sample Input 1

```
8 3
20
15
5
30
20
15
20
15
1 2
0 1
3 4
0 0
```

### Sample Output 1

```
105
```