Warrior

Description

Leo was the last prince of Desertland (Han Hai), which was defeat and nearly destroyed by Royalland (Wang Chao). Leo strove for rebuilding his country and revenging Royalland. His major power was his strong and courageous warriors.

He had N warriors in his army. Every warrior had a strength estimated by Leo. Once Leo need to select some of warriors to prepare for a war against Royalland. Unfortunately, some of the warriors had conflicts which one another (they might have fallen in love with the same girl, for example). Leo wanted that the selected warriors were as strong as possible and that there were no conflicts among the selected warriors. More explicitly, Leo wanted that:

1. There were no conflicts among the selected warriors.
2. The total strength of the selected warriors is maximized.

As an advisor of Leo, you were to write a program to tell Leo:

1. The maximum total strength of the selected warriors among whom there were no conflicts.
2. The number of ways to select such a group of warriors.

Input

The first line contains two integers N (N<=20) and M (M<=50), where N is the number of warriors in Leo's army, and M is the number of (mutual) conflicts. Each of the N lines followed contains an integer, where the i-th integer followed represents the strength of the i-th warrior. Each of the M lines followed contains two integers *x, y*, meaning a conflict between the *x-th* warrior and the *y-th* warrior.

Output

The first line of the output contains an integer, which is the maximum total strength of the selected warriors. The second line contains an integer, which is the number of ways of such a selection.

Sample input 1

5 2

3

3

2

2

1

1 2

4 5

Sample output 1

7

2

Explanation: {1, 3, 4}, {2, 3, 4} gives maximum total strength 7.