

# Problem J4/S2: Good Groups

## Problem Description

A class has been divided into groups of three. This division into groups might violate two types of constraints: some students must work together in the same group, and some students must work in separate groups.

Your job is to determine how many of the constraints are violated.

## Input Specification

The first line will contain an integer  $X$  with  $X \geq 0$ . The next  $X$  lines will each consist of two different names, separated by a single space. These two students *must* be in the same group.

The next line will contain an integer  $Y$  with  $Y \geq 0$ . The next  $Y$  lines will each consist of two different names, separated by a single space. These two students *must not* be in the same group.

Among these  $X + Y$  lines representing constraints, each possible pair of students appears at most once.

The next line will contain an integer  $G$  with  $G \geq 1$ . The last  $G$  lines will each consist of three different names, separated by single spaces. These three students have been placed in the same group.

Each name will consist of between 1 and 10 uppercase letters. No two students will have the same name and each name appearing in a constraint will appear in exactly one of the  $G$  groups.

The following table shows how the available 15 marks are distributed at the Junior level.

Marks Awarded	Number of Groups	Number of Constraints
4 marks	$G \leq 50$	$X \leq 50$ and $Y = 0$
10 marks	$G \leq 50$	$X \leq 50$ and $Y \leq 50$
1 mark	$G \leq 100\,000$	$X \leq 100\,000$ and $Y \leq 100\,000$

The following table shows how the available 15 marks are distributed at the Senior level.

Marks Awarded	Number of Groups	Number of Constraints
3 marks	$G \leq 50$	$X \leq 50$ and $Y = 0$
5 marks	$G \leq 50$	$X \leq 50$ and $Y \leq 50$
7 marks	$G \leq 100\,000$	$X \leq 100\,000$ and $Y \leq 100\,000$

## Output Specification

Output an integer between 0 and  $X + Y$  which is the number of constraints that are violated.

La version française figure à la suite de la version anglaise.

### Sample Input 1

1  
ELODIE CHI  
0  
2  
DWAYNE BEN ANJALI  
CHI FRANCOIS ELODIE

### Output for Sample Input 1

0

### Explanation of Output for Sample Input 1

There is only one constraint and it is not violated: ELODIE and CHI are in the same group.

### Sample Input 2

3  
A B  
G L  
J K  
2  
D F  
D G  
4  
A C G  
B D F  
E H I  
J K L

### Output for Sample Input 2

3

### Explanation of Output for Sample Input 2

The first constraint is that A and B must be in the same group. This is violated.

The second constraint is that G and L must be in the same group. This is violated.

The third constraint is that J and K must be in the same group. This is *not* violated.

The fourth constraint is that D and F must not be in the same group. This is violated.

The fifth constraint is that D and G must not be in the same group. This is *not* violated.

Of the five constraints, three are violated.