

3183 History

Two world-famous professors of archaeology, Professor C. H. Eater and Professor L. Iar, decided to write a book together on the ancient history of China. They figured that by spending five years in China, they could research a sufficient amount of scientific data to write a stunning new book. They divided China into two parts: Professor C. H. Eater collected data in the eastern part of the country, while Professor L. Iar was doing research in western China. After five years, they have met with all their collected evidence. Both professors have written some chapters, these chapters have to be combined into a single book. However, they have realized with horror that some of their chapters contain contradictory data. For example, they have obtained different dates for some important events (famous battles, the deaths of some Emperors, etc.) They don't think that it will be possible to write a best-seller with contradictory data, and they really don't want to spend another five years sorting these things out. Thus they plan to get rid of some of the annoying data (while no one is looking). They ask you to determine the minimum number of chapters that will have to be thrown away to make the remaining material non-conflicting.

Both professors have written a set of *chapters*. Each chapter gives dates for certain events. Two chapters are *conflicting* if there is an event when the two chapters give different dates for this same event. Thus if a chapter says that event A was in 234, event B was in 291, and event C was in 262; and another chapter says that event A was in 234, event C was in 293, and event D was in 218, then these two chapters are conflicting. It is not possible to throw away only a single event from a chapter: either you throw away the whole chapter, or you keep it with all the events and dates. It can be assumed that two chapters collected by the same professor do not contradict (presumably, they have taken care of these conflicts earlier).

Input

The input contains several blocks of test cases. Each case begins with a line containing two integers n_1, n_2 , where n_1 is the number of chapters written by Professor C. H. Eater, and n_2 is the number of chapters written by Professor L. Iar. Both numbers are at most 2000. The next n_1 lines describe the n_1 chapters of Professor C. H. Eater. Each line begins with an integer $1 \leq m \leq 1000$, the number of events whose dates are mentioned in this chapter. This number is followed by m pairs of integers. The first integer of each pair identifies the event (for simplicity, we assume that the professors assigned a unique code to each event), the second integer is the date of the event. The code is at most 1000000, the date is between -10000 and 1000 (we are talking about ancient history here!) These n_1 lines are followed by n_2 lines that describe the chapters written by Professor L. Iar, which are in the same format.

The input is terminated by a block with $n_1 = n_2 = 0$.

Output

For each test case in the input, you have to output a single integer on a separate line: the minimum number of chapters that have to be deleted to make the book non-conflicting.

Sample Input

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3 3
3 10 999 20 888 77 100
2 30 977 88 - 1
2 77 100 40 855
```

```
1 10 988
3 88 - 1 20 887 77 100
2 30 955 40 - 10
0 0
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Sample Output

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2
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