System administrators

A small financial company hired two system administrators Alice and Bob. When an admin wants to go to holiday in the next *N* days he or she have to tell the first and the last day of his vacation. We call a time interval *safe* if both Alice and Bob are available for the company. Similarly, we call a time interval *unsafe* if both admins are on their holiday.

Your task is to create an application which determines the safe and unsafe time intervals for the company based on the administrators holidays.

The file `holidays.in` contains the vacation data of the administrators. The first line of this file is *N*, the number of days to forecast ($N < 1000$). The next line contains the number of days *K* that Alice will spend on holiday ($K \leq N$). The following *K* lines are the first and last days of Alice's holidays separated by a semicolon. The next line contains the number of days *L* that Bob will spends on holiday ($L \leq N$). The rest of the lines are the first and last days of Bob's holidays separated by a whitespace.

The file `holidays.out` should start with the number of safe intervals *S*. The following *S* lines should consist of a starting and ending day of a safe interval. After that, the number of unsafe intervals *U* and finally the starting and ending days of unsafe intervals should be placed.

Use object-oriented programming for both desing and implementation!

Example.

holidays.in

```
50
3
5;10
40;45
15;20
1
12;24
```

holidays.out

```
4
1;4
11;11
25;39
46;50
1
15;20
```