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Sommersemester 2017

Week 13 – (Adv.) Competitive Programming

Abgabe 18.07.2017 15:15 Uhr, über das Judge-Interface

g20summit: (100 points - 1 second timelimit)

Last weekend the G-20 summit took place in Hamburg, Germany. The leaders of the 20 most important countries came together to explain US-President Trump that the climate change exists and that it isn't fake news. This event was accompanied by a lot of demonstrations in all areas of the city.

Each of these demonstrations forms at some point outside of the city and there were walking through the city until they reached the endpoint of the demonstration. Lets assume, that the endpoint is always some crossing in Hamburg. No two demonstrations end at the same crossing and a demonstration never splits up before the reach the crossing.

Last weekend it happened sometimes, that two demonstrations meet at some crossing. That was a catastrophe, because some people get hurt while walking over the crossing since the other crowd walks on the same crossing as well but in a different direction.

To prevent these situations in the future, the organisers of all demonstrations want to work together. They determine, which demonstrations walk on a specific day and they introduced the rule, that no crossing should be used by two demonstrations at the same day. Now they are trying to plan the routes for the demonstrations of a future event, but sometimes they don't find a plan which is valid.

To make it a bit easier, you can assume, that the city of Hamburg is a grid. Given a map of $s \times a$ and the positions of the crossings where the demonstrations end, try to find out, if it is possible to plan routes so that no crossing is used more than once. Every demonstration starts at some point outside of the city (this point be anywhere outside of the city, that doesn't matter).

Input The first input line contains the number of test cases t.

The first line of every test case contains the number of streets (s, $1 \leq s \leq 50$) and the number of avenues (a, $1 \leq a \leq 50$), followed by the number of crossings (b, $1 \leq b \leq 500$) where the demonstrations end.

Each of the following b lines contains the location of a crossing in the form of

two numbers x (the number of the street, $1 \leq x \leq s$) and y (the number of the avenue, $1 \leq y \leq a$).

Output Please print for each test case if it is `possible` or `not possible` to plan non-crossing demonstration routes.

Points There are two groups of test sets.

- *easy*: For the first group of test sets, worth 60 points, you can assume that $w \leq 30$, $h \leq 30$, $n \leq 100$.
- *hard*: For the third group of test sets, worth 40 points, there are no additional assumptions.

Sample Input

```
2
6 6 10
4 1
3 2
4 2
5 2
3 4
4 4
5 4
3 6
4 6
5 6
5 5 5
3 2
2 3
3 3
4 3
3 4
```

Sample Output

```
possible
not possible
```