Competitive Programming SS24

Submit until end of contest

Problem: dungeon (2.0 second timelimit)

It had all gone so well: you snuck into the dungeon, avoided the distracted guards, and found your way to the treasure chamber. It was only when the doors slammed shut and green clouds started filling the room that you realised you had run head first into a trap. In an heroic effort the party wizard managed to teleport everyone out of the room, leaving you scattered throughout the dungeon. In the short moments before being separated you manage to forge some semblance of a plan: flee the dungeon with as many people as possible. Everyone should leave using a different route, in the hopes that the guards can only cover some of those.

While you wait for your turn, you study the dungeon map: a rectangular grid of rooms, each connected to the up to four adjacent rooms. The dungeon can be left from any room at the edge of the grid. However, to avoid the guards, no two people should run through the same room. After a while, you begin to doubt whether this is even possible, even if all of you perfectly coordinate your routes.

Input   The first line contains s ($1 \leq s \leq 15$), the number of situations to analyze. Each situation begins with a line containing w, h ($1 \leq w, h \leq 50$), the size of the grid, and p ($1 \leq p \leq 500$)[1], the size of the party. The following p lines each contain x_i, y_i ($1 \leq x_i \leq w, 1 \leq y_i \leq h$), the room the i-th party member got teleported to. No two party members are teleported into the same room.

Output   For each situation, print YES if the party can leave the dungeon with non-overlapping paths, or NO, if they can't.

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[1]There is a reason you have a lot of time to study the dungeon map

Sample input

```
2
3  4  5
1  4
2  2
2  3
2  4
3  3
5  5  5
3  2
2  3
3  3
4  3
3  4
```

Sample output

```
YES
NO
```