

# CCC '22 J5 - Square Pool

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**Time limit:** 1.0s    **Memory limit:** 1G

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## Canadian Computing Competition: 2022 Stage 1, Junior #5

Ron wants to build a square pool in his square  $N$ -by- $N$  yard, but his yard contains  $T$  trees. Your job is to determine the side length of the largest square pool he can build.

## Input Specification

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The first line of input will be an integer  $N$  with  $N \geq 2$ . The second line will be the positive integer  $T$  where  $T < N^2$ . The remaining input will be  $T$  lines, each representing the location of a single tree. The location is given by two positive integers,  $R$  and then  $C$ , separated by a single space. Each tree is located at row  $R$  and column  $C$  where rows are numbered from top to bottom from 1 to  $N$  and columns are numbered from left to right from 1 to  $N$ . No two trees are at the same location.

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

Marks Awarded	Length/Width of Yard	Number of Trees
3 marks	$N \leq 50$	$T = 1$
5 marks	$N \leq 50$	$T \leq 10$
4 marks	$N \leq 500\,000$	$T \leq 10$
3 marks	$N \leq 500\,000$	$T \leq 100$

## Output Specification

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Output one line containing  $M$  which is the largest positive integer such that some  $M$ -by- $M$  square contained entirely in Ron's yard does not contain any of the  $T$  trees.

## Sample Input 1

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```
5
1
2 4
```

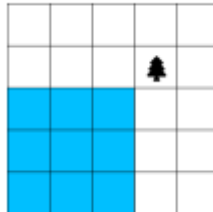
## Output for Sample Input 1

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3

## Explanation of Output for Sample Input 1

A picture of the yard is below. The location of the tree is marked by 🌲 and one of several 3-by-3 squares that do not contain the tree is highlighted. All larger squares contain a tree.



## Sample Input 2

```
15
8
4 7
4 1
14 11
10 6
13 4
4 10
10 3
9 14
```

## Output for Sample Input 2

7

## Explanation of Output for Sample Input 2

A picture of the yard is below. The location of each tree is marked by 🌲 and one of several 7-by-7 squares that do not contain a tree is highlighted. All larger squares contain a tree.

