

Kickstart Practice Round 2  
2017[A. Diwali lightings](#)**B. Safe Squares**[C. Beautiful Numbers](#)[D. Watson and Intervals](#)[Questions asked](#)

## Submissions

## Diwali lightings

5pt	Not attempted <b>89/141 users</b> correct (63%)
8pt	Not attempted <b>62/87 users</b> correct (71%)

## Safe Squares

6pt	Not attempted <b>55/58 users</b> correct (95%)
13pt	Not attempted <b>25/53 users</b> correct (47%)

## Beautiful Numbers

6pt	Not attempted <b>51/63 users</b> correct (81%)
15pt	Not attempted <b>14/39 users</b> correct (36%)

## Watson and Intervals

8pt	Not attempted <b>12/15 users</b> correct (80%)
17pt	Not attempted <b>7/10 users</b> correct (70%)

## Top Scores

Benq	78
1717374	78
yubowenok	78
gridnevvvit	78
LiCode	65
Yash....	53
YourRatzon	53
broncos.billy	53
cmroz	53
sam1373	50

## Problem B. Safe Squares

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input  
6 points

Solve B-small

Large input  
13 points

Solve B-large

## Problem

Codejamon trainers are actively looking for monsters, but if you are not a trainer, these monsters could be really dangerous for you. You might want to find safe places that do not have any monsters!

Consider our world as a grid, and some of the cells have been occupied by monsters. We define a *safe square* as a grid-aligned  $\mathbf{D} \times \mathbf{D}$  square of grid cells (with  $\mathbf{D} \geq 1$ ) that does not contain any monsters. Your task is to find out how many safe squares (of any size) we have in the entire world.

## Input

The first line of the input gives the number of test cases,  $\mathbf{T}$ .  $\mathbf{T}$  test cases follow. Each test case starts with a line with three integers,  $\mathbf{R}$ ,  $\mathbf{C}$ , and  $\mathbf{K}$ . The grid has  $\mathbf{R}$  rows and  $\mathbf{C}$  columns, and contains  $\mathbf{K}$  monsters.  $\mathbf{K}$  more lines follow; each contains two integers  $\mathbf{R}_i$  and  $\mathbf{C}_i$ , indicating the row and column that the  $i$ -th monster is in. (Rows are numbered from top to bottom, starting from 0; columns are numbered from left to right, starting from 0.)

## Output

For each test case, output one line containing Case # $x$ :  $y$ , where  $x$  is the test case number (starting from 1) and  $y$  is the the total number of safe zones for this test case.

## Limits

 $1 \leq \mathbf{T} \leq 20$ .

 $(\mathbf{R}_i, \mathbf{C}_i) \neq (\mathbf{R}_j, \mathbf{C}_j)$  for  $i \neq j$ . (No two monsters are in the same grid cell.)

 $0 \leq \mathbf{R}_i < \mathbf{R}$ ,  $i$  from 1 to  $\mathbf{K}$ 
 $0 \leq \mathbf{C}_i < \mathbf{C}$ ,  $i$  from 1 to  $\mathbf{K}$ 

## Small dataset

 $1 \leq \mathbf{R} \leq 10$ .

 $1 \leq \mathbf{C} \leq 10$ .

 $0 \leq \mathbf{K} \leq 10$ .

## Large dataset

 $1 \leq \mathbf{R} \leq 3000$ .

 $1 \leq \mathbf{C} \leq 3000$ .

 $0 \leq \mathbf{K} \leq 3000$ .

## Sample

Input	Output
2	Case #1: 10
3 3 1	Case #2: 51
2 1	
4 11 12	
0 1	
0 3	
0 4	
0 10	
1 0	
1 9	
2 0	
2 4	
2 9	
2 10	
3 4	
3 10	

The grid of sample case #1 is:

```
0 0 0
0 0 0
0 1 0
```

Here, 0 represents a cell with no monster, and 1 represents a cell with a monster. It has 10 safe squares: 8 1x1 and 2 2x2.

The grid of sample case #2 is:

```
0 1 0 1 1 0 0 0 0 0 1
1 0 0 0 0 0 0 0 0 1 0
1 0 0 0 1 0 0 0 0 1 1
0 0 0 0 1 0 0 0 0 0 1
```

Note that sample case #2 will only appear in the Large dataset. It has 51 safe squares: 32 1x1, 13 2x2, 5 3x3, and 1 4x4.

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