

Practice Contest

[A. Old Magician](#)**B. Square Fields**[C. Cycles](#)[Questions asked](#) **4**

Submissions

Old Magician

5pt Not attempted
203/214 users
correct (95%)10pt Not attempted
193/198 users
correct (97%)

Square Fields

10pt Not attempted
146/157 users
correct (93%)25pt Not attempted
107/128 users
correct (84%)

Cycles

15pt Not attempted
126/146 users
correct (86%)35pt Not attempted
20/41 users correct
(49%)

Top Scores

gawry	100
bmerry	100
Olexiy	100
ACRush	100
ardiankp	100
gepa	100
natalia	100
Alexus	100
almelv	100
OpenGL	100

Problem B. Square Fields

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
10 points

Solve B-small

Large input
25 points

Solve B-large

Problem

You are given **n** points in the plane. You are asked to cover these points with **k** squares.

The squares must all be the same size, and their edges must all be parallel to the coordinate axes.

A point is covered by a square if it lies inside the square, or on an edge of the square.

Squares can overlap.

Find the minimum length for the squares' edges such that you can cover the **n** points with **k** squares.

Input

The first line of input gives the number of cases, **N**. **N** test cases follow. The first line of each test contains two positive integers **n** and **k**. Each of the next **n** lines contains a point as two integers separated by exactly one space. No point will occur more than once within a test case.

Output

For each test case, you should output one line containing "Case #**X**: **Y**" (quotes for clarity), where **X** is the number of the test case, starting from 1, and **Y** is the minimum length for the squares' edges for that test case.

Limits

The points' coordinates are non-negative integers smaller than 64000.

$$1 \leq N \leq 10$$

Small dataset

$$1 \leq k < n \leq 7$$

Large dataset

$$1 \leq k < n \leq 15$$

Sample

Input	Output
2	Case #1: 2
5 2	Case #2: 3
1 1	
2 2	
3 3	
6 6	
7 8	
3 2	
3 3	
3 6	
6 9	

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