ACM-ICPC Indonesia National Contest 2016

Problem C

Beautiful Quadruple

Time Limit: 5 seconds

In a matrix of integers M, $m_{i,j}$ denotes the element of the matrix at i^{th} row and j^{th} column. A quadruple ⟨a, b, c, d⟩ of M is considered *beautiful* if and only if (a < b), (c < d), and $m_{a,c} = m_{a,d} = m_{b,c} = m_{b,d}$ in matrix M.

Given a matrix of integers M, determine how many beautiful quadruple of M there are.

For example, consider the following matrix of 3 x 4:

	1	2	3	4
1	7	5	7	5
2	1	5	5	7
3	7	5	5	5

There are two beautiful quadruples, i.e. ⟨1, 3, 2, 4⟩ and ⟨2, 3, 2, 3⟩, as shown in the following figures.

		c		d	
		1	2	3	4
a	1	7	5	7	5
	2	1	5	5	7
b	3	7	5	5	5

		c		d	
		1	2	3	4
	1	7	5	7	5
a	2	1	5	5	7
b	3	7	5	5	5

There are no other quadruples which are beautiful, thus, in this example, the output is 2.

Input

The first line of input contains an integer T (T ≤ 100) denoting the number of cases. Each case begins with two integers R and C (2 ≤ R, C ≤ 150) denoting the size of the matrix (row and column respectively). The next R lines each contains C integers $m_{i,j}$ ($1 \le m_{i,j} \le 10^9$) representing the matrix's element, respectively for i = 1..R and j = 1..C.

Output

For each case, output in a line "`Case #X: Y`" where `X` is the case number, starts from 1, and `Y` is the output for that particular case.

Sample Input

```
4
3 4
7 5 7 5
1 5 5 7
7 5 5 5
2 3
1 1 1
1 1 1
4 5
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
3 4
2 8 3 2
2 3 3 2
2 3 3 2
```

Output for Sample Input

```
Case #1: 2
Case #2: 3
Case #3: 0
Case #4: 4
```