Questions asked 1

Submissions

Country Leader

4pt	Not attempted **2262/3789 users** correct (60%)
7pt	Not attempted **1722/2218 users** correct (78%)

Rain

9pt	Not attempted **558/1288 users** correct (43%)
15pt	Not attempted **502/552 users** correct (91%)

Jane's Flower Shop

6pt	Not attempted **1003/1408 users** correct (71%)
19pt	Not attempted **319/735 users** correct (43%)

Clash Royale

13pt	Not attempted **200/410 users** correct (49%)
27pt	Not attempted **28/101 users** correct (28%)

Top Scores

jcvb	100
NAFIS	100
ZhouYuChen	100
wwwwodddd	100
chffy	100
Seter	100
19891101	100
Constroy	100
Ronnoc	100
Jason911	100

Problem B. Rain

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 9 points	Solve B-small
Large input 15 points	Solve B-large

Problem

There's an island in the sea. The island can be described as a matrix with **R** rows and **C** columns, with **H[i][j]** indicating the height of each unit cell. Following is an example of a 3*3 island:

```
3 5 5
5 4 5
5 5 5
```

Sometimes, a heavy rain falls evenly on every cell of this island. You can assume that an arbitrarily large amount of water falls. After such a heavy rain, some areas of the island (formed of one or more unit cells joined along edges) might collect water. This can only happen if, wherever a cell in that area shares an edge (not just a corner) with a cell outside of that area, the cell outside of that area has a larger height. (The surrounding sea counts as an infinite grid of cells with height 0.) Otherwise, water will always flow away into one or more of the neighboring areas (for our purposes, it doesn't matter which) and eventually out to sea. You may assume that the height of the sea never changes. We will use W[i][j] to denote the heights of the island's cells after a heavy rain. Here are the heights of the example island after a heavy rain. The cell with initial height 4 only borders cells with higher initial heights, so water will collect in it, raising its height to 5. After that, there are no more areas surrounded by higher cells, so no more water will collect. Again, note that water cannot flow directly between cells that intersect only at their corners; water must flow along shared edges.
Following is the height of the example island after rain:

```
3 5 5
5 5 5
5 5 5
```

Given the matrix of the island, can you calculate the total increased height sum(W[i][j]-**H[i][j]**) after a heavy rain?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. The first line of each test case contains two numbers **R** and **C** indicating the number of rows and columns of cells on the island. Then, there are **R** lines of **C** positive integers each. The j-th value on the i-th of these lines gives **H[i][j]**: the height of the cell in the i-th row and the j-th column.

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 total increased height.

Limits

1 ≤ **T** ≤ 100.
1 ≤ **H[i][j]** ≤ 1000.

Small dataset

1 ≤ **R** ≤ 10.
1 ≤ **C** ≤ 10.

Large dataset

1 ≤ **R** ≤ 50.
1 ≤ **C** ≤ 50.

Sample

Input	Output
3	Case #1: 1

```
3 3       Case #2: 3
3 5 5     Case #3: 0
5 4 5
5 5 5
4 4
5 5 5 1
5 1 1 5
5 1 5 5
5 2 5 8
4 3
2 2 2
2 1 2
2 1 2
2 1 2
```

Case 1 is explained in the statement.

In case 2, the island looks like this after the rain:

```
5 5 5 1
5 2 2 5
5 2 5 5
5 2 5 8
```

Case 3 remains unchanged after the rain.
