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☆ Counting Groups

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A 2D array, m, is an $n \times n$ matrix where each cell contains either the value 0 or the value 1. Any two cells (x_1, y_1) and (x_2, y_2) in m fall into the same group if $|x_1 - x_2| + |y_1 - y_2| = 1$ and both cells contain the value 1.

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Complete the *countGroups* function in your editor. It has 2 parameters:

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1. An $n \times n$ 2D array of integers, m, where the value of each element $m_{i,j}$ (where $0 \le i,j$ < n) is a binary integer (i.e., a 0 or 1).

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2. An array of q integers, t, where the value of each element t_k (where $0 \le k < q$) is a group size for which you must find the number of groups in m.

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Your function must go through each of the q integers in array t and, for each t_k (where 0 $\leq k < q$), find the number of groups in m having size t_k . It must then add the result to index k of a q-element array of integers to be returned by the function (we'll call this array ret).

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After finding the result for each element in *t*, your function must return the *ret* array. Recall from the above paragraph that this is a q-element array of integers where each element k ($0 \le k < q$) denotes the number of groups of size t_k in array m.

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Input Format

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The locked stub code in your editor reads the following input from stdin and passes it to your function:

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The first two lines both contain an integer, n, denoting the number of rows in array m.

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The second line contains an integer, n, denoting the number of columns in array m. Each line i of the n subsequent lines (where $0 \le i < n$) contains n space-separated binary

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integers describing the respective elements of row i in m. The next line contains an integer, q, denoting the number of test cases.

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Each line k of the q subsequent lines (where $0 \le k < q$) contains an integer describing element k in array t.

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Constraints

• $1 \le n \le 10^3$

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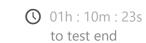
• $1 \le q \le n$ • $1 \le t_k \le n^2$



Output Format

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Your function must return an array of integers where each element *k* denotes the number of groups of size t_k present in array m. This is printed to stdout by the locked stub code in your editor.





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Sample Output 1

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Sample Input 2

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5
1 0 1 1 0
0 1 0 0 1
1 0 1 1 0
1 0 1 1 0
0 1 0 0 1
5
1
2
3
4
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Sample Output 2

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Explanation

Sample Case 1:

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 $t_0 = 1$: m has two groups of this size, so index 0 in our return array should contain the value 2.

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 $t_1 = 10$: m has two groups of this size, so index 1 in our return array should contain the value 2.

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 $t_2 = 20$: m has one group of this size, so index 2 in our return array should contain the value 1.

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 $t_3 = 2$: m has one group of this size, so index 3 in our return array should contain the

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 $t_4 = 6$: m has one group of this size, so index 4 in our return array should contain the value 1.

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Sample Case 2:

 $t_0 = 1$: m has five groups of this size, so index 0 in our return array should contain the value 5.

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 $t_1 = 2$: m has two groups of this size, so index 1 in our return array should contain the value 2.

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 $t_2 = 3$: m has zero groups of this size, so index 2 in our return array should contain the

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value 0. $t_3 = 4$: m has one group of this size, so index 3 in our return array should contain the

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 $t_4 = 5$: m has zero groups of this size, so index 4 in our return array should contain the value 0.

Java 7

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YOUR ANSWER

1 ▶ import ↔;

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value 1.

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We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour. Start tour

Original code

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9 ▼ /* * Complete the function below. 10 11 */

public class Solution {

① 01h : 10m : 23s to test end

:=	16 } 17
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6	19 ▶ public static void main(String[] args) throws IOException{↔}
7	60 } Line: 12 Col: 1
8	Line. 12 Coi. 1
9	Run Code Submit code & Continue
10	(You can submit any number of times)
10	Test against custom input
11	• • • • • • • • • • • • • • • • • • • •
12	▲ Download sample test cases The input/output files have Unix line endings. Do not use Notepad to edit them on windows.
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