

Island Survey

Time Limit 2 second, Memory Limit 128 MB

A team of surveyors want to explore the ecosystem of a group of islands in an ocean. To get basic information of these islands, the team utilizes a satellite image. This image contains M rows and N columns. The image is binary in which zero represents an ocean region, while one represents an island region. Figure 1 illustrates a satellite image.

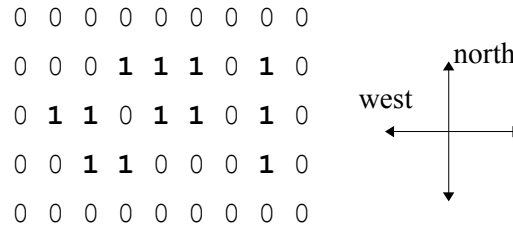


Figure 1. Satellite image of islands.

The team of surveyors wants to count the islands by using the image. Two island regions belong to the same island if they are adjacent to each other either in vertical, horizontal, or diagonal direction. Therefore, the number of islands in Figure 1 is two.

Since a map may be large and there can be a large number of small islands, manual counting is tedious and error-prone. Therefore, the survey team asks you to write a program that reads a satellite image and counts the islands in the image. That is your task.

Input

The first line contains an integer T denoting the number of test cases ($1 \leq T \leq 10$). For each test case, the input is in the following format.

1. The first line contains integers M and N denoting the number of rows and columns of sub-regions in a seabed area, where $1 \leq M, N \leq 500$.
2. The next M lines contain region information where zero represents an ocean region and one represents an island region. These lines are arranged from the north to south. Each line contains N numbers separated by one or more spaces. The first column is the westernmost and the last is the easternmost.

In addition, the boundary of an input image contains only ocean regions. In other words, the top and bottom rows and the leftmost and rightmost columns contain only zeros.

Output

For each test case, your program writes one integer representing the number of islands in a test case. Each integer, including the last one, is followed by a new-line character.

Example

Input	Output
2	2
5 9	5
0 0 0 0 0 0 0 0 0	
0 0 0 1 1 1 0 1 0	
0 1 1 0 1 1 0 1 0	
0 0 1 1 0 0 0 1 0	
0 0 0 0 0 0 0 0 0	
9 12	
0 0 0 0 0 0 0 0 0 0 0 0 0	
0 1 0 1 0 0 1 1 0 0 1 0	
0 1 1 1 0 0 0 1 1 0 0 0	
0 0 0 0 0 1 0 1 0 1 0 0	
0 0 1 1 1 1 0 0 1 1 0 0	
0 1 1 1 0 1 1 0 1 1 0 0	
0 0 1 1 1 0 1 0 0 0 0 0	
0 1 1 0 0 1 1 0 1 1 1 0	
0 0 0 0 0 0 0 0 0 0 0 0	