

Problem F. Urban Map

Source file name: F.c, F.cpp, F.java
 Input: Standard
 Output: Standard
 Author(s):

Urban planning in a city requires usage of geographic maps that represents some parts of the city. In each map you can see buildings that are planned to be built on that zone. In order to follow current urban law codes it is need to verify that the area of buildings is not greater than some percentage from the total geographic area.

Town planners require help to determine what is the area of the map that is not part of a building. A map is a rectangle of R rows and C columns, each cell in the map can may be built or empty. If a set of built cells surround cells that are not built then these cells are considered to be built as they are inside of a building. A building may contain or not empty cells inside.

Any cell that is not part of a building is called “outside cell”, all of these cells are connected, two cells are connected if they share a side in the map. There is always at least one “outside cell” in the periphery of the map. Your task is to determine the number of “outside cells” that exist in the map.

In the figure you can see the map from the test case and it contains three buildings. The biggest has a set of 7 empty cells inside it and in takes 21 cells in total, there is also other building which does not contains empty cells inside it and takes 3 cells in total, and the third building contains two empty cells inside it and 9 cells in total. The total area of the map $8 \times 8 = 64$ minus the area taken by buildings 33 gives the number of “outside cells” $64 - 33 = 31$

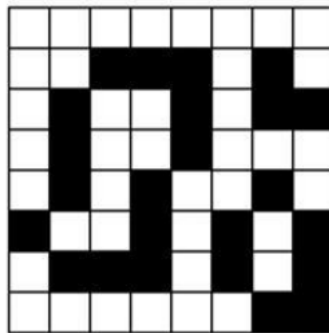


Figura 1. Ejemplo de un mapa de 8 x 8 celdas

Input

The first line of input contains a number T the number of test cases. Each test case starts with a line with a single number R the number of rows, the next line contains a single number C the number of columns. The next R lines contains C numbers each number represents if that cell in the map is built (1) or not (0) (Note that there are no spaces between the numbers as shown in the sample input).

- $2 \leq T \leq 10$
- $2 \leq R \leq 30$
- $2 \leq C \leq 30$

Output

For each test case your program should print a single number representing the number of “outside cells” that exist on the map.

Example

Input	Output
1 8 8 00000000 00111010 01001011 01001000 01010010 10010101 01110101 00000011	31