

Hi there! Thank you for taking the time to complete a code challenge with dott.
Good luck and we hope you will find it interesting!

Guidelines:

- Please solve these tasks in TypeScript and make sure to complete the challenge in 48 hours.
- Please commit your code to a Git repo we can access.

Task

There is given a rectangular bitmap of size $n \times m$. Each pixel of the bitmap is either white or black, but at least one is white. The pixel in i -th line and j -th column is called the pixel (i,j) . The distance between two pixels $p1=(i1,j1)$ and $p2=(i2,j2)$ is defined as $d(p1,p2)=|i1-i2|+|j1-j2|$. Write a program which:

- reads the description of the bitmap from the standard input;
- for each pixel, computes the distance to the nearest white;
- writes the results to the standard output.

Input

The number of test cases t ($1 \leq t \leq 1000$) is in the first line of input, then t test cases follow separated by an empty line. In the first line of each test case there is a pair of integer numbers n, m separated by a single space, $1 \leq n \leq 182$, $1 \leq m \leq 182$. In each of the following n lines of the test case exactly one zero-one word of length m , the description of one line of the bitmap, is written. On the j -th position in the line $(i+1)$, $1 \leq i \leq n$, $1 \leq j \leq m$, is '1' if, and only if the pixel (i,j) is white.

Output

In the i -th line for each test case, $1 \leq i \leq n$, there should be written m integers $f(i,1), \dots, f(i,m)$ separated by single spaces, where $f(i,j)$ is the distance from the pixel (i,j) to the nearest white pixel. Example:

Input:

```
1
3 4
0001
0011
0110
```

Output

```
3 2 1 0
2 1 0 0
1 0 0 1
```