In MATLAB, there is a very useful function called 'reshape', which can reshape a matrix into a new one with different size but keep its original data.

You're given a matrix represented by a two-dimensional array, and two **positive** integers **r** and **c** representing the **row** number and **column** number of the wanted reshaped matrix, respectively.

The reshaped matrix need to be filled with all the elements of the original matrix in the same **row-traversing** order as they were.

If the 'reshape' operation with given parameters is possible and legal, output the new reshaped matrix; Otherwise, output the original matrix.

**Example 1:**

**Input:**

nums =

[[1,2],

[3,4]]

r = 1, c = 4

**Output:**

[[1,2,3,4]]

**Explanation:**  
The **row-traversing** of nums is [1,2,3,4]. The new reshaped matrix is a 1 \* 4 matrix, fill it row by row by using the previous list.

**Example 2:**

**Input:**

nums =

[[1,2],

[3,4]]

r = 2, c = 4

**Output:**

[[1,2],

[3,4]]

**Explanation:**  
There is no way to reshape a 2 \* 2 matrix to a 2 \* 4 matrix. So output the original matrix.

**Note:**

1. The height and width of the given matrix is in range [1, 100].
2. The given r and c are all positive.

**Solutions:** There are two ways to do it. Iterate with two loops over the original matrix and keep filling the new matrix. When we reach the column limit of the new matrix, create a new row and start filling from there.

The second solution is to have an integer iterate over r \* c. To fill an element in the new matrix, use the below statement

for(i = 0; i < r\*c; ++i)

reshaped[i/c][i%c] = original[i/m][i%m];

here *m* is the number of columns in the original matrix.