

HOME TOP CATALOG CONTESTS GYM PROBLEMSET GROUPS RATING EDU API CALENDAR HELP

P

C. Mex in the Grid

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

time limit per test: 2 seconds memory limit per test: 256 megabytes

You are given n^2 cards with values from 0 to n^2-1 . You are to arrange them in a n by n grid such that there is **exactly** one card in each cell.

The MEX (minimum excluded value) of a subgrid* is defined as the smallest non-negative integer that does not appear in the subgrid.

Your task is to arrange the cards such that the sum of MEX values over all $\left(\frac{n(n+1)}{2}\right)^2$ subgrids is maximized

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 100$). The description of the test cases follows.

The first line of each test case contains a single integer n ($1 \le n \le 500$) — the side length of the grid.

It is guaranteed that the sum of n over all test cases does not exceed 1000.

Output

For each test case, output n lines, each containing n integers representing the elements of the $\frac{1}{n}$

If there are multiple answers, you can output any of them.

Evample

Livatifie		
input	Сору	
2		
2		
3		
output	Сору	
0 1		
2 3		
0.4.5		
8 4 5		
8 4 5 6 0 1		

Note

In the first test case, one valid arrangement is:

There are 9 subgrids in total, and the 4 of them with non-zero MEX are shown below:

values: [0] — MEX: 1

 $\mathsf{values}:[0,1] \longrightarrow \mathsf{MEX}:2$

0

Codeforces Round 1024 (Div. 2) Finished

Practice

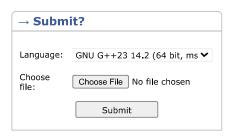


→ Virtual participation

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Start virtual contest





→ Last submissions		
Submission	Time	Verdict
321882426	May/29/2025 10:38	Accepted
321881867	May/29/2025 10:33	Accepted





^{*}A subgrid of a n by n grid is specified by four numbers l_1, r_1, l_2, r_2 satisfying $1 \le l_1 \le r_1 \le n$ and $1 \le l_2 \le r_2 \le n$. The element in the i-th row and the j-th column of the grid is part of the subgrid if and only if $l_1 \le i \le r_1$ and $l_2 \le j \le r_2$.

2

 $\text{values:}[0,1,2,3] \ -\!\!\!\!-\! \text{MEX:} \ 4$

The sum of MEX over all subgrids would be 1+2+1+4=8. It can be proven that no other arrangements have a larger sum of MEX values.

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