

E. Start of the season

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

Before the start of the football season in Berland a strange magic ritual is held. The most experienced magicians have to find a magic matrix of the size $n \times n$ (n is even number). Gods will never allow to start the championship without it. Matrix should contain integers from 0 to $n - 1$, main diagonal should contain only zeroes and matrix should be symmetric. Moreover, all numbers in each row should be different. Magicians are very tired of the thinking process, so they ask you to write a program to find such matrix.

Input

The first line contains one integer n ($2 \leq n \leq 1000$), n is even.

Output

Output n lines with n numbers each — the required matrix. Separate numbers with spaces. If there are several solutions, output any.

Examples

input	Copy
2	
output	Copy
0 1	
1 0	

input	Copy
4	
output	Copy
0 1 3 2	
1 0 2 3	
3 2 0 1	
2 3 1 0	

→ Attention

The package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, a solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then the value 800 ms will be displayed and used to determine the verdict.

Codeforces Beta Round 12 (Div 2 Only)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest](#)

→ Clone Contest to Mashup

You can clone this contest to a mashup.

[Clone Contest](#)

→ Submit?

Language: [GNU G++23 14.2 \(64 bit, ms\)](#)

Choose file: [Choose File](#) No file chosen

[Submit](#)

→ Last submissions

Submission	Time	Verdict
325887879	Jun/24/2025 17:45	Accepted

325886527	Jun/24/2025 17:34	Wrong answer on test 2
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→ **Problem tags**

constructive algorithms

*2100

No tag edit access

→ **Contest materials**

- Announcement



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Server time: Jun/24/2025 21:47:38^{UTC+7} (k1).
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