

D. Cube Snake

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You've got an $n \times n \times n$ cube, split into unit cubes. Your task is to number all unit cubes in this cube with positive integers from 1 to n^3 so that:

- each number was used as a cube's number exactly once;
- for each $1 \leq i < n^3$, unit cubes with numbers i and $i + 1$ were neighbouring (that is, shared a side);
- for each $1 \leq i < n$ there were at least two different subcubes with sizes $i \times i \times i$, made from unit cubes, which are numbered with consecutive numbers. That is, there are such two numbers x and y , that the unit cubes of the first subcube are numbered by numbers $x, x + 1, \dots, x + i^3 - 1$, and the unit cubes of the second subcube are numbered by numbers $y, y + 1, \dots, y + i^3 - 1$.

Find and print the required numeration of unit cubes of the cube.

Input

The first line contains a single integer n ($1 \leq n \leq 50$) — the size of the cube, whose unit cubes need to be numbered.

Output

Print all layers of the cube as $n \times n$ matrices. Separate them with new lines. Print the layers in the order in which they follow in the cube. See the samples for clarifications.

It is guaranteed that there always is a solution that meets the conditions given in the problem statement.

Examples

input
3
output
1 4 17 2 3 18 27 26 19 8 5 16 7 6 15 24 25 20 9 12 13 10 11 14 23 22 21

Note

In the sample the cubes with sizes $2 \times 2 \times 2$ are numbered with integers 1, ..., 8 and 5, ..., 12.