Place the Numbers II

Some days ago, Little Chucha bought a computer game. She is given a NxN board which she has to fill with the numbers 1 to N^2, no repetitions allowed. The computer calculates the sum of distances for each pair of consecutive numbers, that is, 1 -> 2, 2 -> 3, ..., N^2 -> 1. The goal is to make that sum as short as possible.

After many hours spent playing, Chucha has mastered the game. So she bought a new version and now the goal is to make the sum of distances as big as possible. Can you help her?

Input

Input consists of a single integer number 1<=N<=100, the size of the board.

Output

Output one possible placing of the numbers. You are to write N lines, N space separated integers each.

Example

Input:
3

Output:
1 2 3
4 5 6
7 8 9

Score:
Score for the example is:
Distance 1 -> 2 : 1
Distance 2 -> 3 : 1
Distance 3 -> 4 : 3
Distance 4 -> 5 : 1
Distance 5 -> 6 : 1
Distance 6 -> 7 : 3
Distance 7 -> 8 : 1
Distance 8 -> 9 : 1
Distance 9 -> 1 : 4
Sum of distances (SOD): 16, Min SOD: 10, Score: 1+16-10=7 points.