

6973 Excavator Contest

Bluefly University is famous of excavator technology. Lots of students take part in many excavator-related courses. After the students finish their courses, they will compete in a contest called International Collegiate Excavator Contest (ICEC).

This year's ICEC will be held at Marjar University. This is an individual competition that each contestant will start the match one by one.

The task of the contest is to drive an excavator passing a square field. The judge partitioned the field into $N \times N$ equal-sized square chunks. Each chunk should be visited exactly one time. The contestant will drive the excavator, starting from and ending at the center of two different boundary chunks.

In order to show off their superb excavator operating skills, the contestants need to drive the excavator with as many as possible turnings. Since the excavator is a kind of large and heavy vehicle, it can only make a turn to left or right at the center of any chunk.

Bob is a student from Marjar University. He wants to win the contest. To fulfill this dream, he needs to drive the excavator with at least $N \times (N - 1) - 1$ turnings. It seems to be a difficult task, so he turns to you for help. Please write a program to find a feasible route for him.



Input

There are multiple test cases. The first line of input contains an integer T indicating the number of test cases. For each test case:

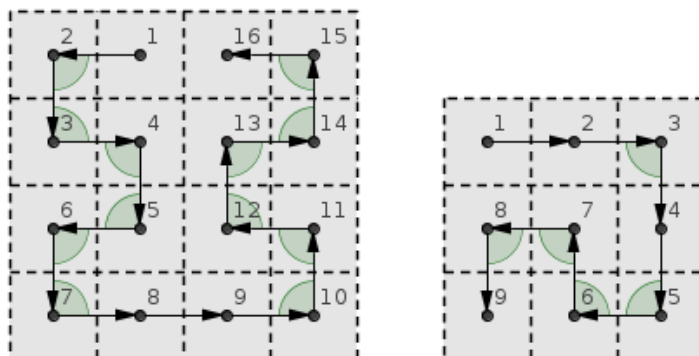
There is only one integer N ($2 \leq N \leq 512$).

Output

For each test case, output a matrix with $N \times N$ integers indicating the route to pass all the chunks. Bob will drive the excavator passing the chunks in the order of 1, 2, ..., N^2 .

If there are multiple solutions, any one will be acceptable.

Hints: route for $N = 3$ or $N = 4$.



Sample Input

```
2
4
3
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Sample Output

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2 1 16 15
3 4 13 14
6 5 12 11
7 8 9 10
1 2 3
8 7 4
9 6 5
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