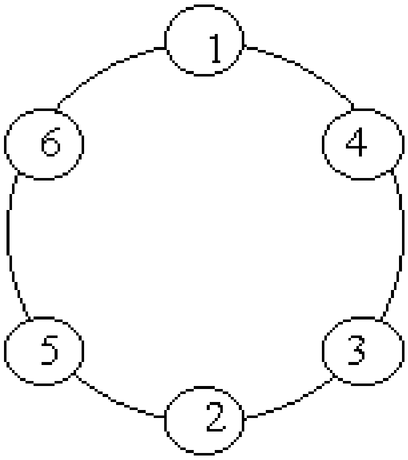
524 Prime Ring Problem

A ring is composed of n (even number) circles as shown in diagram. Put natural numbers $1, 2, \ldots, n$ into each circle separately, and the sum of numbers in two adjacent circles should be a prime.



Note: the number of first circle should always be 1.

Input

n $(0 < n \leq 20)$

Output

The output format is shown as sample below. Each row represents a series of circle numbers in the ring beginning from 1 clockwisely and anticlockwisely. The order of numbers must satisfy the above requirements.

You are to write a program that completes above process.

Sample Input

```
6
8
```

Sample Output

```
Case 1:
1 4 3 2 5 6
1 6 5 2 3 4

Case 2:
1 2 3 8 5 6 7 4
1 2 5 8 3 4 7 6
1 4 7 6 5 8 3 2
1 6 7 4 3 8 5 2
```