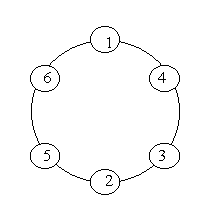
**Prime Ring Problem**

**Time Limit: 4000/2000 MS (Java/Others)    Memory Limit: 65536/32768 K (Java/Others)  
Total Submission(s): 29446    Accepted Submission(s): 13136**

**Problem Description**

A ring is compose of n circles as shown in diagram. Put natural number 1, 2, ..., 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 < 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. Print solutions in lexicographical order.  
  
You are to write a program that completes above process.  
  
Print a blank line after each case.

**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

**Source**

[Asia 1996, Shanghai (Mainland China)](http://acm.hdu.edu.cn/search.php?field=problem&key=Asia+1996%2C+Shanghai+%28Mainland+China%29&source=1&searchmode=source)

**Recommend**

JGShining   |   We have carefully selected several similar problems for you:  [1241](http://acm.hdu.edu.cn/showproblem.php?pid=1241) [1312](http://acm.hdu.edu.cn/showproblem.php?pid=1312) [1242](http://acm.hdu.edu.cn/showproblem.php?pid=1242) [1175](http://acm.hdu.edu.cn/showproblem.php?pid=1175) [1253](http://acm.hdu.edu.cn/showproblem.php?pid=1253)