

## Problem E

### Occult Square

A magic square is a square array of non-negative integers where the sums of the numbers on each row, each column, and both main diagonals are the same. An  $N \times N$  occult square is a magic square with  $N$  rows and  $N$  columns with additional constraints:

- The integers in the square are between 0 and  $N$ , inclusive.
- For all  $1 \leq i \leq N$ , the number  $i$  appears at most  $i$  times in the square.
- There are at least two distinct **positive** integers in the square.

For example, the following is a  $5 \times 5$  occult square, where the sums of the numbers on each row, each column, and both main diagonals are 7:

```
0 0 0 3 4
2 4 0 0 1
0 0 3 4 0
5 0 0 0 2
0 3 4 0 0
```

For a given prime number  $P$ , you are asked to construct a  $P \times P$  occult square, or determine whether no such occult square exists.

#### Input

Input contains a prime number:  $P$  ( $2 \leq P \leq 1000$ ) representing the number of rows and columns in the occult square.

#### Output

If there is no  $P \times P$  occult square, simply output -1 in a line. Otherwise, output  $P$  lines, each contains  $P$  integers representing an occult square. The  $j^{th}$  integer on the  $i^{th}$  line is the integer on the  $i^{th}$  row and the  $j^{th}$  column in the occult square. You may output any  $P \times P$  occult square.

**Sample Input #1**

```
5
```

**Sample Output #1**

```
0 0 0 3 4
2 4 0 0 1
0 0 3 4 0
5 0 0 0 2
0 3 4 0 0
```

*Explanation for the sample input/output #1*

This is the example from the problem description.

**Sample Input #2**

```
2
```

**Sample Output #2**

```
-1
```

*Explanation for the sample input/output #2*

There is no  $2 \times 2$  occult square.