A. Lucky Permutation Triple

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Bike is interested in permutations. A permutation of length n is an integer sequence such that each integer from 0 to $(n - 1)$ appears exactly once in it. For example, $[0, 2, 1]$ is a permutation of length 3 while both $[0, 2, 2]$ and $[1, 2, 3]$ is not.

A permutation triple of permutations of length n (a, b, c) is called a Lucky Permutation Triple if and only if . The sign a_i denotes the i-th element of permutation a. The modular equality described above denotes that the remainders after dividing $a_i + b_i$ by n and dividing c_i by n are equal.

Now, he has an integer n and wants to find a Lucky Permutation Triple. Could you please help him?

Input

The first line contains a single integer n $(1 \le n \le 10^5)$.

Output

If no Lucky Permutation Triple of length n exists print `-1`.

Otherwise, you need to print three lines. Each line contains n space-seperated integers. The first line must contain permutation a, the second line — permutation b, the third — permutation c.

If there are multiple solutions, print any of them.

Examples

input

```
5
```

output

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

input

```
2
```

output

```
-1
```

Note

In Sample 1, the permutation triple $([1, 4, 3, 2, 0], [1, 0, 2, 4, 3], [2, 4, 0, 1, 3])$ is Lucky Permutation Triple, as following holds:

- ;
- ;
- ;
- ;
- .

In Sample 2, you can easily notice that no lucky permutation triple exists.