F. AND-permutations

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

Given an integer N, find two permutations:

1. Permutation p of numbers from 1 to N such that $p_i \neq i$ and $p_i \ \& \ i = 0$ for all $i = 1, 2, ..., N$.
2. Permutation q of numbers from 1 to N such that $q_i \neq i$ and $q_i \ \& \ i \neq 0$ for all $i = 1, 2, ..., N$.

$\&$ is the bitwise AND operation .

Input

The input consists of one line containing a single integer N ($1 \leq N \leq 10^5$).

Output

For each subtask, if the required permutation doesn't exist, output a single line containing the word "NO"; otherwise output the word "YES" in the first line and N elements of the permutation, separated by spaces, in the second line. If there are several possible permutations in a subtask, output any of them.

Examples

input
3

output
NO NO

input
6

output
YES 6 5 4 3 2 1 YES 3 6 2 5 1 4