

Bit Component

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

Denis really likes binary representation of numbers. Once he wrote down binary representations of numbers from 1 to 7, in some order, one under the other, so that their rightmost digits were aligned. Then he realized that the ones in these numbers form a single connected region: if we consider the places for digits as squares on a grid, all squares containing ones are connected by sides. Now he wonders if the same thing can be done for numbers from 1 to n for different n .

You are given an integer n . You should find a good permutation of all integers from 1 to n , or determine that there is no such permutation. A permutation is *good* if, when we write the numbers down as described above, the ones form a single connected region.

Input

The only line contains a single integer n ($1 \leq n \leq 2 \cdot 10^5$).

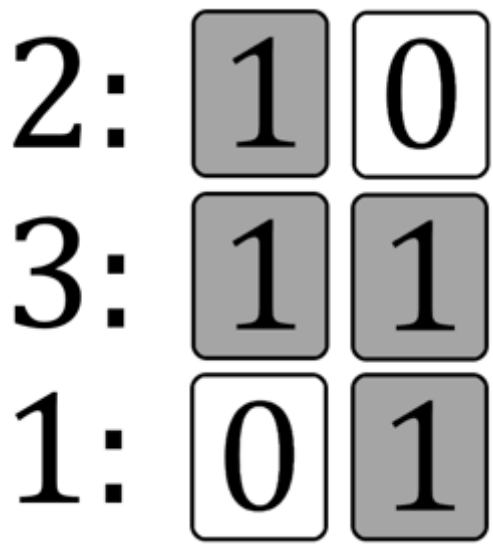
Output

If there is no good permutation of numbers from 1 to n , print a single line with the word “NO” (uppercase). Otherwise, print a line with the word “YES” (uppercase), and then another line containing the good permutation you found. If there are several possible answers, print any one of them.

Examples

<i>standard input</i>	<i>standard output</i>
1	YES 1
2	NO
3	YES 2 3 1

Note



Third example