

## Problem I. Implemented Incorrectly

Input file: *standard input*  
Output file: *standard output*  
Time limit: 2 seconds  
Memory limit: 512 mebibytes

Consider the following problem:

- You are given a permutation  $A = \langle a_1, a_2, \dots, a_n \rangle$  containing each integer from 1 to  $n$  exactly once. Find its only cyclic shift that starts with 1.

Consider the following algorithm to solve it:

- Input:  $A = \langle a_1, a_2, \dots, a_n \rangle$ .
- For each  $i = 2, 3, \dots, n$ :  
if  $a_i < a_1$ :  
rotate  $A$  to move  $a_i$  to the front; that is, set  $A \leftarrow \langle a_i, a_{i+1}, \dots, a_n, a_1, a_2, \dots, a_{i-1} \rangle$ .
- Output:  $A = \langle a_1, a_2, \dots, a_n \rangle$ .

You are given a single integer  $n$ . Find the number of permutations on which the described algorithm solves the problem incorrectly.

### Input

The only line contains a single integer  $n$  ( $1 \leq n \leq 42$ ).

### Output

Print the number of permutations on which the described algorithm works incorrectly.

### Examples

<i>standard input</i>	<i>standard output</i>
3	1
7	1023

### Note

In the first example test case, for  $n = 3$ , the only permutation resulting in an incorrect output is  $\langle 3, 2, 1 \rangle$ . The algorithm returns  $\langle 2, 1, 3 \rangle$ , while the correct answer is  $\langle 1, 3, 2 \rangle$ .