

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 $\langle 1, 3, 2 \rangle$.