Problem I. Modulo Permutations

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Given a natural number n, count the number of permutations $(p_1, p_2, \ldots, p_n)$ of the numbers from 1 to n, such that for each i $(1 \le i \le n)$, the following property holds: $p_i \bmod p_{i+1} \le 2$, where $p_{n+1} = p_1$.

As this number can be very big, output it modulo $10^9 + 7$.

Input

The only line of the input contains the integer n $(1 \le n \le 10^6)$.

Output

Output a single integer — the number of the permutations satisfying the condition from the statement, modulo $10^9 + 7$.

Examples

standard input	standard output
1	1
2	2
3	6
4	16
5	40
1000000	581177467

Note

For example, for $n = 4$ you should count the permutation $[4, 2, 3, 1]$, as $4 \bmod 2 = 0 \le 2$, $2 \bmod 3 = 2 \le 2$, $3 \bmod 1 = 0 \le 2$, $1 \bmod 4 = 1 \le 2$. However, you shouldn't count the permutation $[3, 4, 1, 2]$, as $3 \bmod 4 = 3 > 2$ which violates the condition from the statement.