Strategic Arrays

Time limit: 1.0s **Memory limit:** 128M

For any 1-indexed array of consecutive positive integers $[1, 2, \ldots, N]$ a subsequence $[a_1, a_2, \ldots, a_k]$ constructed from the first array is considered *strategic* if every term with an odd index in the subsequence is odd and every term with an even index is even.

A subsequence is a sequence which is derived from the original sequence by deleting zero or more elements without changing the order of the remaining elements.

Given an integer N, print the number of strategic subsequences of $[1, 2, \ldots, N]$, modulo $10^9 + 7$.

Constraints

For all subtasks: $1 \leq N \leq 10^{18}$

Subtask 1 [10%]

$1 \leq N \leq 15$

Subtask 2 [30%]

$1 \leq N \leq 10^6$

Subtask 3 [60%]

No additional constraints.

Input Specification

You will receive one line of input containing the positive integer N.

Output Specification

Output the number of strategic subsequences, modulo $10^9 + 7$.

Sample Input

```
4
```

Sample Output

```
7
```

Explanation

The strategic subsequences of $[1, 2, 3, 4]$ are: $[1]$, $[3]$, $[1, 2]$, $[1, 4]$, $[3, 4]$, $[1, 2, 3]$, $[1, 2, 3, 4]$