

Recursion [II]

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

points: 100 · problem code: recursion2 · author: glipR

We introduce a new recursive sequence, which satisfies:

$$\begin{cases} G(0) = 0 \\ G(1) = 5 \\ G(n) = 2 \times G(n-1) + 3 \times G(n-2) + F(n-1)n \geq 2 \end{cases}$$

Where $F(n)$ is the n th fibonacci number, following the previous definition.

For example, $G(0), G(1), G(2), G(3), G(4)$ can be written as 0, 5, 11, 39, 114

In this question, you must compute $G(n)$ for some value n . Since the value may be quite large, output your answer modulo $10^9 + 7$.

Input

Input will contain a single integer n

Output

Output should contain a single integer, representing $G(n) \bmod 10^9 + 7$.

Constraints

- $0 \leq n \leq 10^{18}$

Example

Input

5

Output

350