



Triumvirate

There are three rulers in Kazakhstan: Almaty, Nursultan and Shymkent. Almaty likes crimson bricks, Nursultan likes scarlet bricks, and Shymkent likes carmine bricks.

Now they wish to build a pyramid. The pyramid will have n bricks of the three colors. Every brick in the pyramid is either

- on the base, or
- sits on the middle of two bricks below.

The base must be a segment of $k \leq n$ consecutive bricks. No two bricks that are touching (on the side or above or below) can have the same color.

What is the number of ways to construct a pyramid? Two pyramids are different if their structure is different, or if one of the bricks has a different color.

Since this number can be quite large, output only the remainder after dividing it by $10^9 + 7$.

Input format

The first and only line of input contains a single integer n , the number of bricks.

Output format

Output a single integer on a line by itself, the number of possible pyramids.

Since this number can be quite large, output only the remainder after dividing it by $10^9 + 7$.

Subtasks

In all subtasks $1 \leq n$.

Subtask	Points	n
1	10	$n \leq 6$
2	17	$n \leq 12$
3	25	$n \leq 300$
4	24	$n \leq 10\,000$
5	24	$n \leq 100\,000$

Example

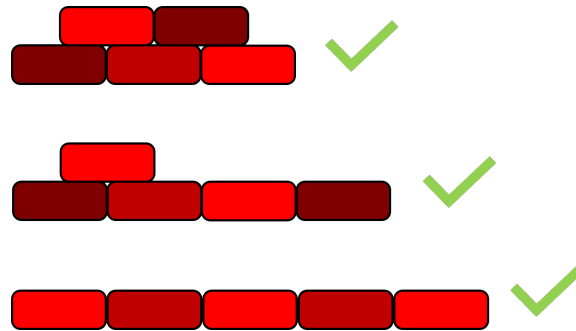
Consider the following input:

5

The correct output is:

126

There are 126 possible pyramids with $n = 5$ bricks. Here are some of them:



Here are some non-examples:

