Counting Paths - III

Input file:	`standard input`
Output file:	`standard output`
Time limit:	0.5 seconds
Memory limit:	256 megabytes

Note: It's the same problem with harder constraints.

Saksham has decided that he will start his workout everyday by climbing stairs of the town hall. However climbing stairs normally is too easy for him. He can thus climb directly three stairs also. So if he is at say stair 1 then he can go to stair 2(normally), or stair 4(jump), in one step.

However it still very easy for him. He thus decided that he will climb n stairs of the town hall in every way possible.

You have to help him find in how many distinct ways can he climb to the top?

You have to give the answer as modulo $10^9 + 7$

Input

You are given a single integer n - denoting the number of stairs he has to climb ($1 \leq n \leq 10^9$).

Output

You have to return a single integer , denoting in how many distinct ways can he climb to the top.

Example

standard input	standard output
3	2

Note

To climb 3 stairs he has the following ways

0->3

0->1->2->3