Counting Words

Supervin likes counting. In this problem, he invites you to count together

Supervin defines a **word** as "a string only consist of 'o' or 'x'", and additional requirement, for each substring with prime-length, the number of 'o' is not less than the number of 'x'.

Supervin gives you an integer **N** (1 <= **N** <= 10^12). Supervin challenges you to determine how many **words** can be made with exactly **N**-length.

You are having difficulties, make a program to determine how many **N**-length **words**. Because the output can be too big, output the number of **words** modulo 1 000 000 007

Input

One line, an integer **N**

Output

One line, an integer indicates how many **N**-length **words** modulo 1 000 000 007

Example

Input:
2

Output:
3

Input:

3

Output:

4

Explanation :

In the first sample, the **words** can be made are : "oo", "ox", "xo".

In the second sample, the **words** can be made are : "ooo", "oox", "oxo", "xoo"