Problem F. Strange Sequence

Input file:	`sequence.in`
Output file:	*`standard output`*
Time limit:	5 seconds
Memory limit:	256 mebibytes

Consider the following well-known sequence s consisting of strings of digits. Let s_0 = "2". Each next term is obtained by describing the previous term: split the previous term into consecutive groups of equal digits, and for each such group, write the size of the group followed by the digit the group consists of. Thus, the first few terms are constructed as follows:

String	Description
s_0 = "2"	one 2
s_1 = "12"	one 1, one 2
s_2 = "1112"	three 1s, one 2
s_3 = "3112"	one 3, two 1s, one 2
s_4 = "132112"	one 1, one 3, one 2, two 1s, one 2
s_5 = "1113122112"	...

Your task is to find the length of the n-th term of this sequence modulo 7 340 033.

Input

The first line of input contains one integer n ($0 \le n \le 10^{18}$).

Output

Print the length of s_n modulo 7 340 033.

Examples

sequence.in	standard output
0	1
2	4