Fibonacci Sum

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

Let $f(i)$ denote the i-th number in the famous Fibonacci Sequence. Formally:

$$f(i) = \begin{cases} 1 & \text{if } i \leq 2, \\ f(i-1) + f(i-2) & \text{if } i > 2. \end{cases}$$

Let $g(x)$ denote the count of 1's in the binary representation of number x. For example, $g(5) = g(101_{(2)}) = 2$, $g(15) = g(1111_{(2)}) = 4$.

Your task is to calculate the following value:

$$\sum_{i=1}^{n} f\left(g(i)\right) \bmod 10^9 + 7$$

Input

The input contains a string s ($1 \leq |s| \leq 10^7$) consisting of only '`0`' or '`1`', denoting the number n **in binary form**.

It's guaranteed that the input contains no leading 0's.

Output

The output contains a single integer, denoting the answer modulo $10^9 + 7$.

Examples

standard input	standard output
1	1
10	2
11	3

Note

It can be calculated that $f\left(g(1_{(2)})\right) = 1$, $f\left(g(10_{(2)})\right) = 1$, $f\left(g(11_{(2)})\right) = 1$.