# A. Malek Dance Club

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

As a tradition, every year before IOI all the members of Natalia Fan Club are invited to Malek Dance Club to have a fun night together. Malek Dance Club has $2^n$ members and coincidentally Natalia Fan Club also has $2^n$ members. Each member of MDC is assigned a unique id $i$ from $0$ to $2^n$ - $1$. The same holds for each member of NFC.

One of the parts of this tradition is one by one dance, where each member of MDC dances with a member of NFC. A dance pair is a pair of numbers $(a, b)$ such that member $a$ from MDC dances with member $b$ from NFC.

The complexity of a pairs' assignment is the number of pairs of dancing pairs $(a, b)$ and $(c, d)$ such that $a < c$ and $b > d$.

You are given a binary number of length $n$ named $x$. We know that member$i$ from MDC dances with member from NFC. Your task is to calculate the complexity of this assignment modulo $1000000007$ $(10^9 + 7)$.

Expression denotes applying «XOR» to numbers $x$ and $y$. This operation exists in all modern programming languages, for example, in *C++* and *Java* it denotes as «`^`», in *Pascal* — «`xor`».

## Input

The first line of input contains a binary number $x$ of lenght $n$, $(1 \le n \le 100)$.

This number may contain leading zeros.

## Output

Print the complexity of the given dance assignent modulo $1000000007$ $(10^9 + 7)$.

### Examples

| input |
| --- |
| 11 |
| **output** |
| 6 |

| input |
| --- |
| 01 |
| **output** |
| 2 |

| input |
| --- |
| 1 |
| **output** |
| 1 |