

# A3 ==> Robots

A while ago Ivancho decided to grow strong, but realised that it didn't work only with drinking milk. He has to train too. That's why he decided to build N robots with which to fight in order to train. He's planning on making them such that he can force them to fight each other (one versus one) while he's bored. Also, some of them will have the ability to repair themselves.

Ivancho would like to know how many ways there are to build these robots. Two ways are different if different robots beat different other robots or different robots can repair themselves.

**Note: if robot A beats robot B and robot B beats robot C, it DOES NOT mean that robot A beats robot C (but it is still possible that A beats C). Also, it is possible that if two robots fight each other, neither of them wins. It's not possible for two robots to both win when they fight each other.**

## Input

At the first line of `robots.in` the integer N, the number of robots, is given.

## Output

You must print a single integer in the `robots.out` file - the ways for Ivancho to build the robots, mod  $1000000007$  ( $10^9 + 7$ )

## Constraints

$1 \leq N \leq 1000000000$  ( $10^9$ )

## Examples

Input ( <code>robots.in</code> )	Output ( <code>robots.out</code> )
2	12
12	981455404

## Обяснение на пример 1

Начините за построяване на роботите са:

- 1) The robots cannot beat each other and neither of them can repair themselves
- 2) The robots cannot beat each other and the first one can repair itself
- 3) The robots cannot beat each other and the second one can repair itself
- 4) The robots cannot beat each other and they can both repair themselves
- 5) The first robot can beat the second one and neither of them can repair themselves
- 6) The first robot can beat the second one and the first one can repair itself
- 7) The first robot can beat the second one and the second one can repair itself
- 8) The first robot can beat the second one and they can both repair themselves
- 9) The second robot can beat the first one and neither of them can repair themselves
- 10) The second robot can beat the first one and the first one can repair itself
- 11) The second robot can beat the first one and the second one can repair itself
- 12) The second robot can beat the first one and they can both repair themselves