

## E. Unsolvable

time limit per test: 2 seconds  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

Consider the following equation:

where  $\text{sign}[a]$  represents the integer part of number  $a$ .

Let's find all integer  $z$  ( $z > 0$ ), for which this equation is *unsolvable* in positive integers. The phrase "unsolvable in positive integers" means that there are no such positive integers  $x$  and  $y$  ( $x, y > 0$ ), for which the given above equation holds.

Let's write out all such  $z$  in the increasing order:  $z_1, z_2, z_3$ , and so on ( $z_i < z_{i+1}$ ). Your task is: given the number  $n$ , find the number  $z_n$ .

### Input

The first line contains a single integer  $n$  ( $1 \leq n \leq 40$ ).

### Output

Print a single integer — the number  $z_n$  modulo  $1000000007$  ( $10^9 + 7$ ). It is guaranteed that the answer exists.

### Examples

input
1
output
1

input
2
output
3

input
3
output
15