

## Problem F. Beautiful sums

Input file:        **stdin**  
Output file:       **stdout**  
Time limit:        1 second  
Memory limit:     256 megabytes

*Beautiful sums* are the sums of several consequent positive integers. For example, the sums  $7 + 8$  and  $4 + 5 + 6$  are beautiful, and the sum  $3 + 5 + 7$  is not beautiful even though the value in all cases equals 15. (The sum of single summand 15 also considered beautiful.)

Given this, *the beauty index* of integer is the number of its representations as a beautiful sum. For example, the beauty index of number 15 equals 4 as  $15 = 7 + 8 = 4 + 5 + 6 = 1 + 2 + 3 + 4 + 5$ .

One number is more beautiful than another if its beauty index is higher. If numbers have equal beauty indexes the smaller one is considered more beautiful. For example, 15 is the smallest integer having beauty index 4.

You have to find the smallest integer for given beauty index  $n$ .

### Input

Single line contains an integer  $n$  ( $1 \leq n \leq 10^5$ ).

### Output

Output the smallest integer for given beauty index  $n$  modulo  $(10^9 + 9)$ .

### Examples

stdin	stdout
3	9
4	15