

## Problem D. Magic Strings

Input file: *standard input*  
Output file: *standard output*  
Time limit: 4 seconds  
Memory limit: 256 mebibytes

Consider the sequence of strings  $F_1, F_2, \dots$ , defined as:

$$\begin{aligned} F_1 &= ab, \\ F_{k+1} &= F_k F_k b. \end{aligned}$$

Calculate the number of distinct *subsequences* of the string  $F_n$  modulo  $10^9 + 7$ .

### Input

The first line of input contains a single integer  $t$  ( $1 \leq t \leq 10$ ), which is the number of test cases.

The second line of input contains  $t$  integers  $n$  ( $1 \leq n \leq 10^{18}$ ), one for each test case.

### Output

For each test case, output the single integer which is the answer to the problem. Separate consecutive answers by single spaces.

### Example

standard input	standard output
3 1 2 3	4 17 226

### Note

The first three strings are:  $F_1 = ab$ ,  $F_2 = ababb$ , and  $F_3 = ababbababb$ .