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Reduce to One

Problem Code: **REDONE**

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You have become good friends with Chef. Right now, Chef is busy in the kitchen, so he asked you to solve a problem for him.

Consider a list of integers L . Initially, L contains the integers 1 through N , each of them exactly once (but it may contain multiple copies of some integers later). The order of elements in L is not important. You should perform the following operation $N - 1$ times:

- Choose two elements of the list, let's denote them by X and Y . These two elements may be equal.
- Erase the chosen elements from L .
- Append the number $X + Y + X \cdot Y$ to L .

At the end, L contains exactly one integer. Find the maximum possible value of this integer. Since the answer may be large, compute it modulo $1,000,000,007$ ($10^9 + 7$).

Input

- The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.
- The first and only line of each test case contains a single integer N .

Output

For each test case, print a single line containing one integer — the maximum possible value of the final number in the list modulo $10^9 + 7$.

Constraints

- $1 \leq T \leq 100,000$
- $1 \leq N \leq 1,000,000$

Subtasks

Subtask #1 (20 points): $1 \leq T, N \leq 25$

My Submissions
(/MAY19B/status/
/REDONE,kaartic)

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+

Example Input

```
3
1
2
4
```

Example Output

```
1
5
119
```

Explanation

Example case 1: $L = [1]$

Example case 2: $L = [1, 2] \rightarrow [1 + 2 + 1 \cdot 2]$

Example case 3: $L = [1, 2, 3, 4] \rightarrow [2, 3, 9] \rightarrow [3, 29] \rightarrow [119]$. The chosen elements in each step are in bold.

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Date Added: 20-04-2019

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: C, CPP14, JAVA, PYTH, PYTH 3.6, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, rust, SCALA, swift, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, kotlin, PERL6, TEXT, SCM chicken, PYP3, CLOJ, R, COB, FS

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