

Problem D. Hacker Elitedj

Elitedj is a famous hacker in the world. He usually likes to watch TV series on Tencent Video. There are annoying ads at the beginning of the video, only VIP users can skip the ads. As a hacker, Elitedj wants to execute an SQL command in Tencent's database, the SQL command is **UPDATE tencent_video_user_info SET is_vip = true WHERE username = 'Elitedj'**. But before doing this, Elitedj needs to get the root user password.

The Fibonacci sequence is very famous and its definition is as follows

$$f(n) = \begin{cases} 1 & n=1 \\ 1 & n=2 \\ f(n-1) + f(n-2) & n > 2 \end{cases}$$

Now, we have a new function $F(n)$, it represents the sum of the squares of the first n terms of the Fibonacci sequence. Its definition is as follows

$$F(n) = \sum_{i=1}^n f(i)^2$$

There are n positive integers and the i -th integer is a_i . In order to get the root user password, Elitedj needs to answer the value of $F(a_1), F(a_2), F(a_3), \dots, F(a_n)$. You are a math enthusiast, can you help him?

Input

The first line contains a single integer $n(1 \leq n \leq 10^4)$, indicating that there are n numbers.

The next n lines, each line contains an integer, representing $a_1, a_2, a_3, \dots, a_n(1 \leq a_1, a_2, a_3, \dots, a_n \leq 10^{18})$.

Output

For each a_i , print a single integer — the value of $F(a_i)$. The answer may be very large so you need to modulo $1e^9 + 7$.

Example

standard input	standard output
3	1
1	2
2	6
3	