

Tile Painting: Revisited!

Nikita has a row of N white tiles indexed from 1 to N . This time, she's painting them green!

Find the number of ways Nikita can paint certain tiles in green so that the indices of the green tiles form an [Arithmetic Progression](#). As this value can be quite large, your answer must be modulo $(10^9 + 7)$.

Note: Nikita must paint *at least* 1 tile.

Input Format

The first line contains a single integer, T , denoting the number of test cases.
Each test case consists of a single line containing an integer, N , denoting the length of row of tiles.

Constraints

- $1 \leq T \leq 10$
- $1 \leq N \leq 10^{10}$

Scoring

- $1 \leq N \leq 2000$ for 20% of test data.
- $1 \leq N \leq 10^5$ for 50% of test data.
- $1 \leq N \leq 10^{10}$ for 100% of test data.

Output Format

On a new line for each test case, print the number of ways Nikita can paint her white tiles green so that the indices of the green tiles form an [Arithmetic Progression](#). Because this number can be quite large, your answer must be modulo $(10^9 + 7)$.

Sample Input

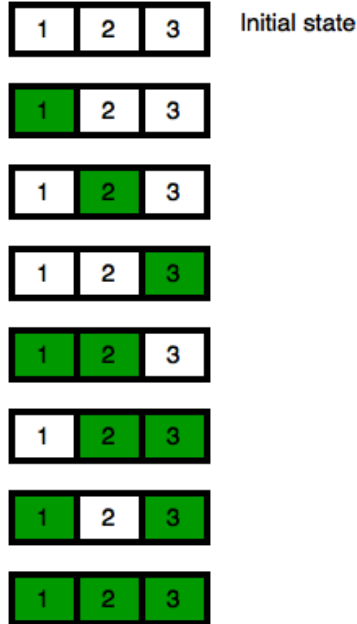
```
3
3
4
5
```

Sample Output

```
7
13
22
```

Explanation

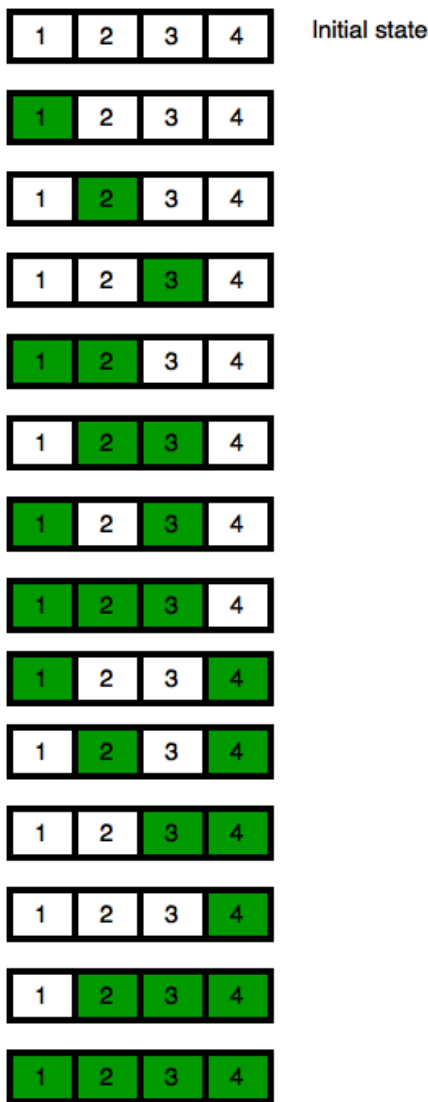
Test Case 0:
There are 7 valid ways to paint the tiles:



Thus, we print the result of $7 \% (10^9 + 7)$ on a new line, which is **7**.

Test Case 1:

There are **13** valid ways to paint the tiles:



Thus, we print the result of $13 \% (10^9 + 7)$ on a new line, which is **13**.