Recursion: Davis' Staircase

Davis has a number of staircases in his house and he likes to climb each staircase 1, 2, or 3 steps at a time. Being a very precocious child, he wonders how many ways there are to reach the top of the staircase.

Given the respective heights for each of the s staircases in his house, find and print the number of ways he can climb each staircase, module $10^9 + 7$ on a new line.

For example, there is $s = 1$ staircase in the house that is $n = 5$ steps high. Davis can step on the following sequences of steps:

```
1 1 1 1 1
1 1 1 2
1 1 2 1
1 2 1 1
2 1 1 1
1 2 2
2 2 1
2 1 2
1 1 3
1 3 1
3 1 1
2 3
3 2
```

There are 13 possible ways he can take these 5 steps. $13\%10000000007 = 13$

Function Description

Complete the *stepPerms* function in the editor below. It should recursively calculate and return the integer number of ways Davis can climb the staircase, modulo 10000000007.

stepPerms has the following parameter(s):

- *n*: an integer, the number of stairs in the staircase

Input Format

The first line contains a single integer, s, the number of staircases in his house.
Each of the following s lines contains a single integer, n, the height of staircase i.

Constraints

- $1 \leq s \leq 5$
- $1 \leq n \leq 36$

Subtasks

- $1 \leq n \leq 20$ for 50% of the maximum score.

Output Format

For each staircase, return the number of ways Davis can climb it as an integer.

Sample Input

```
3
1
3
7
```

Sample Output

```
1
4
44
```

Explanation

Let's calculate the number of ways of climbing the first two of the Davis' $s = 3$ staircases:

1. The first staircase only has $n = 1$ step, so there is only one way for him to climb it (i.e., by jumping 1 step). Thus, we print 1 on a new line.
2. The second staircase has $n = 3$ steps and he can climb it in any of the four following ways:
    1. $1 \rightarrow 1 \rightarrow 1$
    2. $1 \rightarrow 2$
    3. $2 \rightarrow 1$
    4. 3

Thus, we print 4 on a new line.