

# Project Euler #113: Non-bouncy numbers

This problem is a programming version of [Problem 113](#) from [projecteuler.net](#)

Working from left-to-right if no digit is exceeded by the digit to its left it is called an increasing number; for example, **134468**.

Similarly if no digit is exceeded by the digit to its right it is called a decreasing number; for example, **66420**.

We shall call a positive integer that is neither increasing nor decreasing a "bouncy" number; for example, **155349**.

As  $n$  increases, the proportion of bouncy numbers below  $n$  increases such that there are only **12951** numbers below one-million that are not bouncy and only **277032** non-bouncy numbers below  $10^{10}$ .

How many numbers below  $10^k$  are not bouncy?

As the answer can be large, print the result mod  $(10^9 + 7)$

## Input Format

First line contains an integer  $T$  which is the number of tests, next  $T$  lines contain an integer  $k$ .

## Constraints

$$1 \leq T \leq 1000$$

$$3 \leq k \leq 10^5$$

## Sample Input

```
3
3
5
10
```

## Sample Output

```
474
4953
277032
```