

# Primes of Lambda

[Lambda](#) checks primality in a weird way. He checks the following two conditions.

- All the digits of the number in the decimal system are primes or one, namely 1, 2, 3, 5 or 7.
- It isn't a multiple of 2, 3, 5, 7, 11 or 47 (Why 47? I don't know).

In order to estimate the accuracy of his approach, he asks you to calculate the number of decimal integers of a specific length that satisfy the conditions.

## Input

The first and only line contains an integer  $n$ , denoting the length of integers.

## Output

The only line contains the answer **modulo 9973**.

## Example

**Input:**

1

**Output:**

1

**Input:**

2

**Output:**

8

**Input:**

4

**Output:**

182

**Input:**

1000000000

**Output:**

4589

## Constraints

$1 \leq n \leq 10^9$

In 50% of testcases,  $n \leq 100$

Note: Data corrected and solutions rejudged. Sorry for inconvenience.

**Warning: A naive solution won't terminate in 30s. And be careful with certain languages.**

