# Lucky Sequence

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 3 seconds |
| Memory limit: | 512 megabytes |

A number sequence $[a_1, a_2, \ldots, a_n]$ is lucky if and only if the following requirements are fulfilled.

- Each element $a_i$ in the sequence is a non-negative integer such that $0 \leq \frac{a_i}{i} < \frac{\sqrt{5}+1}{2}$;
- For any two elements $a_i$ and $a_j$ $(i \neq j)$ in the sequence, $a_i \neq 0$ and $a_j \neq 0$ imply that $a_i \neq a_j$.

Your task is to figure out how many number sequences of length $n$ are lucky and report the number modulo 998 244 353.

## Input

The first line contains an integer $T$ $(1 \leq T \leq 10^5)$, indicating the number of test cases.

Then follow $T$ test cases. For each test case:

The only line contains an integer $n$ $(1 \leq n \leq 10^5)$, indicating the length of the sequence.

## Output

For each test case, output an integer in one line, representing the number of lucky sequences of length $n$ modulo 998 244 353.

## Example

| standard input | standard output |
|---|---|
| 5<br>1<br>2<br>3<br>4<br>5 | 2<br>7<br>27<br>141<br>919 |

## Note

For $n = 2$, there are 7 lucky sequences: $[0, 0]$, $[0, 1]$, $[0, 2]$, $[0, 3]$, $[1, 0]$, $[1, 2]$ and $[1, 3]$.