Problem C. Lucky Sequence

Input file: `standard input`
Output file: `standard output`

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 1 2 3 4 5	2 7 27 141 919

Note

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