Bunny 3.1

Input file:	`standard input`
Output file:	`standard output`
Time limit:	0.75 seconds
Memory limit:	192 megabytes

The bunny stands in front of a staircase with n steps. The steps are numbered from 1 to n, and we can assume that the bunny is on step number 0. For better understanding, refer to the illustration in the example.

At a time, the bunny can only jump over a "beautiful" number of steps. The bunny considers a number of steps beautiful only if its representation in ternary (base 3) does not contain the digit 1. The bunny cannot jump backwards.

For example, the bunny can jump over 0 steps and thus move up one step, since $0_{10} = 0_3$ and the digit 1 was not used in the ternary representation of the number, or jump over 8 steps and move up nine steps ($8_{10} = 22_3$), but not over 7 steps ($7_{10} = 21_3$).

How many ways can the bunny reach the top (the n-th step)?

Input

The first line of input contains a single integer n ($1 \le n \le 2 \cdot 10^6$).

Output

Output a single number—the number of ways to reach the top. Since this number can be very large, output it modulo 998 244 353.

Scoring

Subtask	Points	Additional Constraints	Required Groups	Comment
0	0	–	–	Tests from the statement.
1	30	$n \le 2000$	0	–
2	15	$n \le 2 \cdot 10^4$	0–1	–
3	15	$n \le 2 \cdot 10^5$	0–2	–
4	25	$n \le 10^6$	0–3	–
5	15	—	0–4	–

Examples

standard input	standard output
7	10
5	4
10	36

Explanation

The illustration for the first example is on the next page. In this example, jumps could be made over $0_{10} = 0_3$, $2_{10} = 2_3$, and $6_{10} = 20_3$ steps.

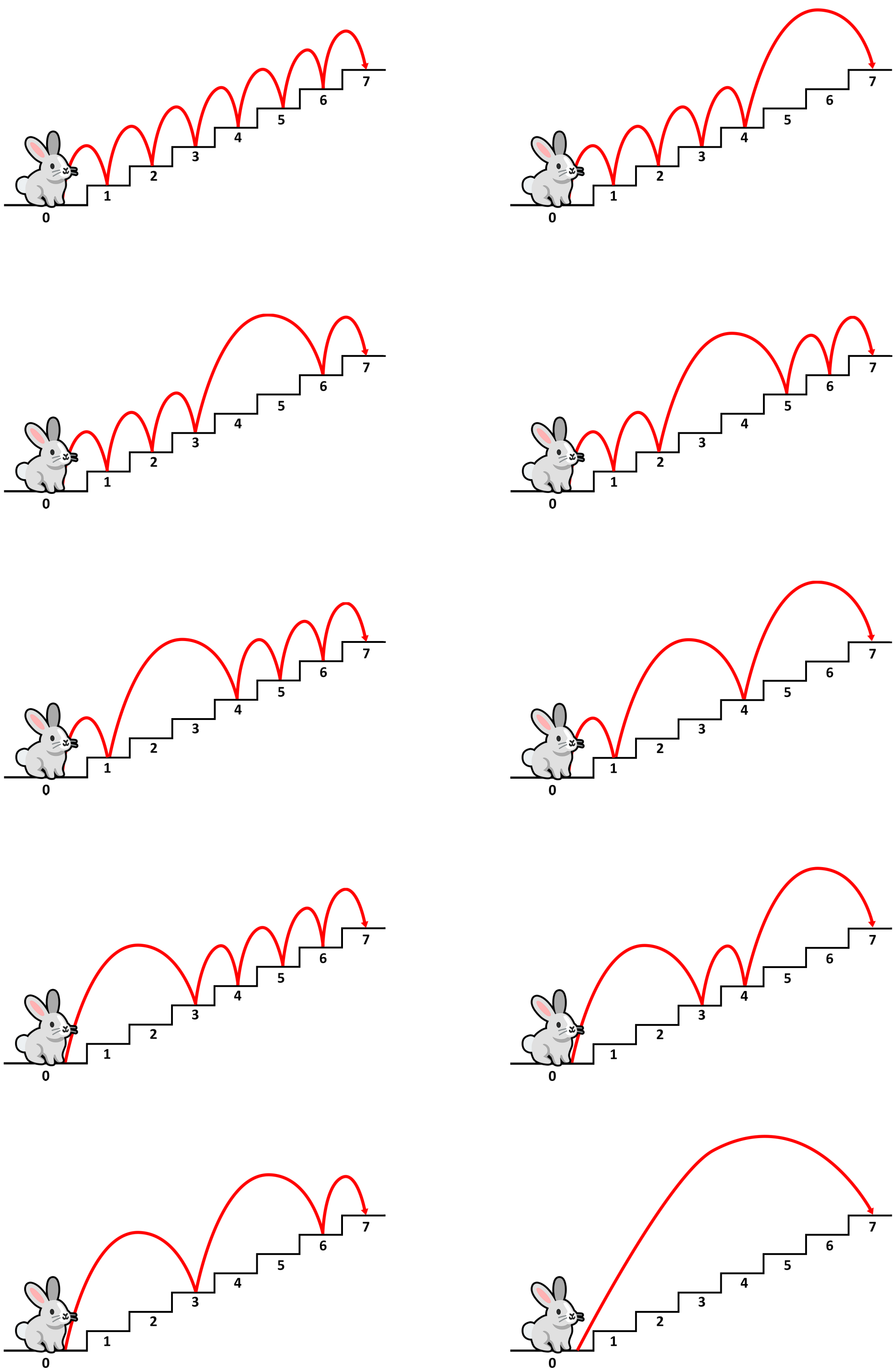

Illustration for the first example