

Problem C. Marin and Anti-coprime Permutation

Time limit 1000 ms

Mem limit 262144 kB

Marin wants you to count number of permutations that are *beautiful*. A *beautiful* permutation of length n is a permutation that has the following property:

$$\gcd(1 \cdot p_1, 2 \cdot p_2, \dots, n \cdot p_n) > 1,$$

where gcd is the [greatest common divisor](#).

A permutation is an array consisting of n distinct integers from 1 to n in arbitrary order. For example, $[2, 3, 1, 5, 4]$ is a permutation, but $[1, 2, 2]$ is not a permutation (2 appears twice in the array) and $[1, 3, 4]$ is also not a permutation ($n = 3$ but there is 4 in the array).

Input

The first line contains one integer t ($1 \leq t \leq 10^3$) — the number of test cases.

Each test case consists of one line containing one integer n ($1 \leq n \leq 10^3$).

Output

For each test case, print one integer — number of *beautiful* permutations. Because the answer can be very big, please print the answer modulo 998 244 353.

Sample 1

Input	Output
7	0
1	1
2	0
3	4
4	0
5	36
6	665702330
1000	

Note

In first test case, we only have one permutation which is $[1]$ but it is not beautiful because $\gcd(1 \cdot 1) = 1$.

In second test case, we only have one beautiful permutation which is $[2, 1]$ because $\gcd(1 \cdot 2, 2 \cdot 1) = 2$.