

Twin Contests

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

You are given a positive integer N . For $n = 1, 2, \dots, N$, solve the following problem:

Find the number, modulo 998244353, of permutations $P = (P_1, P_2, \dots, P_N)$ obtained by rearranging $(1, 2, \dots, N)$ such that for all $m = 1, 2, \dots, N$,

- $n \neq m \implies nP_n < mP_m$.

Input

The input is given from Standard Input in the following format:

N

- $1 \leq N \leq 5 \times 10^5$
- All input values are integers.

Output

Print N lines. On the i -th line, print the answer when $n = i$.

Example

standard input	standard output
3	3 1 0

Note

- When $n = 1$, the permutations satisfying the condition are $P = (1, 2, 3), (1, 3, 2)$ and $(2, 3, 1)$, for a total of 3.
- When $n = 2$, the permutation satisfying the condition is $P = (3, 1, 2)$, for a total of 1.
- When $n = 3$, there are no permutations satisfying the condition.