

## Problem J. Japanese Knowledge

Input file: *standard input*  
Output file: *standard output*  
Time limit: 10 seconds  
Memory limit: 1024 mebibytes

*This problem might be well-known in some countries, but how do other countries learn about such problems if nobody poses them?*

You are given a **non-decreasing positive** integer sequence  $A = (A_1, A_2, \dots, A_N)$  of length  $N$ . For each  $k = 0, 1, 2, \dots, N$ , count the number of **non-decreasing non-negative** integer sequences  $x = (x_1, x_2, \dots, x_N)$  of length  $N$  that satisfy following conditions, modulo 998244353:

- $x_i \leq A_i$  for all  $1 \leq i \leq N$ .
- The number of indices  $i$  with  $x_i = A_i$  is exactly  $k$ .

### Input

The first line contains an integer  $N$  ( $1 \leq N \leq 250000$ ).

The second line contains  $N$  integers  $A_1, A_2, \dots, A_N$  ( $1 \leq A_1 \leq A_2 \leq \dots \leq A_N \leq 250000$ ).

### Output

For each  $k = 0, 1, 2, \dots, N$ , print the answer.

### Examples

standard input	standard output
3 1 2 3	5 5 3 1
4 3 3 3 3	15 10 6 3 1
5 10 10 11 11 12	3982 1285 352 77 12 1