Problem D. Do Use FFT

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

You are given integer sequences A, B, and C, each of length N. For each $k = 1, 2, \ldots, N$, find the following value modulo 998244353.

$$\sum_{1 \le i \le N} \left(C_i \times \prod_{1 \le j \le k} (A_i + B_j) \right)$$

Input

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

The second line contains N integers $A_1, A_2, \ldots, A_N$ ($0 \le A_i < 998244353$).

The third line contains N integers $B_1, B_2, \ldots, B_N$ ($0 \le B_i < 998244353$).

The fourth line contains N integers $C_1, C_2, \ldots, C_N$ ($0 \le C_i < 998244353$).

Output

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

Example

standard input	standard output
3 1 2 3 4 5 6 7 8 9	146 1050 8694