Problem E. Equal Numbers

Input file:	equal.in	Time limit:	3 seconds
Output file:	equal.out	Memory limit:	512 megabytes

You are given a list of n integers $a_1, \ldots, a_n$. You can perform the following operation: choose some a_i and multiply it by any positive integer.

Your task is to compute the minimum number of different integers that could be on the list after k operations for all $0 \le k \le n$.

Input

The first line of the input contains single integer n ($1 \le n \le 3 \cdot 10^5$). The second line of the input contains n integers a_i ($1 \le a_i \le 10^6$).

Output

Output a single line that contains $n + 1$ integers. The i-th integer should be the minimum possible number of different integers in the list after $i - 1$ operations.

Example

equal.in	equal.out
6 3 4 1 2 1 2	4 4 3 3 2 2 1