Task Tornjevi

On a certain street, there are n towers, numbered consecutively from 1 to n. Each tower has its own height h_i, expressed in meters.

For a consecutive subsequence of towers numbered l, $l+1$, ..., r, we say that the tower with number i ($l \leq i \leq r$) is *good* in that subsequence if it holds that $h_i = \gcd(h_l, h_{l+1}, \ldots, h_r)$, where $\gcd(a_1, a_2, \ldots, a_k)$ denotes the greatest common divisor of the set of positive integers $a_1, a_2, \ldots, a_k$.

Your task is to determine, for each $i = 1, 2, \ldots, n$, the size of the largest consecutive subsequence in which the tower with number i is good, where the size of a consecutive subsequence is defined as the number of towers in that subsequence.

Input

In the first line, there is an integer n ($1 \leq n \leq 10^6$), the number of towers.

In the second line, there are n integers, in order, h_1, h_2, ..., h_n ($1 \leq h_i \leq 10^6$).

Output

In a single line, print the answer to the above-mentioned question for each $i = 1, 2, \ldots, n$, in order.

Scoring

Subtask	Points	Constraints
1	7	$n \leq 100$
2	11	$n \leq 5000$
3	17	$n \leq 50000$
4	29	$h_i \leq 100$
5	26	No additional constraints.

Examples

input

```
6
3 6 6 6 1 3
```

output

```
4 3 3 3 6 1
```

input

```
5
10 2 10 15 5
```

output

```
1 3 1 1 3
```

Clarification of the first example: In the first four towers, tower number 1 is good. Towers with numbers 2, 3, and 4 are good in the subsequence they form themselves. Tower 5 will be good in any arbitrary subsequence that contains it, so the answer will be 6 (the entire sequence).