Dorm labeling

In preparation for this year's spring camp, the R&R duo came up with a fun icebreaker to get all N students in the algerian olympiad community socializing: the ith $(1 \leq i \leq N)$ student is given a label A_i, and each student works with the others to find their dorm number D_i, which is defined as the largest GCD obtainable between their label and any other student's label, or, in math terms, for each student numbered i, the dorm number would be given by: $D_i = \max_{j \neq i}(\gcd(A_i, A_j))$ $(1 \leq j \leq N)$.

Camp staff have already chosen the labeling of each student, but, given that they need to check on each dorm pretty often, they need an ordered list of students such that, for each pair of distinct numbers i, j $(1 \leq i, j \leq N)$:

- If $D_i < D_j$, student i must appear before student j.
- Otherwise, if they are in the same dorm, then student i must appear before student j if $A_i < A_j$.
- Finally, if $A_i = A_j$ and $D_i = D_j$, then student i only appears before student j if $i < j$.

Given the number of students N and the list of labels A, compute and output the resulting ordering of students.

Constraints

- $2 \leq N \leq 10^6$
- $1 \leq A_i \leq 10^6$ $(1 \leq i \leq N)$

I/O

Let $A[i]$ be the label of the ith student, and $O[i]$ be the ith student in the new ordering.

Input

```
N
A[1] A[2] ... A[N]
```

Output

```
O[1] O[2] ... O[N]
```

Subtasks

The final grade for this task will be the given by the sum of points of all subtasks that have passed in atleast one of your submissions.

Test group	Points	Constraints
1	5	$N \leq 10^3$
2	8	All A_i are prime
3	14	$A_i \leq 10^3$
4	11	A_i are distinct integers between 1 and N
5	19	Each dorm D_i has atleast one student such that $A_i = D_i$.
6	43	No additional constraints.

Example test cases

Example 1

Input

```
6
1 2 3 4 6 8
```

Output

```
1 2 3 5 4 6
```

Explanation

Student 1 has a label of 1, so he can have a GCD of at most 1 with another student, so he goes in dorm number 1.

Student 2 has a label of 2, and has GCD of 2 with any other numbers, so he goes to dorm room number 2.

Students 3 and 5 have a label of 3 and 6 respectively, which together have a GCD of 3. They all go to room number 3.

Students 4 and 6 have a label of 4 and 8 respectively, and they both have a GCD of 4

Example 2

Input

```
6
7 2 3 8 2 5
```

Output

```
3 6 1 2 5 4
```

Explanation

Students 1, 3 and 6 have a label of 7, 3 and 5, which are all prime, so their GCDs with all the other numbers in this list are 1. Since student 1 has a label ordered higher than the other label, he is last on the list. Likewise, student 3 has the label with the smallest value, so he is first on the list.

Students 2, 5 and 4 have a label of 2, 2 and 8 respectively. These numbers have a maximum GCD of 2 with any other numbers, so they all lie in room number 2.

Example 3

Input

```
5
7 9 2 15 2
```

Output

```
1 3 5 2 4
```