Common Generator

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

For two integers x and y ($x, y \geq 2$), we will say that x is a *generator* of y if and only if x can be transformed to y by performing the following operation some number of times (possibly zero):

- Choose a divisor d ($d \geq 2$) of x, then increase x by d.

For example,

- 3 is a *generator* of 8 since we can perform the following operations: $3 \xrightarrow{d=3} 6 \xrightarrow{d=2} 8$;
- 4 is a *generator* of 10 since we can perform the following operations: $4 \xrightarrow{d=4} 8 \xrightarrow{d=2} 10$;
- 5 is not a *generator* of 6 since we cannot transform 5 into 6 with the operation above.

Now, Kevin gives you an array a consisting of n pairwise distinct integers ($a_i \geq 2$).

You have to find an integer $x \geq 2$ such that for each $1 \leq i \leq n$, x is a *generator* of a_i, or determine that such an integer does not exist.

Input

Each test contains multiple test cases. The first line of the input contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases. The description of test cases follows.

The first line of each test case contains a single integer n ($1 \leq n \leq 10^5$) — the length of the array a.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($2 \leq a_i \leq 4 \cdot 10^5$) — the elements in the array a. It is guaranteed that the elements are pairwise distinct.

It is guaranteed that the sum of n over all test cases does not exceed 10^5.

Output

For each test case, output a single integer x — the integer you found. Print -1 if there does not exist a valid x.

If there are multiple answers, you may output any of them.

Example

standard input	standard output
4 3 8 9 10 4 2 3 4 5 2 147 154 5 3 6 8 25 100000	2 -1 7 3

Note

In the first test case, for $x = 2$:

- 2 is a *generator* of 8, since we can perform the following operations: $2 \xrightarrow{d=2} 4 \xrightarrow{d=4} 8$;
- 2 is a *generator* of 9, since we can perform the following operations: $2 \xrightarrow{d=2} 4 \xrightarrow{d=2} 6 \xrightarrow{d=3} 9$.
- 2 is a *generator* of 10, since we can perform the following operations: $2 \xrightarrow{d=2} 4 \xrightarrow{d=2} 6 \xrightarrow{d=2} 8 \xrightarrow{d=2} 10$.

In the second test case, it can be proven that it is impossible to find a common *generator* of the four integers.