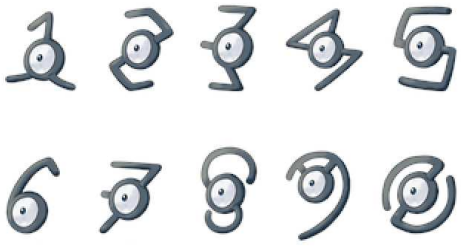
Unown Code

Problem ID: unowncode



Unown Digits

Professor Rowan has been researching a group of Unown in the Solaceon Ruins who have come up with a secret code. Each Unown is shaped like a digit, and they have grouped together to form N numbers $(a_1, \ldots, a_N)$. Their code is the smallest integer $c > 1$ such that when each of the numbers a_i are raised to the c-th power, the result ends with the digits of a_i. For example, if the numbers were 3 and 25, the secret code would be 5, as $3^5 = 243$, which ends with 3, and $25^5 = 9\,765\,625$, which ends with 25.

Write a program to help Professor Rowan figure out the secret code.

Input

The first line of input contains a single integer N ($1 \leq N \leq 10^6$), the number of groups of Unown.

The second line contains N space-separated integers $a_1, \ldots, a_N$ ($1 \leq a_i \leq 10^9$) representing the numbers formed by each group of Unown. It is guaranteed that none of the numbers contain a leading zero.

Output

Output a single line containing the secret code, or -1 if no such code exists.

Sample Input 1	Sample Output 1
2 3 25	5

Sample Input 2	Sample Output 2
1 5	2

Sample Input 3	Sample Output 3
2 5 10	-1