COCI '13 Contest 4 #5 Čokolade

Time limit: 2.0s **Memory limit:** 32M

Mirko is a party animal, so he has decided to organise an **endless amount** of parties for his friends. To satisfy the party's needs, he has decided to set up N tables with **candy** on them. We know the number of candies b_i on each table. On **the first day** of the rest of eternity, Mirko is going to invite **one** friend per table, on **the second day** he will invite **two** friends per table, on **the third day three** friends... In general, obviously, **on the k^{th} day** he is going to invite k **friends** per each table.

When his friends enter the room, k people will sit down at each table and they will divide the candies on their table into k **as large as possible equal pieces**, and **get rid of the possible remains**. After the candy division, because of jealousy and various other reasons, **only tables with the same amount of candy per capita will socialise together**. Mirko has all eternity to study the social dynamics of his parties. Firstly, he wants to know the answer to the following question: given an s between 1 and N, what is the **earliest day** when there is a group of **exactly** s tables socialising together?

As usual, Mirko is incapable of solving his own problems, so every few days he comes to you and asks you what the required number is, given an s. Alas, he has all eternity to ask questions, but you don't. Therefore, you are going to write a programme which outputs Mirko's required answers for each s from 1 to N.

Please note: Before each party, Mirko renews the candy supply on each table, meaning the supplies are equal to those before the first party. Additionally, all people leave the current party before the next one starts.

Input Specification

The first line of input contains the integer N $(1 \leq N \leq 100)$.

The second line of input contains N integers, the i^{th} number marking the number of candy on the i^{th} table.

The numbers are from the interval $[1, 10^8]$.

Output Specification

Output N lines, each line containing a single integer.

The s^{th} line should contain the required number for a group sized s or `-1` if there will never be a group of that size.

Scoring

In test cases worth 30% of total points, the number of candy on all tables will not exceed 10^3.

In test cases worth additional 30% of total points, the number of candy on all tables will not exceed 10^6.

Sample Input 1

```
5
11 10 9 6 4
```

Sample Output 1

```
1
2
3
6
12
```

Explanation for Sample Output 1

On the first day, each table will socialise only with itself so the answer for groups sized 1 is 1. Already on the second day, people sitting at tables 1 and 2 are going to get 5 candies per capita and socialise together, so the answer for a group sized 2 is 2.

On the third day, tables 1, 2 and 3 will socialise (because they all have 3 candies per capita).

On the sixth day, tables 1, 2, 3 and 4 will socialise (because they now have 1 candy per capita).

Finally, on the twelfth day, all tables will socialise together because they will all get zero candy per capita.

Sample Input 2

```
3
5 5 5
```

Sample Output 2

```
-1
-1
1
```

Explanation for Sample Output 2

All tables have the same amount of candy per capita, so a group sized less than 3 will never exist.

Sample Input 3

```
8
12 16 95 96 138 56 205 84
```

Sample Output 3

```
1
5
14
49
96
97
139
206
```