

Balance Scale

Time Limit: 2.0s **Memory Limit:** 128M

KODTÜ6 Question B

Balance Scale

Execution time limit is 2 seconds.

Runtime memory usage limit is 128 megabytes.

Once upon a time, scales and weights, which are almost never used today, were very widespread. When the same masses are placed on both sides of the scale, they remain in equilibrium. Thus we know that the mass on both bowls is the same. You can measure different masses using weights, the masses of which are known in advance.

Imagine that you have such scales, as well as n weights with integer masses. What is the smallest mass that cannot be measured with these scales and weights?

Input

The first line contains one integer n ($1 \leq n \leq 16$) - the number of weights to be weighed.

The second line contains n integers $w[1], w[2], \dots, w[n]$ ($1 \leq w[i] \leq 10^8$) - masses of weights.

Output

Print the smallest mass that cannot be measured with the balance and available weights.

Examples

Input 1:

```
4
1 1 4 15
```

Output 1:

```
7
```

Input 2:

2
2 1

Output 2:

4

Input 3:

1
2

Output 3:

1

Input 4:

1
1

Output 4:

2

Explanation

Input 1

Suppose you have 4 weights with masses 1, 1, 4 and 15 kg. You can weigh 1 kg by placing one of the 1-kilogram weights on one scale pan. You can weigh 2 kg by placing two 1 kg weights on one scale pan. 3 kg can be weighed by placing a 1-kilogram weight on one scale pan and a 4-kg weight on the other pan of the scale. The smallest mass that cannot be measured in this example is 7 kg.