Money Sums

Time limit: 1.00 s   **Memory limit:** 512 MB

You have n coins with certain values. Your task is to find all money sums you can create using these coins.

Input

The first input line has an integer n: the number of coins.

The next line has n integers $x_1, x_2, \ldots, x_n$: the values of the coins.

Output

First print an integer k: the number of distinct money sums. After this, print all possible sums in increasing order.

Constraints

- $1 \le n \le 100$
- $1 \le x_i \le 1000$

Example

Input:
```
4
4 2 5 2
```

Output:
```
9
2 4 5 6 7 8 9 11 13
```