DMOPC '17 Contest 3 P3 - N-Kat

Time limit: 1.0s **Memory limit:** 256M
Python: 3.0s

A KitKat is a candy bar that can be split into two equal sized pieces. One day while Christmas shopping, Roger stumbles upon the legendary N-kat: a KitKat that can be split into N equally sized pieces, with the i^{th} piece having sweetness s_i. Roger wishes to split the pieces into two disjoint non-empty subsets to share with his two friends such that the total sweetness of the two subsets has the smallest possible non-negative difference. Note that the two subsets do not need to contain all N elements; Roger will eat any pieces his friends do not get. Help Roger split the N-kat!

Note that the judge will accept any valid solution.

Hint: It is recommended Python users use PyPy instead.

Constraints

$1 \leq s_i \leq 10^6$

Subtask 1 [20%]

$2 \leq N \leq 10$

Subtask 2 [80%]

$2 \leq N \leq 20$

Input Specification

The first line of input will contain a single integer, N.
The next line of input will contain N space-separated integers, $s_1, s_2, \ldots, s_N$.

Output Specification

The output should consist of two lines.
The first line should contain $a_1\ a_2\ \ldots$, indicating that the first subset should contain piece $a_1, a_2, \ldots$.
The second line should contain $b_1\ b_2\ \ldots$, indicating that the second subset should contain piece $b_1, b_2, \ldots$.

Sample Input

```
4
8 2 3 1
```

Sample Output

```
2 4
3
```

Explanation for Sample Output

The first subset contains pieces 2 and 4, which have a total sweetness of 3.
The second subset contains piece 3, which has a sweetness of 3.
The difference between the total sweetness of both subsets is 0, which is the smallest difference possible.