

Array decomposition

An array A of N integer elements is given. Insert the positive elements of array A into array B , the negative elements of array A into array C . Output arrays.

Input

From the standard input device the number N is entered in the first line ($1 \leq N \leq 1000$) - the quantity of elements in array A . In the second line N numbers are entered through a space - elements of the array A ($-1000 \leq A_i \leq 1000$).

Output

In the first line print the elements of the resulting array B , *printing a space after each element*.

In the second print the elements of the resulting array C , *printing a space after each element*.

In the third line print the elements of the original array A , *printing a space after each element*.

Sample Input

```
9
5 4 -6 0 -3 -2 2 0 3
```

Sample Output

```
5 4 2 3
-6 -3 -2
5 4 -6 0 -3 -2 2 0 3
```

Note

Observe the initial order of numbers in the array. For example, the answer:

```
4 5 2 3
-6 -3 -2
5 4 -6 0 -3 -2 2 0 3
```

will not be accepted, because the number five came in the array A before the number four.