

The quantity of positive and negative numbers

Given an array A of N integers. Find the quantity of positive, negative and equal to zero numbers in this array. Print the original array.

Input

From the standard input device the number N ($1 \leq N \leq 1000$) - the quantity of array elements - is entered in the first line. 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 quantity of positive elements of array A , in the second line the quantity of negative elements of array A , in the third line the quantity of elements of array A equal to null. In the fourth line print the original array A , *printing a space after each element*.

Sample Input

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

Sample Output

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