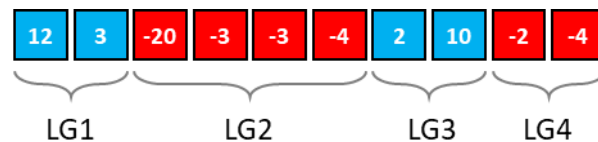


Problem E: Effective Vaccine

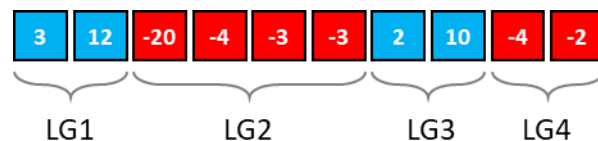
Description

A hypothetical vaccine is made from a chain of messenger ribonucleic acid (RNA). The strength of this alien vaccine is measured from the localized nano-electric charges available around each base. However, studies have shown that the effectiveness of the vaccine comes from the arrangement of bases in local groups—the more sorted local groups are, the more effective the medicine is. Bases belong to the same local group if they have the same charge sign (positive or negative) and are close together.

For instance, the vaccine in Test 1 contains four local groups as shown in the figure below.



The most effective configuration of this vaccine comes from arranging bases in each local group in an increasing order of charges—resulting in the configuration below.



Input

The first line of the dataset contains the total number of bases in the alien vaccine ($3 \leq N \leq 1,000,000$). Each of the following **N** lines contain the charge ($-100 \leq Q \leq 100$) of each base in the vaccine mRNA.

Output

Print out the most effective configuration of the vaccine, displaying each nucleobase on its own line.

NB: *Kindly note that your solution will be run at least five times. Each time, it will be tested against a different set of input. The first few test cases are given below to help you check your solution. The remaining tests can be seen from the contest page for this problem or the results page after you submit your solution.*

Test 1

Input	Output
10	3
12	12
3	-20
-20	-4
-3	-3
-3	-3
-4	2
2	10
10	-4
-2	-2
-4	

Test 2

Input	Output
10	3
11	11
3	-20
-20	2
31	3
3	10
40	31
2	40
10	-40
-2	-2
-40	