A Not-So-Simple Sort

Having proven yourself in the previous challenge, you are given another list of numbers. Once again, you must sort them in ascending order of their distance from zero.

Input

The first line of the input file will contain N, the number of items for you to sort, $0 \le N \le 1000000$. Following that will be N lines containing an integer m, $-1000000000 \le m \le 1000000000$.

Output

The output should consist of the numbers given in the input file, sorted by ascending order of their distance from zero (i.e., their absolute value).

Sample Input

```
10
5
8
-2
9
3
-3
2
1
-17
-6
```

Sample Output

```
1
2
-2
3
-3
5
-6
8
9
-17
```

Scoring

The score for each input scenario will be 100% if the correct answer is written to the output file, and 0% otherwise. Note that there may be more than one correct output file; it doesn't matter which of these your programme produces.