Problem 5—Valley Sort

Professor Plum likes to bicycle in the Rocky Mountains during his summer vacation. He typically gets dropped off at the top of a mountain and bikes to the valley below. While writing an array question for his final examination in CS 101, he invents the notion of a *valley sort* where the first half of the array is in descending order and last half of the array is in ascending order. More specifically, the largest item is in the first index, the second largest item is in the last index, the third largest item is in the second index, the fourth largest item is in the next to last index, etc.

For example, an array initially order as: 20, 45, 30, 5, 15, 50, 10, 35 would be valley sorted to:

50, 35, 20, 10, 5, 15, 30, 45.

Input Format

The first line of the input file contains an integer count of the number of items to valley sort. The remaining lines will contain one integer per line.

Output Format

The first line of the output file should contain an integer count of the number of items valley sorted. The remaining lines will contain one integer per line in valley-sorted order.

Input Sample

```
8
20
45
30
5
15
50
10
35
```

Output Sample

```
8
50
35
20
10
5
15
30
45
```