

## Problem 6 – Odd-Even Directional Sort

Professor Plum likes to travel. On a recent trip he noticed that even Interstate highways run east-west and odd Interstates run north-south. Thus, on a recent test he had his students write the following “odd-even directional sort” to rearrange positive integers such that:

- odd values should be interleaved with even values exactly the same way after sorting as before sorting,
- odd values are sorted in ascending order (smallest to largest),
- even values are sorted in descending order (largest to smallest),

### Input

The first line contains the number of sorts to perform. Each of the following lines contain the information about a sort. A sort line starts with the number values to be sorted followed by a sequence of positive integers to sort. For example, the first sort in the example input below contains 13 values: 8, 2, ..., 10. Each sort sequence consists of no more than 1,000,000 positive integers. The number of values in each sort (e.g., 13) should NOT be included in the sort.

```
3
13 8 2 11 6 3 6 5 15 4 7 1 9 10
8 9 7 5 3 1 2 4 6
10 9 3 2 1 5 4 6 7 8 10
```

### Output

For each sort, print to standard output a case label followed by the sequence of positive integers rearranged in “odd-even directional” sorted order as defined above. For the example input given above, the output is:

```
Case 1: 10 8 1 6 3 6 5 7 4 9 11 15 2
Case 2: 1 3 5 7 9 6 4 2
Case 3: 1 3 10 5 7 8 6 9 4 2
```