# Maximum Sum

Time limit: *1000 ms*
Memory limit: *256 MB*

Given a sequence that contains $n$ ($1 \leq n \leq 10^5$) integers, represented by $a_1, a_2, ..., a_n$ ($0 \leq a_i \leq 10^5$), you have the amazingly easy task to reorder the sequence and maximize the formula $\sum_{i=1}^{n-1} a_i * a_{i+1}$.

## Standard input

The first line of the input will contain an integer $t$ ($1 \leq t \leq 25$), which is the number of test cases to follow.

Each test case is composed of two lines:

- The first line of each test case contains an integer $n$, which is the length of the sequence.
- The second line of the test case contains $n$ integers indicating the $a_1, a_2, ..., a_n$ sequence, each integer is separated by one space.

## Standard output

The output should contain $2 * t$ lines, two lines for each test case:

- The first line of each test case should contain the maximum sum.
- The second line of the test case should contain $n$ integers indicating the reordered sequence. If there is more than one solution, print the one with the smallest alphabetical order.

## Contraints and notes

- $1 \leq t \leq 25$
- $1 \leq n \leq 10^5$
- $0 \leq a_i \leq 10^5$
- Sequence $a$ is considered smaller than sequence $b$ if and only if there is a position $i$ that satisfies $a_1 = b_1, a_2 = b_2, ..., a_{i-1} = b_{i-1}, a_i < b_i$.

| Input | Output |
|---|---|
| 4<br>10<br>1 2 1 5 4 2 1 1 8 9<br>3<br>5 2 0<br>9<br>5 9 0 0 4 6 2 3 2<br>4<br>2 1 7 1 | 173<br>1 1 1 2 4 8 9 5 2 1<br>10<br>0 2 5<br>152<br>0 0 2 3 5 9 6 4 2<br>23<br>1 2 7 1 |