Hiking (H)

Memory limit: 1024 MB Time limit: 2.00 s

Dwarf the Traveler has decided to focus his attention this year on conquering the peaks of Wrocław. His latest goal is to conquer N different peaks over N consecutive days, exactly one peak each day. Conquering peaks is a piece of cake for the Traveler. He can conquer any peak on any day, which is why he has decided to make the whole expedition as well-publicized as possible in the media.

The dwarf has recently noticed a certain pattern:

- After conquering the first peak, media interest will be high, regardless of its height.
- If on one day he conquers a peak of height a, and on the next day a peak of height b, the media interest in his expedition decreases by $\lfloor a/b \rfloor$ units, which he calls *media interest units*.

The Traveler already knows he will have to conquer N peaks with heights $a_1, \ldots, a_N$. Additionally, it turns out that the height of the highest peak is **at most twice** the height of the lowest one. The dwarf can choose the peaks' order arbitrarily. His goal is to minimize the total decrease in media interest units during the entire expedition.

Can you help him choose the order for visiting all the peaks so that the decrease in media interest units is minimized?

Input

The first line of input contains the number T, representing the number of test cases.
The first line of each test case contains a single integer N, representing the number of peaks to be visited by the Traveler.
The second line of the test case contains N integers $a_1, \ldots, a_N$, satisfying the conditions stated in the problem.

Output

For each test case, output two lines. The first line should contain a single integer representing the minimum possible decrease in media interest units for the dwarf's journey.
The second line should contain the heights $a_1, \ldots, a_N$ arranged in the order in which the Dwarf should visit them to achieve this minimum decrease.
If there are multiple optimal solutions, you may output any of them.

Limits

$1 \leq T \leq 100\,000$,
$1 \leq N \leq 10^6$,
$1 \leq a_i \leq 10^9$,
$\max\{a_1, \ldots a_N\} \leq 2 \cdot \min\{a_1, \ldots, a_N\}$,
the sum of the values of N provided in the input does not exceed 10^6.

Examples

Input	Output
3 6 10 18 12 13 17 14 4 10 10 7 7 8 8 4 8 5 4 4 8 6	0 10 12 13 14 17 18 1 7 10 7 10 4 4 4 4 5 6 8 8 8