Problem U. Advantage

Time limit 2000 ms
Mem limit 262144 kB

There are n participants in a competition, participant i having a strength of s_i.

Every participant wonders how much of an advantage they have over the other best participant. In other words, each participant i wants to know the difference between s_i and s_j, where j is the strongest participant in the competition, not counting i (a difference can be negative).

So, they ask you for your help! For each i ($1 \leq i \leq n$) output the difference between s_i and the maximum strength of any participant other than participant i.

Input

The input consists of multiple test cases. The first line contains an integer t ($1 \leq t \leq 1000$) — the number of test cases. The descriptions of the test cases follow.

The first line of each test case contains an integer n ($2 \leq n \leq 2 \cdot 10^5$) — the length of the array.

The following line contains n space-separated positive integers s_1, s_2, ..., s_n ($1 \leq s_i \leq 10^9$) — the strengths of the participants.

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output n space-separated integers. For each i ($1 \leq i \leq n$) output the difference between s_i and the maximum strength of any other participant.

Examples

Input	Output
5 4 4 7 3 5 2 1 2 5 1 2 3 4 5 3 4 9 4 4 4 4 4 4	-3 2 -4 -2 -1 1 -4 -3 -2 -1 1 -5 5 -5 0 0 0 0

Note

For the first test case:

- The first participant has a strength of 4 and the largest strength of a participant different from the first one is 7, so the answer for the first participant is $4 - 7 = -3$.
- The second participant has a strength of 7 and the largest strength of a participant different from the second one is 5, so the answer for the second participant is $7 - 5 = 2$.
- The third participant has a strength of 3 and the largest strength of a participant different from the third one is 7, so the answer for the third participant is $3 - 7 = -4$.
- The fourth participant has a strength of 5 and the largest strength of a participant different from the fourth one is 7, so the answer for the fourth participant is $5 - 7 = -2$.