

B. Unconventional Pairs

time limit per test: 2 seconds

memory limit per test: 256 megabytes

A popular reality show *Unconventional Pairs* has been launched in the city. According to the rules of the show, participants are paired in an unusual way: with an even number of people, all participants must be in pairs.

Petya has an array of n integers a_1, a_2, \dots, a_n . It is known that n is even. Petya must divide the participants (numbers) into exactly $\frac{n}{2}$ pairs $(a_{p_1}, a_{q_1}), (a_{p_2}, a_{q_2}), \dots, (a_{p_{\frac{n}{2}}}, a_{q_{\frac{n}{2}}})$. Each index can be included in no more than one pair.

For a pair (x, y) , its *difference* is defined as $|x - y|$. Petya wants to form *unconventional pairs* such that the **maximum** difference among all pairs is minimized.

Determine the minimum possible value of this maximum difference.

Input

Each test consists of several test cases.

The first line contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases. The description of the test cases follows.

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

The second line contains n integers a_1, a_2, \dots, a_n ($-10^9 \leq a_i \leq 10^9$) — the elements of the array a .

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

Output

For each test case, output a single number — the minimum possible maximum difference between the elements in pairs.

Example

input	Copy
5 2 1 2 4 10 1 2 9 6 3 8 9 3 3 2 8 5 5 5 5 5 5 4 -5 -1 2 6	
output	Copy
1 1 1 0 4	

Note

In the first test case, the array is: $[1, 2]$. The only possible (and therefore optimal) pair is $(1, 2)$, its difference is $|1 - 2| = 1$, the answer is 1.

In the second test case, the array is: $[10, 1, 2, 9]$. We can choose pairs — $(1, 2)$ and $(9, 10)$: both differences are equal to 1, therefore, the maximum difference is 1.

In the third test case, the array is: $[3, 8, 9, 3, 3, 2]$. We can choose pairs: $(2, 3)$, $(3, 3)$, $(8, 9)$. The differences are: 1, 0, 1 — the largest is 1.

Codeforces Round 1054 (Div. 3)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++17 7.3.0

 Choose file: Nenhum...colhido

Submit

→ Last submissions



Submission	Time	Verdict
340506350	Sep/25/2025 19:49	Accepted
340505501	Sep/25/2025 19:48	Wrong answer on test 2
340502768	Sep/25/2025 19:43	Wrong answer on test 2

→ Problem tags

greedy sortings *800

No tag edit access

→ Contest materials

- Announcement 
- Tutorial (en) 

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