A. Plus One on the Subset

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Polycarp got an array of integers $a[1 \ldots n]$ as a gift. Now he wants to perform a certain number of operations (possibly zero) so that all elements of the array become the same (that is, to become $a_1 = a_2 = \cdots = a_n$).

- In one operation, he can take some indices in the array and increase the elements of the array at those indices by 1.

For example, let $a = [4, 2, 1, 6, 2]$. He can perform the following operation: select indices 1, 2, and 4 and increase elements of the array in those indices by 1. As a result, in one operation, he can get a new state of the array $a = [5, 3, 1, 7, 2]$.

What is the minimum number of operations it can take so that all elements of the array become equal to each other (that is, to become $a_1 = a_2 = \cdots = a_n$)?

Input

The first line of the input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases in the test.

The following are descriptions of the input test cases.

The first line of the description of each test case contains one integer n ($1 \le n \le 50$) — the array a.

The second line of the description of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^9$) — elements of the array a.

Output

For each test case, print one integer — the minimum number of operations to make all elements of the array a equal.

Example

input Copy

```
3
6
3 4 2 4 1 2
3
1000 1002 998
2
12 11
```

output Copy

```
3
4
1
```

Note

First test case:

Codeforces Round #764 (Div. 3)
Finished

→ Virtual participation

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Start virtual contest

→ Problem tags

math *800

No tag edit access

→ Contest materials

- Announcement
- Tutorial

- $a = [3, 4, 2, 4, 1, 2]$ take a_3, a_5 and perform an operation plus one on them, as a result we get $a = [3, 4, 3, 4, 2, 2]$.
- $a = [3, 4, 3, 4, 2, 2]$ we take a_1, a_5, a_6 and perform an operation on them plus one, as a result we get $a = [4, 4, 3, 4, 3, 3]$.
- $a = [4, 4, 3, 4, 3, 3]$ we take a_3, a_5, a_6 and perform an operation on them plus one, as a result we get $a = [4, 4, 4, 4, 4, 4]$.

There are other sequences of 3 operations, after the application of which all elements become equal.

Second test case:

- $a = [1000, 1002, 998]$ 2 times we take a_1, a_3 and perform an operation plus one on them, as a result we get $a = [1002, 1002, 1000]$.
- $a = [1002, 1002, 1000]$ also take a_3 2 times and perform an operation plus one on it, as a result we get $a = [1002, 1002, 1002]$.

Third test case:

- $a = [12, 11]$ take a_2 and perform an operation plus one on it, as a result we get $a = [12, 12]$.