

“I have not failed. I’ve just found 10,000 ways that won’t work.”

Thomas Edison

Do you know how to compute the mean (or average) of n numbers? Well, that’s not good enough for me. I want the supermean! “What’s a supermean,” you ask? I’ll tell you. List the n given numbers in non-decreasing order. Now compute the average of each pair of adjacent numbers. This will give you $n - 1$ numbers listed in non-decreasing order. Repeat this process on the new list of numbers until you are left with just one number - the supermean. I tried writing a program to do this, but it’s too slow. :-(Can you help me?

Input

The first line of input gives the number of cases, N . N test cases follow. Each one starts with a line containing n ($0 < n \leq 50000$). The next line will contain the n input numbers, each one between -1000 and 1000 , in non-decreasing order.

Output

For each test case, output one line containing ‘Case # x :’ followed by the supermean, rounded to 3 fractional digits.

Sample Input

```
4
1
10.4
2
1.0 2.2
3
1 2 3
5
1 2 3 4 5
```

Sample Output

```
Case #1: 10.400
Case #2: 1.600
Case #3: 2.000
Case #4: 3.000
```