

Problem D

Statistics Applied

Time Limit: 1 sec, Memory Limit: 256 MB

In this problem we will be looking for medians of data set. Median is the central element in **ordered** data group. For example: for the set $\{2, 6, 3, 3, 2\}$ the median would be 3. In general, if we have n elements $\{a_1, a_2, \dots, a_n\}$, we define the median as element $a_{\frac{n+1}{2}}$ if n is odd and $a_{\frac{n}{2}} + a_{(\frac{n}{2}+1)}$ otherwise. You will be given N numbers and you must calculate N medians. i -th median is taken on the subset $[a_1, a_2, \dots, a_i]$ for $1 \leq i \leq N$.

Input

The first line contains the number of test cases. Each case consists of an integer N ($1 \leq N \leq 100000$). N integers a_i ($0 \leq a_i < 2^{31}$) follow, elements in data set.

Output

For each case, print N lines with the medians. If the result is non-integral, print the exact value using decimal point (see example).

Samples

Sample Input	Sample Output
2	3
4	4
3 5 7 3	5
2	4
3 4	3
	3.5