

295. Find Median from Data Stream

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The **median** is the middle value in an ordered integer list. If the size of the list is even, there is no middle value, and the median is the mean

- For example, for `arr = [2,3,4]` , the median is `3` .
- For example, for `arr = [2,3]` , the median is `(2 + 3) / 2 = 2.5` .

Implement the MedianFinder class:

- `MedianFinder()` initializes the `MedianFinder` object.
- `void addNum(int num)` adds the integer `num` from the data stream to the data structure.
- `double findMedian()` returns the median of all elements so far. Answers within 10^{-5} of the actual answer will be accepted.

Example 1:

Input
["MedianFinder", "addNum", "addNum", "findMedian", "addNum", "findMedian"]
[[], [1], [2], [], [3], []]
Output
[null, null, null, 1.5, null, 2.0]

Explanation
`MedianFinder medianFinder = new MedianFinder();`
`medianFinder.addNum(1);` // `arr = [1]`
`medianFinder.addNum(2);` // `arr = [1, 2]`
`medianFinder.findMedian();` // return `1.5` (i.e., `(1 + 2) / 2`)
`medianFinder.addNum(3);` // `arr[1, 2, 3]`
`medianFinder.findMedian();` // return `2.0`

Constraints:

- $-10^5 \leq num \leq 10^5$
- There will be at least one element in the data structure before calling `findMedian` .
- At most $5 * 10^4$ calls will be made to `addNum` and `findMedian` .

Follow up:

- If all integer numbers from the stream are in the range `[0, 100]` , how would you optimize your solution?
- If 99% of all integer numbers from the stream are in the range `[0, 100]` , how would you optimize your solution?

Seen this question in a real interview before? 1/4

YesNo

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