CSE 4304-Data Structures Lab. Winter 2022
Date: October 18, 2022.
Target Group: 1A
Topic: BST/HEAP

Instructions:

- Task naming format: fullID_T01L05_1A.c/CPP

Task 1

The median is the value in the center of an **ordered** list of integers. If the list has an even number of items, there is no middle value, and the median is the average of the two middle values.

- 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

You will be given some queries:

- AddNum(int x): add the integer x to the existing data structure(Choose your best DataStructure to satisfy the time and space constraints)
- FindMedian(): prints the median of all elements so far.

Sample Input	**Sample Output**
AddNum(10) AddNum(12) AddNum(9) FindMedian() AddNum(8) FindMedian()	Ordered List: [10] Ordered List: [10 12] Ordered List: [9 10 12] Median: 10 Ordered List: [8 9 10 12] Median: 9.5

Constraints:

- $-10^5 \leq X \leq 10^5$, *where* $X =$ *Any element of the ordered list*
- $1 \leq N \leq 10^5$, *where* $N =$ *Total Size of the ordered list*
- Time Complexity: For AddNum: O($log(N)$), For FindMedian: $O(1)$

Note: Solutions with less efficient approaches will be considered for partial marks.