

- 1) Build Min heap from scratch. Please use array to implement the heap. You should at least design two functions: insert() and remove().
Insert(): insert a new element to the Min heap
Remove(): remove the root node from the heap.

Note that after your insertion and removal, you don't break the structure.

- 2) Given a list of numbers, please output the first kth minimal numbers. For example,

Input:

2

[2,7,5,12,22,17]

Output:

[2,5]

The first line is k value. The second line is a number list. Thus, your output should be [2,5] since 2 and 5 are the two smallest number in this list.

Note: 1) you must use the min heap to solve the problem.

2) you can ask the users to input the data from the keyboard, and the input must follow the min-heap requirements. For example, [2,7,5,12,22,17] is a min heap since the parent node is smaller than children nodes and it satisfies the heap definition. [2,12,5,7,22,17] is not a min heap since the node 12 is larger than its left child node 7 which violates the min-heap requirement. If your input is not a legal input, you can return and requires users to input a new data list again.