HackerRank For Work

Fall_2017_INFO6205_Quiz_7 50 minutes

Question - 1

SCORE: **10 points**

Insertion Sort

Consider an array of elements array[5] = [5,4,3,2,1]. What are the steps of insertion done while insertion sort in the array, to sort them in ascending order?

- 4 5 3 2 1, 2 3 4 5 1, 3 4 5 2 1, 1 2 3 4 5
- 4 5 3 2 1, 3 4 5 2 1, 2 3 4 5 1, 1 2 3 4 5
- 5 4 3 2 1, 1 4 3 2 5, 1 2 4 3 5, 1 2 3 4 5
- 5 4 3 1 2, 5 4 1 2 3, 5 1 2 3 4, 1 2 3 4 5

Question - 2

SCORE: **10 points**

Merge Sort

The time complexity required to merge two sorted arrays of size m and n is

- O(mn)
- O(m+n)
- O(m logn)
- O(n logm)

Question - 3

SCORE: **10 points**

Sorting

Which sorting method runs faster for an array with all keys identical, selection sort or
insertion sort?

- Insertion sort
- Selection sort
- Same

Question - 4

SCORE: **10 points**

Sorting

Which method runs faster for an array in reverse order, selection sort or insertion
sort?

- ○ Insertion sort
- ○ Selection sort
- ● Same

Question - 5

SCORE: **60 points**

Find the median

All of you know the concept of a median. If not, When a distribution is sorted, the middle value(or mean of the middle two values) is known as the median.

```
Example:
When the number of elements is odd :[1,2,4,5,7]
The median = 4


When the number of elements is even :
[1,2,4,5,7,8]
The median = 4.5
```

This program finds the median of an array. The logic for finding the median is provided. All you have to do is implement the **mergeSort() and merge()** methods.

needless to say, the mergeSort() implements the logic for the sort and merge() merges the two arrays. The array **a[] contains the actual list of elements while tempA[] is an auxiliary array for the merge sort.**

```
Sample Input :
3
8 6 7

The first line is size of the array.
The second line is the value of the integers in
the array, ie. The elements in the array.


Sample output :
7.0

The output is the median of the array [8,6,7]
(from the example input above)
```

NOTE: you are NOT allowed to use the Arrays.sort() method.