Assignment 2 Sorting with Heap

COMP 205 Data Structures and Algorithms

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1- My Main Code's Algorithm

1 – In main method, I import java.util.Arrays for using Java's own Arrays.sort sorting operation and java.util.Random assign random integers.

2 – I declare and 3 arrays for sorting and assign random integers, i and j for indexing, double data types for calculate and print elapsed time.

3 – I use a nested for loops, first one for calling sorting methods, copying the array and calculate elapsed time in double arrays and second one for assign random integers to arrayHeap.

4 – I create three seperate for loop for printing each elapsed time for each three method and print out calculate average elapsed time.

5 – In heapSort method, I create a myHeap object and in a for loop, I use remove operation for sorting the integers which stored in heap.

6 – In selectionSort method, I create a nested for loop to searching with two indexes for swapping the random integers to achieving a sorted array.

2- The Heap Class Algorithm

1 – The class has already given for me from my instructor. – The class contains Heap features which are data fields, Heap' s operations, methods and some conditions.

2 – I used the class to create an heap object in the main method for Heap Sort.

3- Sample Output

```
Array Size: 70000
 1: 64,29 msec
 2: 18,70 msec
 3: 15,45 msec
 4: 15,46 msec
 5: 14,73 msec
 6: 15,06 msec
 7: 14,98 msec
 8: 15,40 msec
 9: 15,15 msec
10: 15,34 msec
 Average Sort Time for Heap Sort               20,46

 1: 19,56 msec
 2:  7,13 msec
 3:  6,70 msec
 4:  3,86 msec
 5:  3,90 msec
 6: 12,87 msec
 7: 15,72 msec
 8:  3,98 msec
 9:  3,90 msec
10:  3,84 msec
 Average Sort Time for Java Array Sort          8,15

 1: 1293,70 msec
 2: 1207,77 msec
 3: 1207,48 msec
 4: 1227,56 msec
 5: 1204,61 msec
 6: 1217,76 msec
 7: 1205,44 msec
 8: 1208,46 msec
 9: 1203,79 msec
10: 1213,10 msec
 Average Sort Time for Selection Sort         1218,97
```