Kocaeli University
2022-23 Spring
YZM210 Algorithm Analysis Midterm Exam

This is a take home exam, and all students must be careful about ethical statement. The copied codes and results will be ignored. All students must solve the problems with their individual efforts.

Good Luck **Dr. Mehmet Zeki KONYAR**

Q1: Assume you have an array A=[8 6 9 4 3 1 5 2 7]. Write the code to sorting the array with,

1-INSERTATION SORT

2- MERGE SORT

3a- QUICK SORT (select pivot as first element)

3b- QUICK SORT (select pivot as last element)

4- COUNTING SORT

5- DECISION TREE

For each method show all outputs as:

```
Unsorted Array
8  7  2  1  0  9  6
2  7  8  1  0  9  6
2  1  8  7  0  9  6
2  1  0  7  8  9  6
2  1  0  6  8  9  7
0  1  2  6  8  9  7
0  1  2  6  8  9  7
0  1  2  6  8  9  7
0  1  2  6  7  9  8
0  1  2  6  7  8  9
Sorted array in ascending order:
0  1  2  6  7  8  9
```

Q2: Assume you have an array A=[8 6 9 4 3 1 5 2 7]. Write the code to select 5.th minimum member of the array with,

1-BINARY SEARCH

2- RANDOMIZED SEARCH

Q3: Generate two random arrays with 15000 and 100000 integer elements respectively. Sort each array with Q1 methods. Compare the running time of the algorithms. (You must use same arrays for all methods and save them to send me in two notepad)

Coding language: Select C, C++, C# or Java

Requested: number_name.rar contains all code files, program outputs, running times and random arrays in notepads as A15.txt and A100.txt