HACETTEPE UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

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LECTURE: SOFTWARE LABORATORY II (BBM 204)

1) PROBLEM: Analyzing The Complexity Of Sorting Algorithms

2) AIM:

To the given "Traffic Flow" files, select 3 different sort algorithms and implement them in java and then examine their complexity in different sized files.

3) SOFTWARE USAGE:

I use 3 algorithms;

- ✓ Selection Sort,
- ✓ Heap Sort,
- ✓ Quick Sort.

- ➢ I first read the file so that the rest of the lines are dropped into a 2-dimensional ArrayList, except for the first line. I put the first line into another ArrayList.
- ➢ Since it is difficult to process with the entire ArrayList in the background, we just take the desired column and transfer it to an array of type double. In this way, both the algorithm will be faster and the sorting process will become easier.
- ➢ After that I implemented the algorithms I selected by creating classes in the same program. By sending both the double array and the ArrayList that I created as parameters to each algorithm, I also implemented the change in the ArrayList during the sort.
- ➢ When I opened it with FileWriter, I wrote the data in the 2-dimensional ArrayList that I created first, sorted by sorting algorithms to the same file. Thus the program was completed.

4) COMPLEXITY OF ALGORYTHMS:

	TrafficFlow100	TrafficFlow1000	TrafficFlow50000	TrafficFlow100000	TrafficFlowAll
Selection Sort	0.001 second	0.023 second	1.582 second	6.934 second	40.742 second
Heap Sort	0.003 second	0.012 second	0.051 second	0.083 second	0.167 second
Quick Sort	0.002 second	0.009 second	0.092 second	0.159 second	0.308 second