Lab 11 and 12: Sorting

Data Structures and Algorithms

This lab is designed to test your ability to optimize code as well as doing some research on how to improve quick sort. **This lab is count as 2 labs.**

In the file QuickSorting.java, there are code for randomly generate array keys with gaussian distribution together with a quick sort code packed in a class name TeacherQuickSort and an empty class named StudentQuickSort. The TeacherQuickSort class provides code for quick sort. However, the code given is naively implemented. Now, your task is to use TeacherQuickSort as a guideline, or forget it totally, and implement your version of quick sort. Your version of quick sort should run faster than my version.

Your task: Implement StudentQuickSort and run it against TeacherQuickSort. You must optimize the code to make the StudentQuickSort run faster. The optimize may include, but not limited to, changing the way to choose pivot, optimize code to run faster, or anything you can think of. Please make sure your code sort the array correctly.

Suggestion: Test on small array (change N to 10 or any small number) and print them out to see if your sorting is correct or not first. You may use method printArray for print your array before and after sorting.

Experiment Result

Teacher time:_____

Your time: _____

Ratio: _____

Instruction: Hand in 2 items: 1. Your QuickSorting.java with class StudentQuickSort. You may separate TeacherQuickSort and StudentQuicksort their own files. 2. This document with the answer filled in.