You have file Quicksort for students in Sakai. That has the quick sort code.

You also have a file QuickSelect for students in Sakai.

(1) Use these to create a new QuickSort Java code, ***newQuickSort*** *in which you will pick the pivot by calling QuickSelect first to compute actual the “median”.*

(2) Compare the running times of QuickSort and NewQuickSort.

(3) Plot the graph for 1000, 2000, …, 10000 data sets randomly generated in the interval 1 to 25000 (integers).

**Solution:**

(1). See the source code in class **lesson8.lab.newquicksort.NewQuickSort**

(2)

QuickSort

Average: teta(nlogn)

Worst: O(n^2)

QuickSelect:

Average: teta(n)

Worst: O(n^2)

New Quick Sort:

Average: teta(nlogn) + teta(n) = teta(nlogn)

Worst: O(n^2) + O(n^2) = O(n^2)