



StanfordOnline CSX0003

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Programming Assignment 2

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Programming Assignment due Jul 31, 2023 10:56 EDT

GENERAL DIRECTIONS:

Download the following text file (right click and select "Save As..."): [QuickSort.txt](#)

The file contains all of the integers between 1 and 10,000 (inclusive, with no repeats) in random order. The integer in the i^{th} row of the file gives you the i^{th} entry of an input array.

Your task is to compute the total number of comparisons used to sort the given input array by QuickSort. As you know, the number of comparisons depends on which elements are chosen as pivots, so we'll ask you to explore three different pivoting rules.

You should not count comparisons one-by-one. Rather, when there is a recursive call to sort an array of length m , you should simply add $m - 1$ to your running total of comparisons (because the pivot element is compared to each of the other $m - 1$ elements in this recursive call.)

WARNING: The Partition subroutine can be implemented in several different ways. Different implementations can give you differing numbers of comparisons. For this problem, you must implement the Partition subroutine exactly as it is described in the video lecture (otherwise you might get the wrong answer).

Programming Assignment 2 - Question 1

1 point possible (graded)

DIRECTIONS FOR THIS PROBLEM:

For the first part of the programming assignment, you should always use the first element of the array as the pivot element.

HOW TO GIVE US YOUR ANSWER:

Type the numeric answer in the space provided.

So if your answer is 1198233847, then just type 1198233847 in the space provided.

DIRECTIONS FOR THIS PROBLEM:

Compute the number of comparisons (as in Problem 1), always using the final element of the array as the pivot element. Again, be sure to implement the Partition subroutine described in the video lectures.

Recall from the lectures that, just before the main Partition subroutine, you should swap the pivot element (i.e., the last element) with the first element.

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