**Assignment 4**

**Design and Analysis of Algorithms**

[1]The following problems are from *Introduction to Algorithms*, by CLRS.

If the solution of a problem is posted publicly, then understand it and copy.

| Points | Second Edition | Third Edition |
|---|---|---|
| 10 | Page 173: 8.3-4 | Page 200: 8.3-4 |

**Problem**: (20 points). Assume that $n$ numbers have to be sorted. For counting sort, the items to sort are integers in the set $\{0, 1, 2, \ldots, k\}$. For a radix sort, each item is a $d$-digit number, where each digit takes on $k$ possible values. For bucket sort, we assume that the keys are real numbers uniformly distributed in the half-open interval $[0, 1)$.

Make a table of the asymptotic bounds for worst case, and average case running times. If you do not know the bound, leave it blank. Your table should look like:

| *Sorting algorithm* | *Worst case running time* | *Average case running time* |
|---|---|---|
| Insertion sort | | |
| Merge sort | | |
| Heapsort | | |
| Quicksort | | |
| Counting sort | | |
| Radix sort | | |
| Bucket sort | | |

This table might be useful in job interviews.

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