Assignment #5

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A screenshot of a social media post

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**explanation:**

Counting Sort: the time complexity is O(m+n), m is 13 – array size, n is range of max and min, when n is small, the plot of counting sort and randomized selection will be close.

Randomized Selection: the excepted time complexity is O(n), n is 13- array size. But in the worst-case, the running time is o(n^2). So the counting sort doesn’t always takes longer than randomized selection. But anyway, the plot of randomized selection is linear.

bucket Sort: the running time depends on how even every element be assigned to the buckets. When n = 10, the probability for selected element is around 0.1(1/10). So it takes longer time. Beside, for each bucket, we need sort the elements. In this case, I used quicksort. That’s why bucket sort always takes longer time than the others.

**The output of my code(same as the file LiuF\_5.dat):**

A screenshot of text

Description automatically generated

A picture containing meter, drawing

Description automatically generated