Extra Credit 2.

Implement two functions named *quick_sort* and *insertion_sort*.

Note: Please use median-of-three to find your pivot in your QuickSort.

Note: Explain in words how you implemented the partition and QuickSort. How did the idea come to your mind? How does it work?

1. Request the user to enter a positive integer, and call it n. (n = 1000)

2. Generate n random integers between -5000 to 5000 and save them in array a.

3. Call quick_sort and insertion_sort functions to sort the array.

4. Repeat steps 2 and 3 for 100 times to determine the average-running time of each function.

5. Print the end/finish time for your function. (Note: to be more precise, the time to generate a random array in each iteration should be excluded from the result)

6. Calculate the growth of each function. (On a scratch paper!)

7. Write a code to calculate how many instructions your machine/laptop can run in a second using step 5 and 6 using the insertion_sort.