

### Programming assignment 3.

**Due date:** Friday, October 19 2018 at 11:59pm

Remember:

You can remove all the variables from the workspace by writing “clear”

**Look up the description of all the functions in MATLAB by typing doc in the command window.**

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Implement two functions named **quick\_sort** and **insertion\_sort**.

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(a)** and **insertion\_sort(a)** functions to sort the array.
4. Repeat steps 2 and 3 for **100** times to determine the **average-running time** of each function.
1. 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)
2. Calculate the growth of each function. (On a scratch paper!)
3. **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.