

HW Extra Credit - Sorting [100 pts]

Sort three arrays (list1, list 2, and list3) five times.

list1 = {1, 2, 3, ... ,98, 99, 100}

list2 = {100, 99, 98,..., 3, 2, 1}

list3 = {100, 5, 92,..., 98, 2, 88}

Sort ascending (bubble, insertion, selection, quick (use a random number between 1 and 100 as the pivot), merge) the arrays where

1. list1 is initially in ascending order
2. list2 is initially in descending order
3. list3 is initially in random order
 - a. Print out the first and last 10 array entries of list1, list2, and list3 before sorting. Also print out the first and last 10 array entries after each sort (bubble, insertion, selection, quick, merge).
 - b. Output the number of comparisons and item assignments made during each sort. There should be 15 entries.
 - c. Output the execution time in nanoseconds for each sort. There should be 15 entries.

Use the command script to capture your interaction compiling and running the program, including all operations, as shown below:

CS1C Summer 2019 MTWTH HWEC 100pts Due: Fri 7/26/2019

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ script hwec.scr
```

```
Script started, file is hwec.scr
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ date
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ ls -l
```

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...

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ make all
```

...

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ ls -l
```

...

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ ./hwec
```

... // print output from steps a, b, c above

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ exit
```

Script done, file is hwec.scr

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/ec $ make tar
```

...

Submit the tar package file hwec.tar by Friday July 26, 2019.