

## Lab 5 Report Items:

### 1. Checklist for program testing

- ☒ a. All time measurements were taken on the same laptop.
- ☒ b. Laptop was plugged in, and not running off battery power.
- ☒ c. All unneeded processes (programs) on both the host OS (Windows / OSX) and Ubuntu Linux were shut down.
- ☒ d. "Sleep on inactivity" function on laptop was disabled.
- ☒ e. Laptop was kept in a well-ventilated place, and its air-flow intake/output ports were not blocked.

### 2. Reporting Table

$n_1 = ?$  (Fill in the size of the first data set)

$n_2 = ?$  (Fill in the size of the second data set;  $n_2$  should be  $2 \times n_1$ )

	Asymptotic Complexity $f(n) = O(?)$	Observed run time (seconds)	Your notes/observations
<b>A Sort</b>	$O(n^2)$	$n_1 = 934.85$ ( $n_1$ ) $n_2 = 234.092$ ( $n_2$ )	
<b>B Sort</b>	$O(n^2)$	$n_1 = 0.35664$ ( $n_1$ ) $n_2 = 0.150515$ ( $n_2$ )	
<b>C Sort</b>	$O(n^2)$	$n_1 = 7630.11$ ( $n_1$ ) $n_2 = 1710.95$ ( $n_2$ )	
<b>D Sort</b>	$O(n^2)$	$n_1 = 0.374955$ ( $n_1$ ) $n_2 = 0.144413$ ( $n_2$ )	
<b>E Sort</b>	$O(n^2)$	$n_1 = 0.31978$ ( $n_1$ ) $n_2 = 0.22561$ ( $n_2$ )	
<b>F Sort</b>	$O(n^2)$	$n_1 = 1E-6$ ( $n_1$ ) $n_2 = 0.098546$ ( $n_2$ )	

In the column titled "Your notes/observations", report whether 1. Your observed run time is consistent with the (theoretical) asymptotic complexity of the sorting algorithm, 2. Did you observe anything obvious, or unusual that either met your expectation or was unexpected, 3. How did the run time increase when the data set size doubled, and your inference, and 4. Anything else that you might wish to state.

### 3. General Summary

*Summarize your general findings or inferences based on the reporting table.*