

### Practical Lab Session: Week 8

For this practical lab session, please first ensure you have viewed the **Week 8** video sessions **8.1** and **8.2**. Within these sessions, you should attempt the development exercises presented as **Challenges** during this lab session. Please ensure you complete the set of challenges prior to the next lab session and upload screenshots of your results to the Progress Management section on Blackboard as directed.

#### Session 8.1 Challenge: Quicksort

- Measure the performance of the recursive Quicksort technique
  - Revisit the previous challenge and measure the execution time to sort 1000 arrays of 100, 200, 400, 800, 1600, 3200 and 6400 elements.
  - Report the results as a series of 2 values per line – array size and sort time.)
- The results of earlier tests suggest that the Insertion Sort is very quick for smaller array sizes ( $\leq 100$  elements) before performance drops off significantly for larger arrays. Some implementations of QuickSort exploit this by using an Insertion Sort as the recursive call for small sub-arrays.

Note: an example of the output from the program is provided in the video session.

#### Session 8.2 Challenge: Sort Algorithm Performance Analyser

- Build an application that prompts the user to choose a sort technique from a list. The application should then apply that technique to randomly generated arrays of integers of sizes 10, 100, 1000, 10000, 100000 and 1 million elements. For each sort operation, the results should report the array size, the execution time and the percentage change in execution time from the previous sort

Note: an example of the output from the program is provided in the video session.