Australian National University
Research School of Computer Science

COMP3600/COMP6466 in 2016
Lab 01 (Week 2)

In this lab exercise, we aim to obtain the first hand experience on the running time of different sorting algorithms with different problem sizes. In this exercise, two sorting algorithms: Insertion algorithm with time complexity of $O(n^2)$ and the merge-sort algorithm with time complexity of $O(n \log n)$ will be considered.

Your task is to read the source code of each of these two algorithms, compile the code and run the algorithm. Compare their actual (real) running times with different problem sizes.

Download the complete implementation `Sort.java` of the sorting algorithm which contains both insertion and merge-sort algorithms. It can be found here:

- `http://cs.anu.edu.au/courses/COMP3600/labs/Sort.java`
- `http://cs.anu.edu.au/courses/COMP3600/labs/Merge.java`
- `http://cs.anu.edu.au/courses/COMP3600/labs/Insertion.java`

In this lab you need to finish the following tasks.

- Read the source code, compile the code, and running the algorithm.
- Input problem size 100, 1,000, 10,000 to see their real running times.
- Observe the differences of running times between the two algorithms with the growth of problem size n.
- Modify the source code of program `Sort.java` to enable the modified program to output the sorted sequence when the problem size is no greater than 100.