COMP108 Algorithmic Foundations
Tutorial 9
w/c 31st March 2014

Tutorial participation contributes to 5% of overall marks. For this tutorial, make sure you have scanned your ID card.

1. Download two java files MSortApp.java and MSort.java from the tutorial page `http://www.csc.liv.ac.uk/~pwong/teaching/comp108/201314/tutorial.html` (Use right mouse click to save the files.)

   You can refer to the lecture notes (divide-and-conquer) for the pseudo codes. `http://www.csc.liv.ac.uk/~pwong/teaching/comp108/201314/notes.html` (Divide and Conquer Method)

   (a) Compile and run the program; then enter some numbers, one per line, followed by $\mathbf{-1}$ to terminate the input. Try the option to sort the numbers using the merge sort algorithm. Note that these two function is NOT working yet.

   (b) Check the program MSort.java to read the method **copy( )** to see what they do.

   (c) In the program MSort.java read the method **msort( )** which invokes the recursive merge sort algorithm rec_msort( ). Fill in the method **rec_msort( )** to sort the numbers in ascending order using the **merge sort** algorithm. You will also need to fill in the method **merge( )**. You can make use of the **copy( )** method if necessary. *Remember to read the comments in the methods.*

   Test cases:

   i. $\mathbf{10, 30, 20, 40, 50}$
   ii. $\mathbf{50, 30, 10, 40, 20}$
   iii. $\mathbf{50, 40, 30, 20, 10}$
   iv. $\mathbf{40}$, $\mathbf{20}$, $\mathbf{60}$, $\mathbf{-30}$, $\mathbf{-40}$, $\mathbf{10}$, $\mathbf{-5}$, $\mathbf{-50}$