*Your submission for this tutorial **must include your full name** and you nine-digit **student number as a comment** at the top of **every source file you submit**. All source code files must be written using the **Python 3 programming language** and must run on the course's **official virtual machine**.*

Exercise A: "Bogosort and Bozosort"

For this exercise you will implement "Bogosort" and "Bozosort". Although the simplest interpretations of these cannot be truly considered algorithms (since they are not guaranteed to terminate), you will implement them anyway using only high-level descriptions as a guide.

In Bogosort, you shuffle the list argument (i.e., randomize the positions of every element) and then check to see if the result is in sorted order. If it is, the algorithm terminates successfully, but if it is not then the process must be repeated.

In Bozosort, you choose two elements at random, swap them, and then check if the result is in sorted order. If it is, the algorithm terminates successfully, but if it is not then the process must be repeated.

In order to complete this task, you will need to:

- interpet the natural language descriptions above, first into pseudocode and then into Python

Your submission for this exercise:

- must be a source code file with filename[1] 'comp1405_f21_#########_tutorial_09_a.py'
- must include a function with a list argument, returning a Boolean for if the list is sorted or not
- must include non-recursive functions for Bogosort and Bozosort, and a "main" for testing
- must NOT use any built-in functions for shuffling (i.e., this must be done yourself)

Exercise B: "Empirical Performance Analysis"

For this exercise you will create a program that will conduct an empirical performance analysis of the Bogosort and Bozosort algorithms you implemented in Exercise A.

In order to complete this task, you will need to:

- copy the function definitions (except for main) from your submission for Exercise A above

Your submission for this exercise:

- must be a source code file with filename[2] 'comp1405_f21_#########_tutorial_09_b.py'
- must import the time library and record the elapsed time each time one of the sorts is called
- must import the random library and construct random lists to be sorted
- must use a counter-controlled loop to perform multiple trials and report average times
- must use another counter-controlled loop to increase the size of the random list generated

[1] You must replace the number signs in the filename with your official nine-digit student identification number.
[2] You must replace the number signs in the filename with your official nine-digit student identification number.