CS315: Design and Analysis of Algorithms (2021/22)
Programming Assignment 01

In this assignment, you will implement six sorting algorithms in python: selection sort, insertion sort, bubble sort, heap sort, merge sort, and quick sort. You will test your code using varied input cases of integers generated using a random number generator, record computational times and compare these computational times with the theoretical running time of the algorithms (Big-O asymptotic notation).

General Guidelines

1. You may implement all sorting algorithms as functions in one program. Save the program as ***cs315progassgn1_regno.py*** where *regno* represents your registration numbers. E.g., *cs315progassgn1_s16999.py*

2. **Sample function call:** *mergesort(numofelts)* where *numofelts* is the number of random integers.
   mergesort(100) generates an array of 100 integers, sort them using merge sort and calculates the execution time.

3. **Sample output:** Generate a table similar to the one given below.

Algorithm	10	100	1000	10000	100000
Selection					
Insertion					
Bubble					
Heap					
Merge					
Quick					

Note: If python is not preferred, you may use Java for the implementation.