# Introduction to Computer Science and Programming 1

# CSCI120

### Chapter14: Data Structures and Algorithms

Lab 14

**Note:** This document has been designed and developed as part of an initiative for creating an OER (Open Education Resource) package for the course CSCI 120 at Columbia College.

Please contact [Alireza.davoodi@gmail.com](mailto:Alireza.davoodi@gmail.com) for any comment, modification, and questions.

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Last Modified: July 2022

# Problem1

* The following list is given, visually show how the insertion sort is used to sort the list.
  + [10, 2,3,7,1,7,9,2]

# Problem2

* The following list is given, visually show how the merge sort is used to sort the list.
  + [10, 2,3,7,1,7,9,2]

# Problem3

* Explain when you would use Merge sort and when you would use another algorithm for sorting even though the time complexity order of Merge sort is O(NLogN)

# Problem4

* Suppose a dictionary given where the keys are student’s IDs and the values of the list of grades each student has receives. Write a Python program which calculates the GPA for each student. What is the time complexity of your algorithm.

**Good Luck ☺**