

Exercise Set 4: Algorithm Analysis

Exercise 4.1 The goal of this exercise is to run some tests on common algorithms, to determine their expected running time.

Start with the code for Lab 4. At this point you should have a working version of insertion sort and merge sort for both the `ArrayList` and the `List` data structures.

- Design *quicksort* algorithm for both the `ArrayList` and `List`.
- Design a test driver, which collects timer data for your algorithms. Record the data in a table during the run.

Collect data for the following algorithms:

- insertion sort on `ArrayList`
- insertion sort on `List`
- merge sort on `ArrayList`
- merge sort on `List`
- quicksort on `ArrayList`
- quicksort on `List`

Collect the data for the following size data sets: 100, 1000, 5000, 10000, and 30000.

- At the end, display the data in the console, using commas to separate the individual entries.
- Print your test results
- Display your results as a chart - you may use Excel or other plotting program to do this.