## lab 12 Basic sorting: Selection and Insertion Sort

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**Part 1:** Implement Selection and Insertion sort for your Array List class. Then implement any of the basic sorts (Bubble, Selection, or Insertion) for a singly Linked List.
**Note: Keep your old implementation and append the following functions:**

```
1
2  template <class T>
3  class Array {
4      private:
5      /* You fill out the private contents. */
6
7      public:
8      /* Runs a bubble sort algorithm on the array.
9       * The array shall be ordered from least to greatest
10      */
11     void bubbleSort();
12
13     /* Runs a selection sort algorithm on the array.
14      * The array shall be ordered from least to greatest
15      */
16     void selectionSort();
17
18     /* Runs a insertion sort algorithm on the array.
19      * The array shall be ordered from least to greatest
20      */
21     void insertionSort();
22
23     /* Runs the sort routing you believe is the best. */
24     void sort();
25
26 };
27
28
29 /* SLL = Singly Linked List */
30 template<class T>
31 class SLList {
32     public:
33         /* Sort the linked list. You may use any sort algorithm you wish */
34         void sort();
35 };
```

**Write some test cases:**
Create some test cases, using cxxtestgen, that you believe would cover all aspects of your code.

**Part 2: Performance**
Generate a graph to compare the performance of bubble sort, selection sort, insertion sort, and the sort you chose for a Singly Linked List. Your graph should have data size on the x axis and time on the y axis. Make sure to label each graph line! Please turn in as a .pdf!

**Auto Grader:**
The auto grader is only grading part 1, I will have to assess part 2. In other words, if the auto grade issues a 100, that is only for part 1!

**Memory Management:**
Ensure there are no memory leaks in your code. Please run Valgrind on your tests to ensure no memory leaks.

**STL:**
You may not use the STL.

**How to turn in:**
Turn in via GitHub. Ensure the file(s) are in your directory and then:

- $ git add <files>
- $ git commit
- $ git push

**Due Date:** September 30, 2020 2359

**Teamwork:** No teamwork, your work must be your own.