

HW4: Set

CSS 342 – Data Structures, Algorithms, and Discrete Mathematics I
By: Hansel Ong

Summary

One of the benefits of data structures is to organize data and have automatic actions on the data. For this homework assignment, you are to experiment with inheritance/polymorphism of LinkedList into a (form of) Set.

Assignment Description

Create a LinkedList data structure and a Set data structure that inherits from the LinkedList. Both data structure should be able to keep track of any objects (use templates). Recall also that a Set data structure should keep track of only unique values (“keys”). Slight modification: Your Set data structure should also keep track of how many times a user has attempted to add a “key” to the structure (“counter”).

Grading Criteria

- LinkedList class
 - [2 Points] Proper header file
 - [3 Points] Proper implementation of List interfaces (get, insert, delete)
 - [1 Points] Ability to handle all objects (use of template)
- Set class
 - [2 Points] Proper header file
 - [2 Points] Proper inheritance from LinkedList class
 - [2 Points] Insert keeps track of only unique values (“key”)
 - [1 Point] Insert also keeps track of how many times a user has attempted to add a “key” to the structure (“counter”)
 - [1 Point] A way to obtain the “counter” for a given “key”
 - [2 Points] A way to display the “top 3” keys in the structure (With the top 3 highest counters)
 - [1 Point] Ability to handle all objects (use of template)
- Driver
 - [1 Point] Written instructions on how to execute your program
 - [1 Point] Screen capture of program execution
 - [1 Point] A LinkedList with at least 10 items
 - [2 Points] Demonstration of use of Set (e.g. given a sentence of at least 10 words, parse each word and store it in the Set)
 - [1 Point] Adding an item that already exists in the set (also demonstrate increase in the “counter” for that specific “key”)
 - [1 Point] Demonstration of “top 3” in Set
 - [1 Point] Print out everything that is in the set (key + counter)