Course: CS 3460: Data Structures (and Algorithms) Fall 2017
Assignment 02: Fun with Sets
Due Date: Wednesday, September 13; 23:00 pm

This assignment will help us practice with arrays and linked lists. We will also understand the notion of an abstract data type, that is, changing the underlying implementation of the ADT does not affect other programs that only interact with the ADT through its public interface.

Integer Set (10 points): In this problem, we will be changing an implementation of the integer set data structure from arrays to linked lists. A set data structure maintains a collection of non-duplicated elements, and supports the following operations: `insert(key)` that inserts a new key into the set; `remove(key)` that removes the key from the set; and `find(key)` that finds if a given key is present in the set. In our integer set, an assert statement checks for valid input to both the `insert` and `remove` operations: that is, it checks if the newly inserted key is not a duplicate during `insert`, and that the removed key is present during `remove`. In addition, the `print` method prints out the contents of the set in sorted order.

The `IntSet` class implements all the operations using array as the underlying implementation. In this problem, you will change the implementation to singly linked lists. Note that the driver (or user) program `IntSetDriver.java` should still work, since it only interacts with the public interface of `IntSet`. You should not change the public interface of the `IntSet` class, but feel free to include other private methods that may be useful to your implementation.

Submission: Please submit the files `IntSet.java` and `Node.java` (if applicable) as a single zip archive `hw2.zip` through ASULearn.

Input/ Output Instructions: For all programs, until and otherwise stated, we will be taking the input from standard input (`System.in`) and will be sending the output to standard output (`System.out`).

Notes on Coding: Please do not include user-defined packages in your code. Your code should run in the Unix/Linux machine using the commands `javac` and `java`.