

CS 112 – Spring 2012, Homework 2

Problems due at the beginning of class on Thursday, February 9

Question 1 (10 pts). *Linked list traversal: Write a method `public Item max()` of the `Bag` class as implemented using linked lists on p. 155. Return the maximum-valued `Item` in the `Bag`, or a null reference if the `Bag` is empty. Assume your `Items` are `Comparable`, and use `compareTo()` to compare them within the `max()` method. (See pp. 246-7 and Piazza for discussion). To test your code, it is fine to just work with a `Bag` of `Integers`.*

- a.) *Implement this method iteratively, by traversing the `Bag` with a loop.*
- b.) *Implement this method recursively. Hint: you will need to implement a helper method `private Item max (Node<Item> c)` that returns the maximum valued item in the sublist starting at `Node c`.*

Question 2 (10 pts). *Reasoning about stacks and queues.*

- a.) *Exercise 1.3.3 on p. 161.*
- b.) *Exercise 1.3.13 on p. 163.*

Question 3 (10 pts). *Chapter 1, Exercise 1.3.42 on p. 170. Make sure that you create actual copies of the `Items` in the original stack, as opposed to creating aliases (copies of references).*

Question 4 (10 pts). *Chapter 1, Exercise 1.3.44 on p. 170. Some details have been left unspecified, but try to handle corner cases as gracefully as you can, like moving left 15 when the cursor is at position 5. Mimic the behavior of a real text editor when you have a choice, like deciding what the cursor should point to after a deletion.*