Discussion Questions for “Data Recursion”

1. Compare a singly linked list to an array. Are there applications that would work better using a linked list? What features of a linked list would make those applications work better? Are there applications that would work better using an array? What features of an array would make those applications work better?
2. In the SinglyLinkedList implementation created by the Professor, he never checked to see if there were any circular references. If circular references appear, how would methods like getTail() work? Why didn’t the professor check for circular references?
3. One of the problems with a linked list is that you have to start at the head of the list no matter what else you do. Can you think of ways to make the tail just as accessible as the head of the list? How would that affect the SinglyLinkedList class?
4. Another problem with a linked list is that you can only move forward in the list. If you want to find the node that precedes you in the list, you need to start at the head of the list and move forward until you find a node whose next field references you. Can you think of ways to move both backwards and forwards in a list? How would that affect the SinglyLinkedList class?
5. Can you think of other data structures which could be implemented using self-references? What kinds of data structures can you make, and which kind of self-references would you use to implement those data structures?