1 Administrative Topics

• We take the quiz.

2 Recursion in linked lists

One place where recursion can be very helpful is performing operations in certain abstract data types. You will find recursion almost necessary to do anything with trees. But it also lends itself naturally to linked lists. Let’s write the following two methods in our StringLinkedList class, using recursion.

• Write a length method. The basic strategy is to start at the beginning of the list, then asks the rest of the list how long it is and add 1 to that result before returning it. The base case is that we are at the end (have a null pointer), in which case we return 0.

• Write a contains method. The basic strategy is to return True if the current node contains the given item. Otherwise, ask the rest of the list if it contains the item. Return that answer.
And here is the code:

```java
private int length(StringNode node) {
    if (node == null) {
        return 0;
    }
    return 1 + length(node.next);
}

public int length() {
    return length(this.head);
}

private boolean contains(StringNode node, String target) {
    if (node == null)
        return false;
    if (node.data.equals(target))
        return true;
    return contains(node.next, target);
}

public boolean contains(String target) {
    return contains(this.head, target);
}
```