

CSE 143: Computer Programming II

QuickCheck: ArrayList Solutions (due Tuesday, January 13)

0. runningTotal

Add a method `runningTotal` to the `ArrayList` class, that returns a new `ArrayList` that contains a running total of the original list. In other words, the i^{th} value in the new list should store the sum of elements 0 through i of the original list. For example, suppose a variable `list` stores the following sequence of values:

```
[2, 3, 5, 4, 7, 15, 20, 7]
```

If the following call is made:

```
ArrayList list2 = list.runningTotal();
```

The the variable `list2` should store the following sequence of values:

```
[2, 5, 10, 14, 21, 36, 56, 63]
```

The original list should not be changed by the call. If the original list is empty, the result should be empty.

Solution: Two solutions are shown below:

```
1 public ArrayList runningTotal() {
2     ArrayList result = new ArrayList(this.elementData.length);
3     if (size > 0) {
4         result.add(this.elementData[0]);
5         for (int i = 1; i < this.size; i++) {
6             result.add(result.get(i - 1) + this.elementData[i]);
7         }
8     }
9     return result;
10 }
```

```
1 public ArrayList runningTotal() {
2     ArrayList result = new ArrayList(this.elementData.length);
3     if (size > 0) {
4         result.elementData[0] = this.elementData[0];
5         for (int i = 1; i < this.size; i++) {
6             result.elementData[i] = result.elementData[i - 1] + this.elementData[i];
7         }
8         result.size = size;
9     }
10    return result;
11 }
```