

COP 3330 Suggested Exercises for StringTokenizer, ArrayList, ArrayDeque

StringTokenizer, ArrayList, ArrayDeque

1) Rewrite the following exercise from the 1D array section using an ArrayList:

Write a static method that takes in a reference to an ArrayList of Integers and returns the number of inversions in the list. An inversion in a list is an ordered pair (i, j) such that $i < j$ but the element stored at index i is greater than the element stored at index j. Test your method on several arrays:

```
public static int numInversions(ArrayList<Integer> list);
```

2) Write a method that takes in a String which contains spaces and returns an ArrayList of the different tokens in the String. (This is identical to what the .split() method in Python does.)

```
public static ArrayList<String> tokenize(String line);
```

3) Write a shopping simulation with an ArrayDeque of Customer. Create your own Customer class (you can keep it relatively simple, maybe store a name and number of items bought), and process customers by adding them into the grocery line and servicing them at that line. Do this with a menu that allows the user to either add a customer to the back of the line or check out the customer in the front of the line. Use the appropriate methods (addLast, pollFirst, size) as needed. When you add to the back of the line, as the user to enter information for that customer. When a customer is checked out, print out which customer was checked out.

4) Rewrite the class example circuitmath.java to work for integer variables and the addition, subtraction and multiplication operators. Create your own test cases to improve your confidence that your implementation is correct. (Thus, instead of making – a unary operator, change it to be binary and do regular subtraction.)