CECS 277 LAB ARRAYLIST

OBJECTIVE: Get some practice using the ArrayList features.

INTRODUCTION: Please remember the coding standards here.

Array lists are objects that, like arrays, provide you the ability to store items sequentially and recall items by index. Working with array lists involves invoking ArrayList methods, so we will need to develop some basic skills. Let's start with the code below:

```
import java.util.ArrayList;

public class ArrayListRunner
{
   public static void main(String[] args)
   {
       ArrayList<String> names = new ArrayList<String>();
       System.out.println(names);
   }
}
```

The `main` method imports `java.util.ArrayList` and creates an `ArrayList` that can hold strings. It also prints out the `ArrayList` and, when it does, we see that the list is empty: [ ].

PROCEDURE: In your console output, be sure to write out a title for each step of the output, so that it is clear what the output demonstrates (see the sample output below). Each time that you print out the list of names, use an enhanced `for` loop.

1. Invoke `add()` to enter the following names in sequence: Alice, Bob, Connie, David, Edward, Fran, Gomez, Harry. Print the `ArrayList` again.
2. Print the `size()` of the `ArrayList`.
3. Use `get()` to retrieve and print the first and last names in the ArrayList. Do not assume that you know how many names have been put into the ArrayList.
4. Use `set()` to change "Alice" to "Alice B. Toklas". Print the `ArrayList` to verify the change. Be sure to find the "Alice" entry first before changing it. Do not rely on your knowledge of the list.
5. Use the alternate form of `add()` to insert "Doug" after "David". Do not assume that you know where the "David" element is in the ArrayList. Instead, find it first, then perform the add. Print the `ArrayList` again.
6. Create a **second** `ArrayList` called `names2` that is built by calling the `ArrayList` constructor that accepts another `ArrayList` as an argument. Pass `names` to the constructor to build `names2`. Then print the `names2` `ArrayList`. Remember, the Java API documentation is at URL:

https://docs.oracle.com/javase/10/docs/api/ for your reference. Use that to see what arguments are needed and the name of the method. Print the new ArrayList.

7. Call `names.remove(0)` to remove the first element of the original AtrayList. Print both `names` and `names2`. Verify that Alice B. Toklas was removed from `names`, but **not** from `names2`.

SAMPLE OUTPUT:

```
Step: 0 The list of names now looks like:

Step: 1After performing the original adds
Step: 1 The list of names now looks like:
Alice
Bob
Connie
David
Edward
Fran
Gomez
Harry

STEP 2:
The names list currently has: 8

STEP 3:
First name in the list: Alice
Last name in the list: Harry

STEP 4:
Step: 4 The list of names now looks like:
Alice B. Toklas
Bob
Connie
David
Edward
Fran
Gomez
Harry

Step: 5 The list of names now looks like:
Alice B. Toklas
Bob
Connie
David
Doug
Edward
Fran
Gomez
Harry

STEP 6 create a deep copy of the list of names:
Step: 6 The list of names now looks like:
Alice B. Toklas
```

```
Bob
Connie
David
Doug
Edward
Fran
Gomez
Harry

STEP 7:
Original List after removing the first element:
Step: 7 The list of names now looks like:
Bob
Connie
David
Doug
Edward
Fran
Gomez
Harry

Deep copy of the original list:
Step: 7 The list of names now looks like:
Alice B. Toklas
Bob
Connie
David
Doug
Edward
Fran
Gomez
Harry

Completed Satisfactorily.
```

WHAT TO TURN IN:

- Cut and paste your console output into a text file, call it console.txt.
- Your source code for the one class that you write for this lab.