Intro to Java Week 3 Coding Assignment

Points possible: 70

Category	Criteria	% of Grade
Functionality	Does the code work?	25
Organization	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
Creativity	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
Completeness	All requirements of the assignment are complete.	25

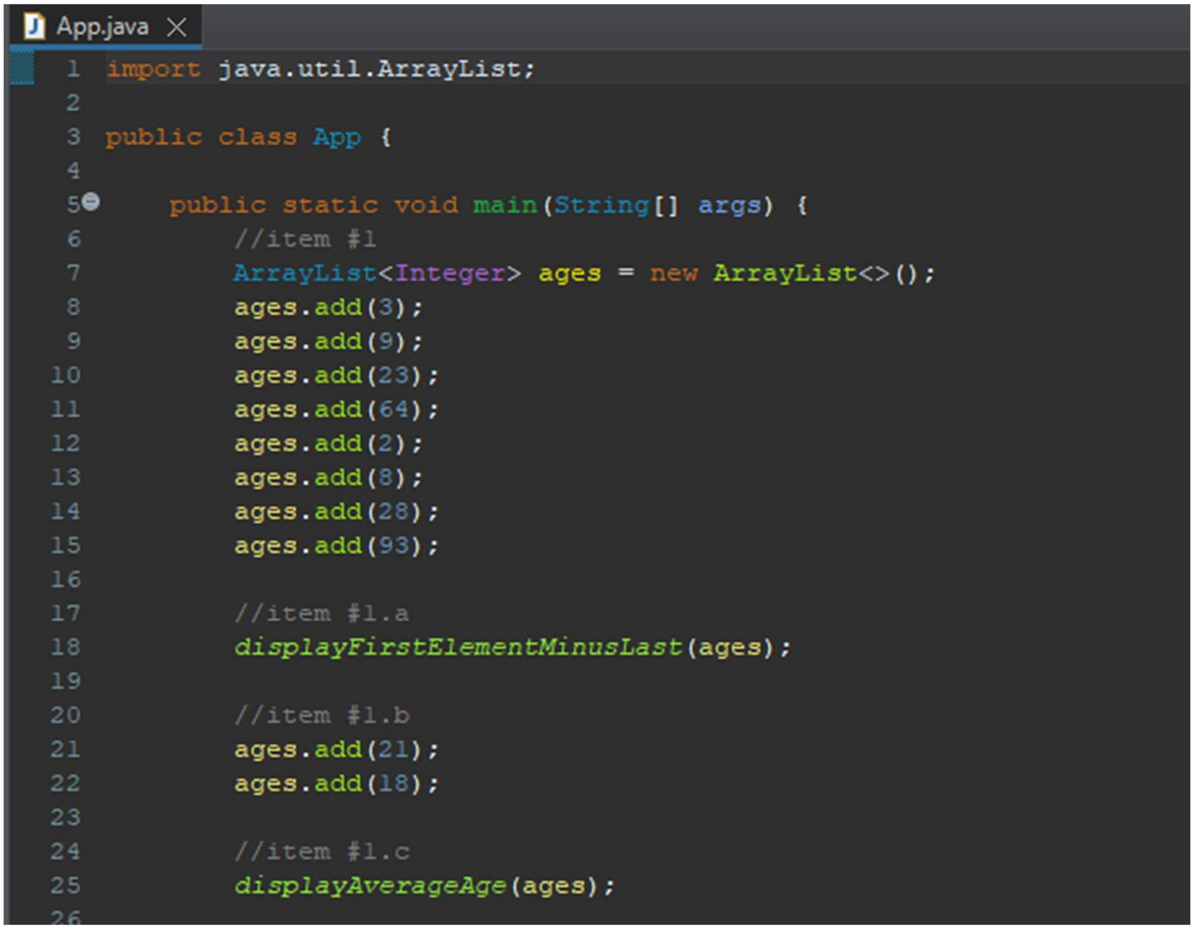
Instructions: In Eclipse, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document, with your Java project code, to the repository. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

Coding Steps:

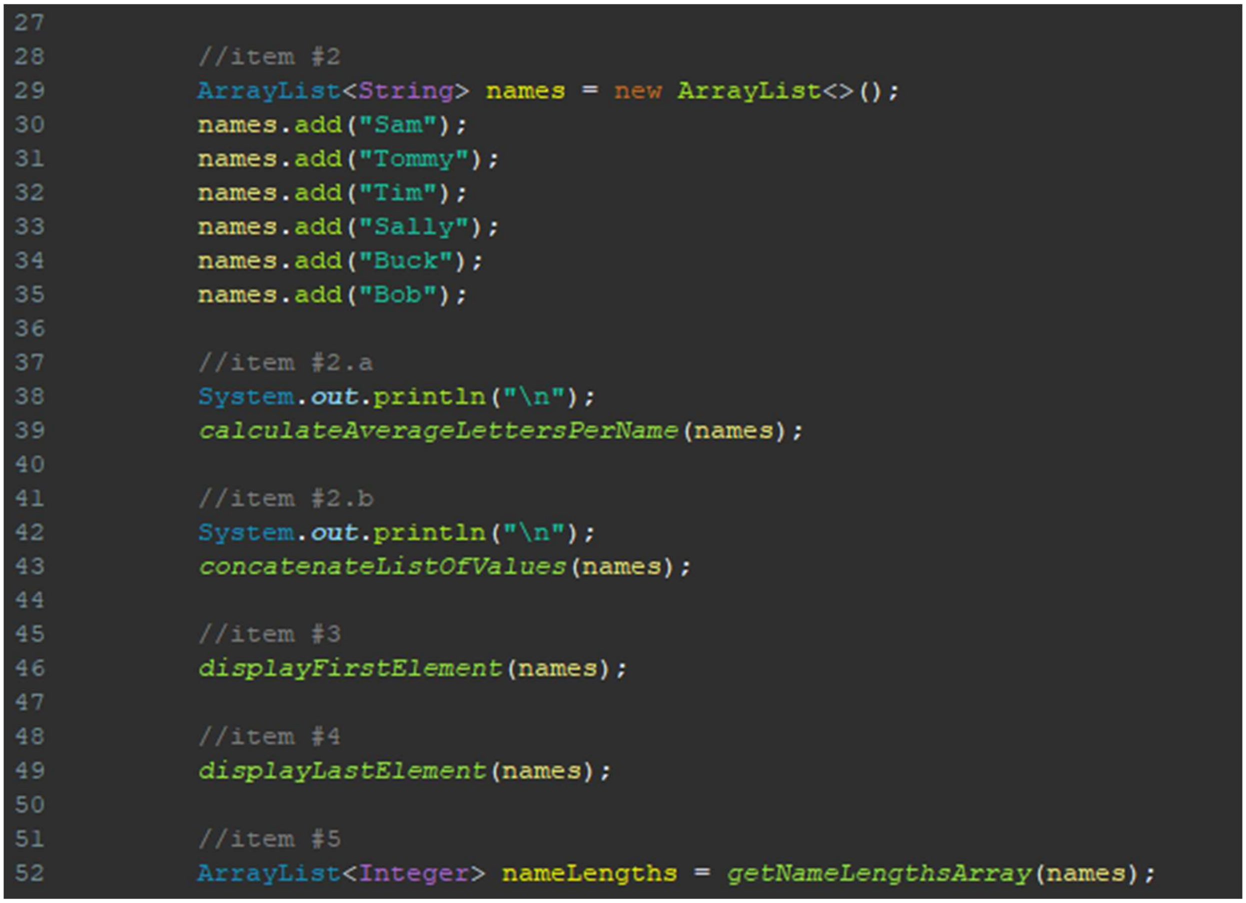
1. Create an array of int called ages that contains the following values: 3, 9, 23, 64, 2, 8, 28, 93.
    a. Programmatically subtract the value of the first element in the array from the value in the last element of the array (i.e. do not use ages[7] in your code). Print the result to the console.
    b. Add a new age to your array and repeat the step above to ensure it is dynamic (works for arrays of different lengths).
    c. Use a loop to iterate through the array and calculate the average age. Print the result to the console.
2. Create an array of String called names that contains the following values: “Sam”, “Tommy”, “Tim”, “Sally”, “Buck”, “Bob”.
    a. Use a loop to iterate through the array and calculate the average number of letters per name. Print the result to the console.
    b. Use a loop to iterate through the array again and concatenate all the names together, separated by spaces, and print the result to the console.

3. How do you access the last element of any array?
4. How do you access the first element of any array?
5. Create a new array of int called nameLengths. Write a loop to iterate over the previously created names array and add the length of each name to the nameLengths array.
6. Write a loop to iterate over the nameLengths array and calculate the sum of all the elements in the array. Print the result to the console.
7. Write a method that takes a String, word, and an int, n, as arguments and returns the word concatenated to itself n number of times. (i.e. if I pass in "Hello" and 3, I would expect the method to return "HelloHelloHello").
8. Write a method that takes two Strings, firstName and lastName, and returns a full name (the full name should be the first and the last name as a String separated by a space).
9. Write a method that takes an array of int and returns true if the sum of all the ints in the array is greater than 100.
10. Write a method that takes an array of double and returns the average of all the elements in the array.
11. Write a method that takes two arrays of double and returns true if the average of the elements in the first array is greater than the average of the elements in the second array.
12. Write a method called willBuyDrink that takes a boolean isHotOutside, and a double moneyInPocket, and returns true if it is hot outside and if moneyInPocket is greater than 10.50.
13. Create a method of your own that solves a problem. In comments, write what the method does and why you created it.

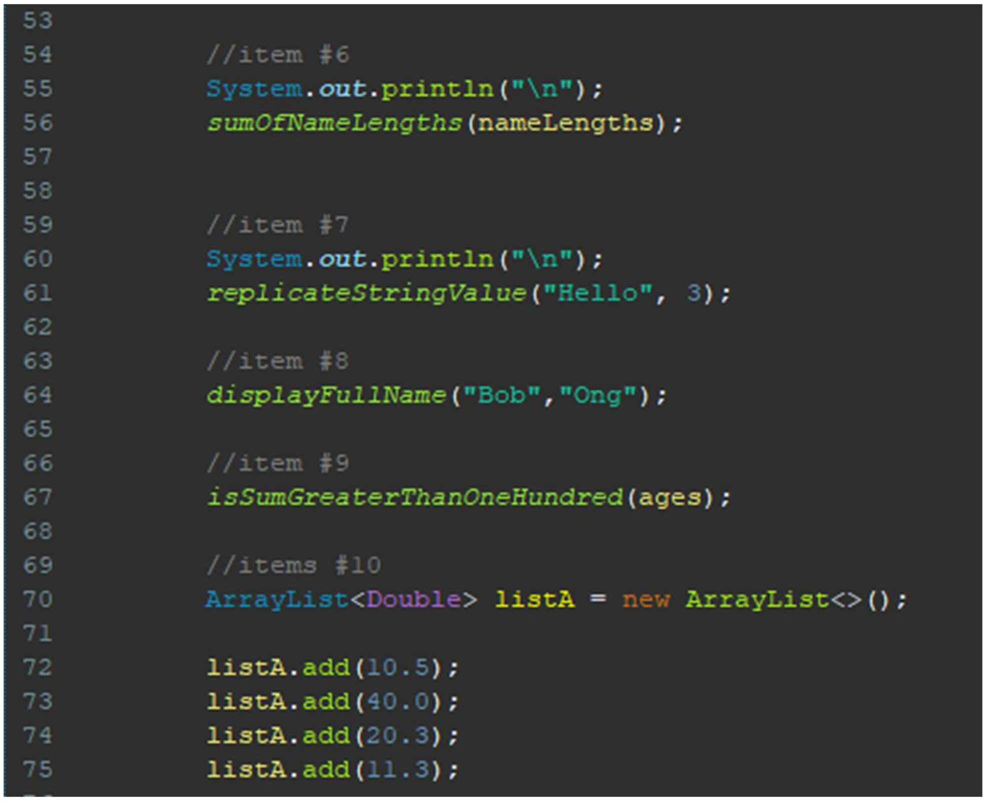
Screenshots of Code:



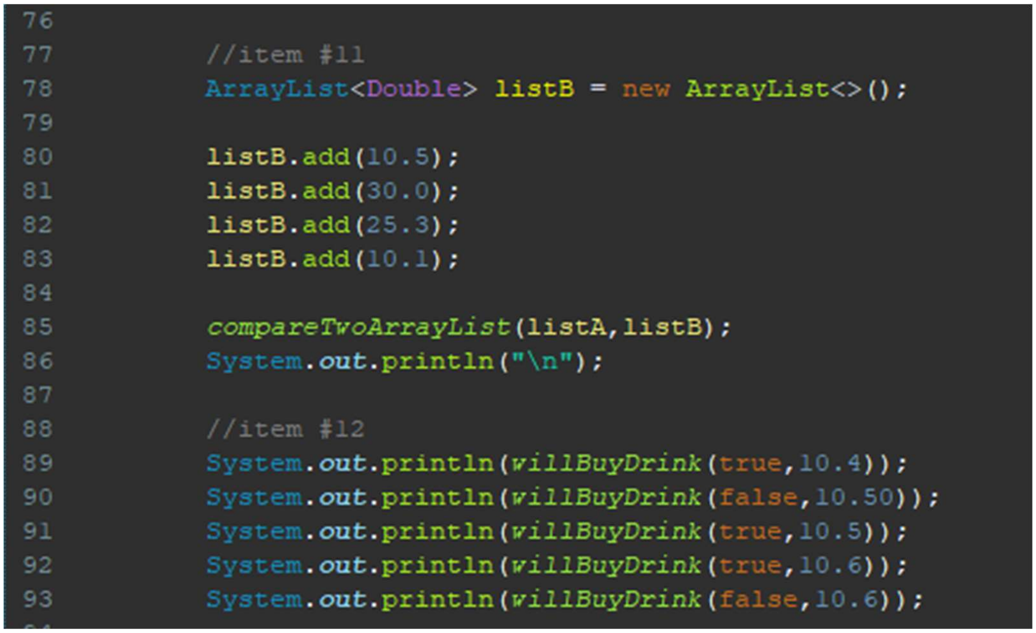
```java
import java.util.ArrayList;

public class App {

    public static void main(String[] args) {
        //item #1
        ArrayList<Integer> ages = new ArrayList<>();
        ages.add(3);
        ages.add(9);
        ages.add(23);
        ages.add(64);
        ages.add(2);
        ages.add(8);
        ages.add(28);
        ages.add(93);

        //item #1.a
        displayFirstElementMinusLast(ages);

        //item #1.b
        ages.add(21);
        ages.add(18);

        //item #1.c
        displayAverageAge(ages);
```



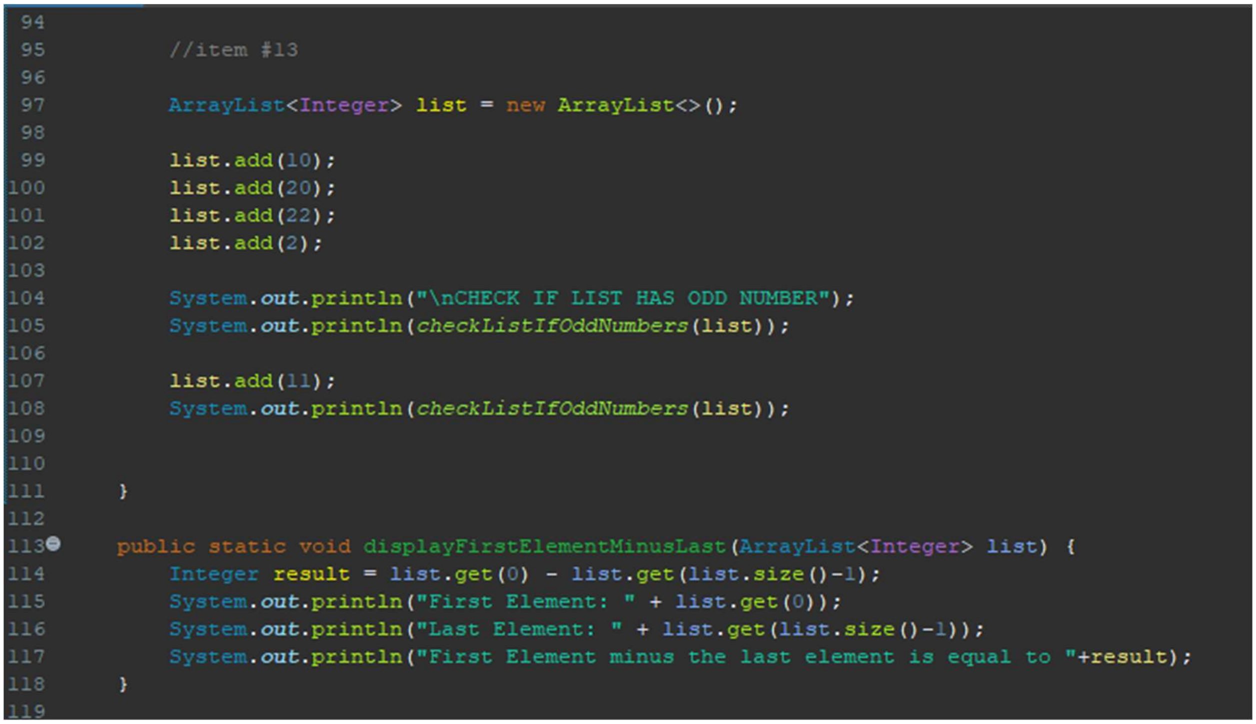
```java

        //item #2
        ArrayList<String> names = new ArrayList<>();
        names.add("Sam");
        names.add("Tommy");
        names.add("Tim");
        names.add("Sally");
        names.add("Buck");
        names.add("Bob");

        //item #2.a
        System.out.println("\n");
        calculateAverageLettersPerName(names);

        //item #2.b
        System.out.println("\n");
        concatenateListOfValues(names);

        //item #3
        displayFirstElement(names);

        //item #4
        displayLastElement(names);

        //item #5
        ArrayList<Integer> nameLengths = getNameLengthsArray(names);
```



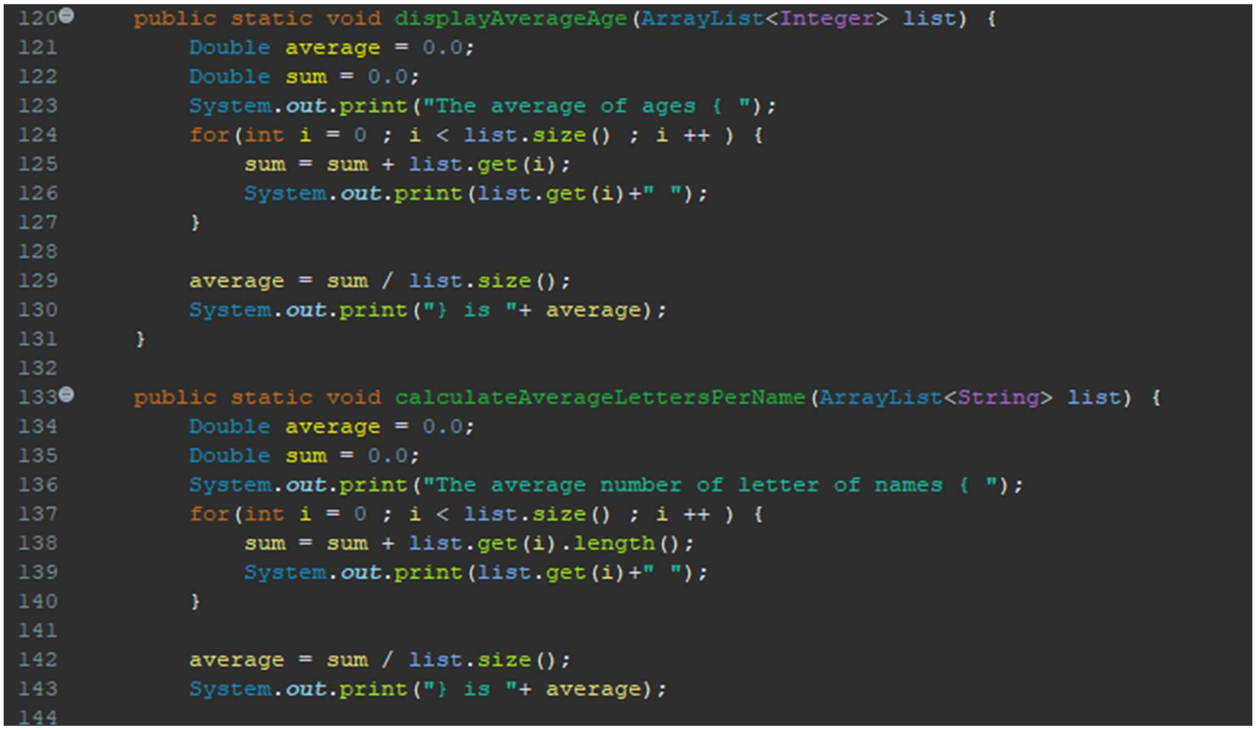
```java

        //item #6
        System.out.println("\n");
        sumOfNameLengths(nameLengths);


        //item #7
        System.out.println("\n");
        replicateStringValue("Hello", 3);

        //item #8
        displayFullName("Bob","Ong");

        //item #9
        isSumGreaterThanOneHundred(ages);

        //items #10
        ArrayList<Double> listA = new ArrayList<>();

        listA.add(10.5);
        listA.add(40.0);
        listA.add(20.3);
        listA.add(11.3);
```



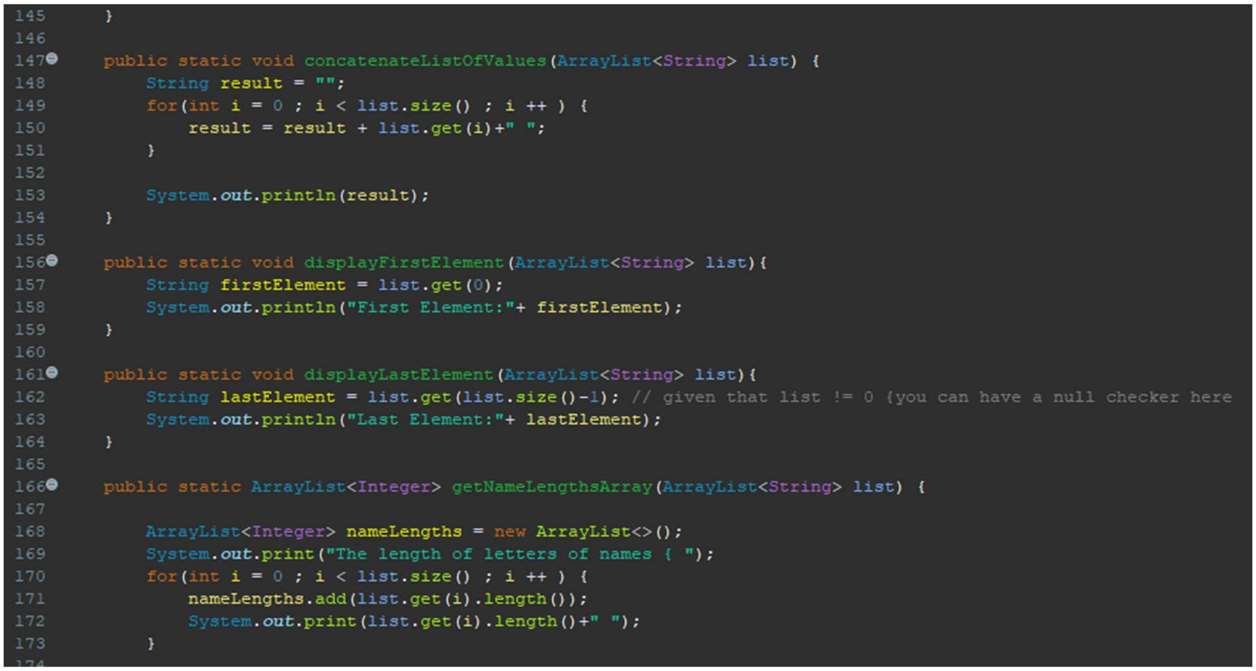
```java

        //item #11
        ArrayList<Double> listB = new ArrayList<>();

        listB.add(10.5);
        listB.add(30.0);
        listB.add(25.3);
        listB.add(10.1);

        compareTwoArrayList(listA,listB);
        System.out.println("\n");

        //item #12
        System.out.println(willBuyDrink(true,10.4));
        System.out.println(willBuyDrink(false,10.50));
        System.out.println(willBuyDrink(true,10.5));
        System.out.println(willBuyDrink(true,10.6));
        System.out.println(willBuyDrink(false,10.6));
```



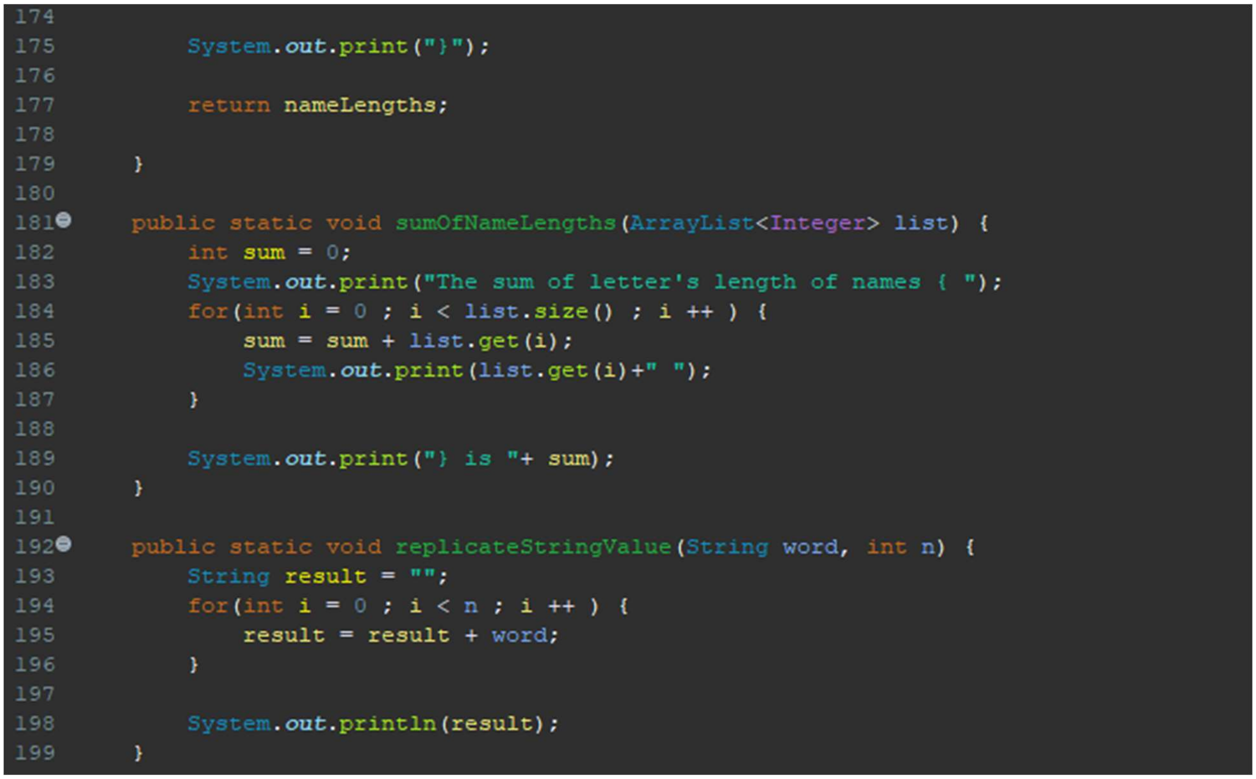
```java

        //item #13

        ArrayList<Integer> list = new ArrayList<>();

        list.add(10);
        list.add(20);
        list.add(22);
        list.add(2);

        System.out.println("\nCHECK IF LIST HAS ODD NUMBER");
        System.out.println(checkListIfOddNumbers(list));

        list.add(11);
        System.out.println(checkListIfOddNumbers(list));


    }

    public static void displayFirstElementMinusLast(ArrayList<Integer> list) {
        Integer result = list.get(0) - list.get(list.size()-1);
        System.out.println("First Element: " + list.get(0));
        System.out.println("Last Element: " + list.get(list.size()-1));
        System.out.println("First Element minus the last element is equal to "+result);
    }

```



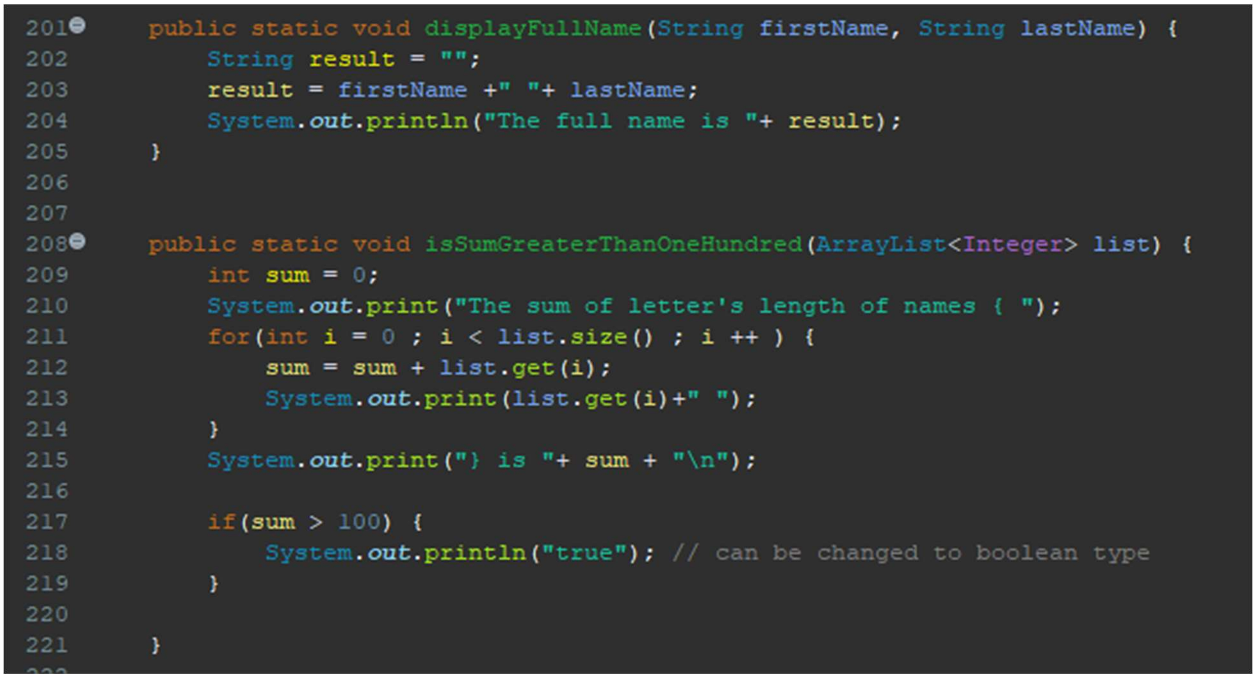
```java
    public static void displayAverageAge(ArrayList<Integer> list) {
        Double average = 0.0;
        Double sum = 0.0;
        System.out.print("The average of ages { ");
        for(int i = 0 ; i < list.size() ; i ++ ) {
            sum = sum + list.get(i);
            System.out.print(list.get(i)+" ");
        }

        average = sum / list.size();
        System.out.print("} is "+ average);
    }

    public static void calculateAverageLettersPerName(ArrayList<String> list) {
        Double average = 0.0;
        Double sum = 0.0;
        System.out.print("The average number of letter of names { ");
        for(int i = 0 ; i < list.size() ; i ++ ) {
            sum = sum + list.get(i).length();
            System.out.print(list.get(i)+" ");
        }

        average = sum / list.size();
        System.out.print("} is "+ average);

```



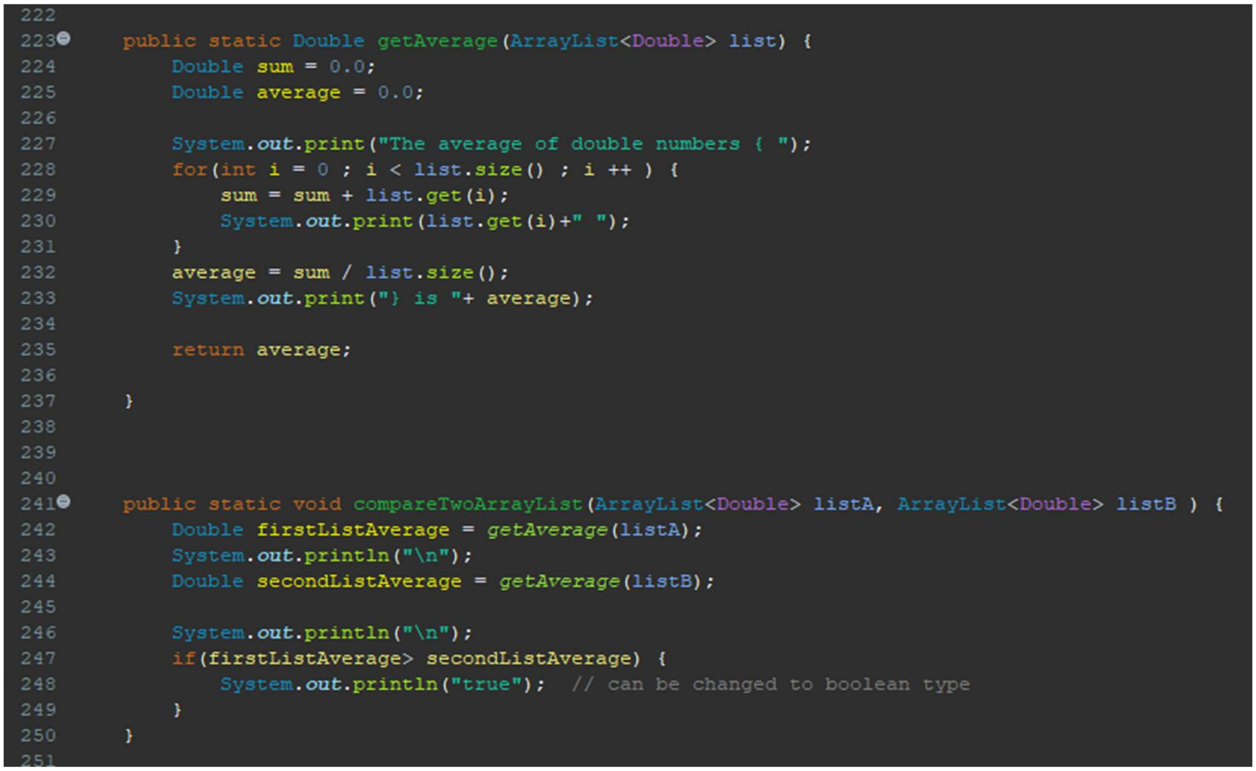
```java
    }

    public static void concatenateListOfValues(ArrayList<String> list) {
        String result = "";
        for(int i = 0 ; i < list.size() ; i ++ ) {
            result = result + list.get(i)+" ";
        }

        System.out.println(result);
    }

    public static void displayFirstElement(ArrayList<String> list){
        String firstElement = list.get(0);
        System.out.println("First Element:"+ firstElement);
    }

    public static void displayLastElement(ArrayList<String> list){
        String lastElement = list.get(list.size()-1); // given that list != 0 {you can have a null checker here
        System.out.println("Last Element:"+ lastElement);
    }

    public static ArrayList<Integer> getNameLengthsArray(ArrayList<String> list) {

        ArrayList<Integer> nameLengths = new ArrayList<>();
        System.out.print("The length of letters of names { ");
        for(int i = 0 ; i < list.size() ; i ++ ) {
            nameLengths.add(list.get(i).length());
            System.out.print(list.get(i).length()+" ");
        }
```



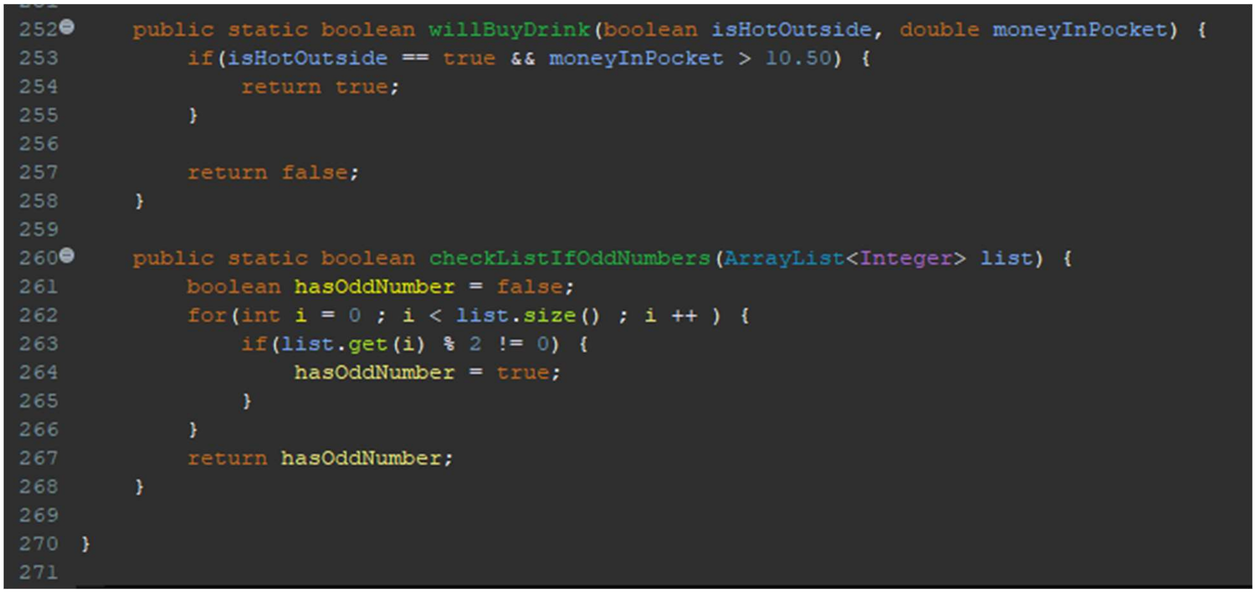
```java

        System.out.print("}");

        return nameLengths;

    }

    public static void sumOfNameLengths(ArrayList<Integer> list) {
        int sum = 0;
        System.out.print("The sum of letter's length of names { ");
        for(int i = 0 ; i < list.size() ; i ++ ) {
            sum = sum + list.get(i);
            System.out.print(list.get(i)+" ");
        }

        System.out.print("} is "+ sum);
    }

    public static void replicateStringValue(String word, int n) {
        String result = "";
        for(int i = 0 ; i < n ; i ++ ) {
            result = result + word;
        }

        System.out.println(result);
    }
```



```java
    public static void displayFullName(String firstName, String lastName) {
        String result = "";
        result = firstName +" "+ lastName;
        System.out.println("The full name is "+ result);
    }


    public static void isSumGreaterThanOneHundred(ArrayList<Integer> list) {
        int sum = 0;
        System.out.print("The sum of letter's length of names { ");
        for(int i = 0 ; i < list.size() ; i ++ ) {
            sum = sum + list.get(i);
            System.out.print(list.get(i)+" ");
        }
        System.out.print("} is "+ sum + "\n");

        if(sum > 100) {
            System.out.println("true"); // can be changed to boolean type
        }

    }
```

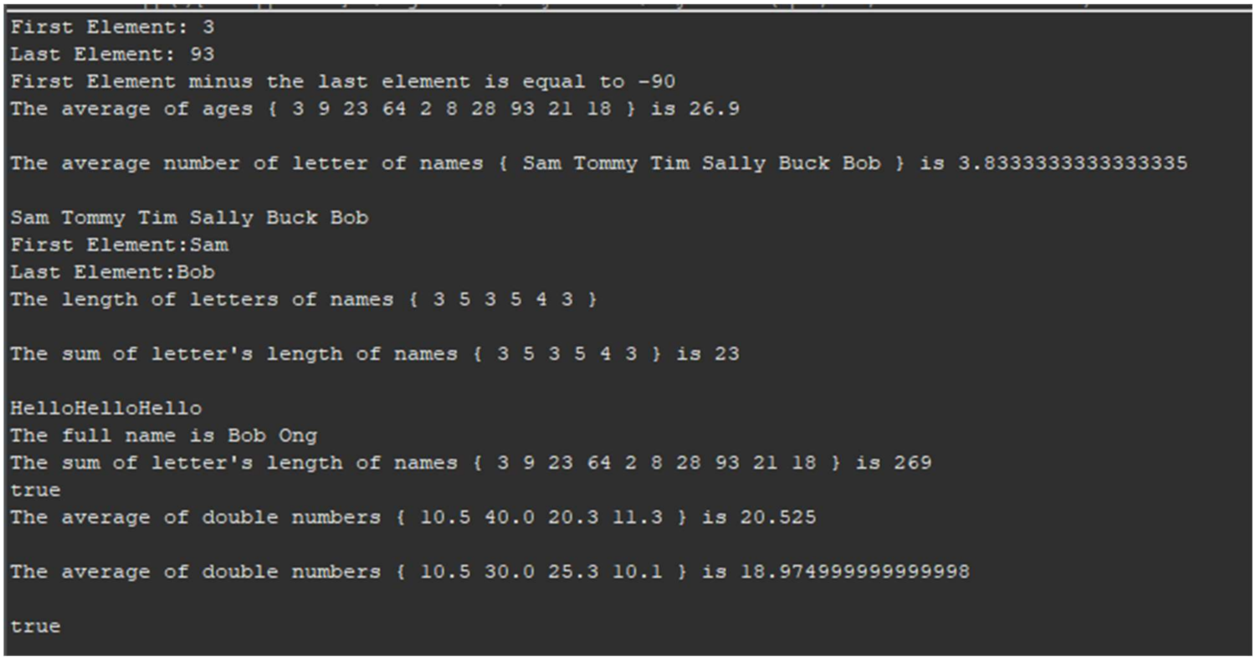


```java

    public static Double getAverage(ArrayList<Double> list) {
        Double sum = 0.0;
        Double average = 0.0;

        System.out.print("The average of double numbers { ");
        for(int i = 0 ; i < list.size() ; i ++ ) {
            sum = sum + list.get(i);
            System.out.print(list.get(i)+" ");
        }
        average = sum / list.size();
        System.out.print("} is "+ average);

        return average;

    }



    public static void compareTwoArrayList(ArrayList<Double> listA, ArrayList<Double> listB ) {
        Double firstListAverage = getAverage(listA);
        System.out.println("\n");
        Double secondListAverage = getAverage(listB);

        System.out.println("\n");
        if(firstListAverage> secondListAverage) {
            System.out.println("true");  // can be changed to boolean type
        }
    }

```

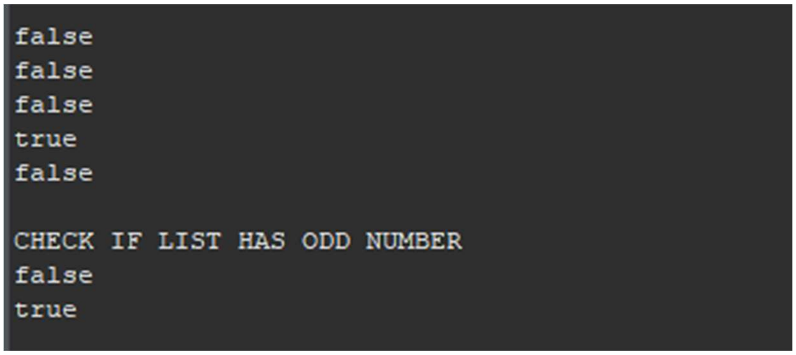


```java
    public static boolean willBuyDrink(boolean isHotOutside, double moneyInPocket) {
        if(isHotOutside == true && moneyInPocket > 10.50) {
            return true;
        }

        return false;
    }

    public static boolean checkListIfOddNumbers(ArrayList<Integer> list) {
        boolean hasOddNumber = false;
        for(int i = 0 ; i < list.size() ; i ++ ) {
            if(list.get(i) % 2 != 0) {
                hasOddNumber = true;
            }
        }
        return hasOddNumber;
    }

}

```

Screenshots of Running Application:



```
First Element: 3
Last Element: 93
First Element minus the last element is equal to -90
The average of ages { 3 9 23 64 2 8 28 93 21 18 } is 26.9

The average number of letter of names { Sam Tommy Tim Sally Buck Bob } is 3.8333333333333335

Sam Tommy Tim Sally Buck Bob
First Element:Sam
Last Element:Bob
The length of letters of names { 3 5 3 5 4 3 }

The sum of letter's length of names { 3 5 3 5 4 3 } is 23

HelloHelloHello
The full name is Bob Ong
The sum of letter's length of names { 3 9 23 64 2 8 28 93 21 18 } is 269
true
The average of double numbers { 10.5 40.0 20.3 11.3 } is 20.525

The average of double numbers { 10.5 30.0 25.3 10.1 } is 18.974999999999998

true
```



```
false
false
false
true
false

CHECK IF LIST HAS ODD NUMBER
false
true
```

URL to GitHub Repository:

https://github.com/ailimutan/Java-week3-codingassignment