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

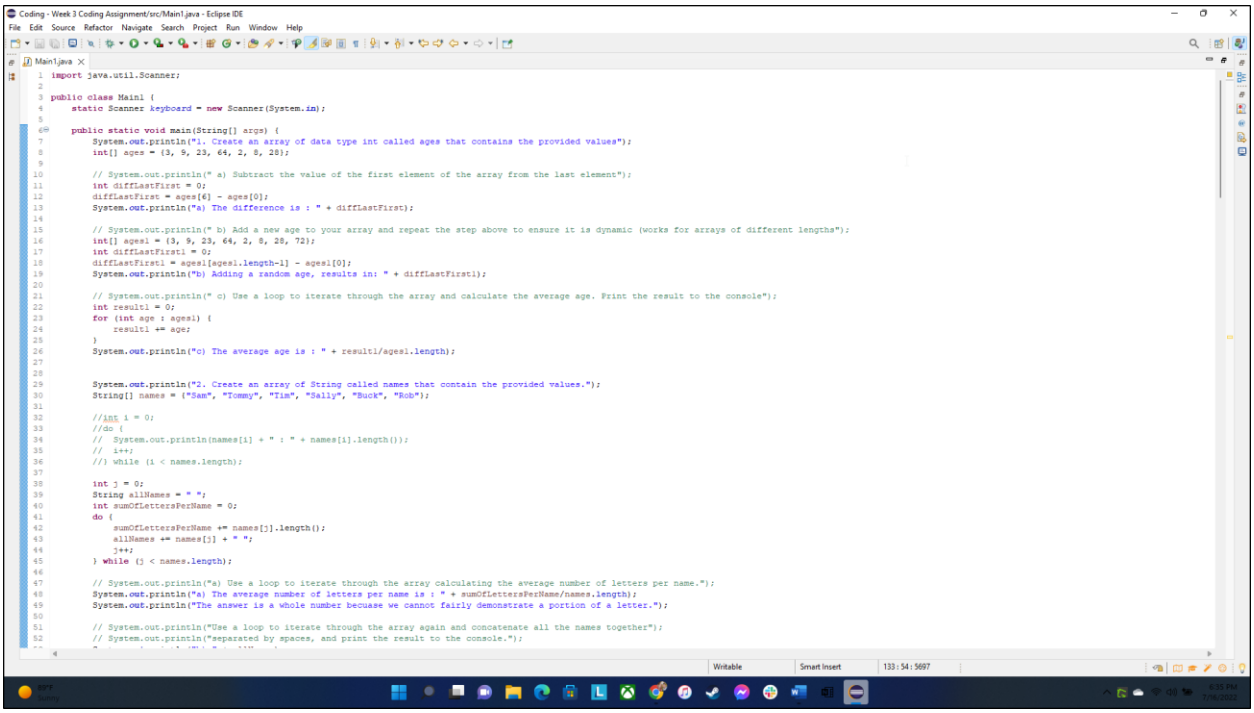
Instructions: In Eclipse, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in 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.

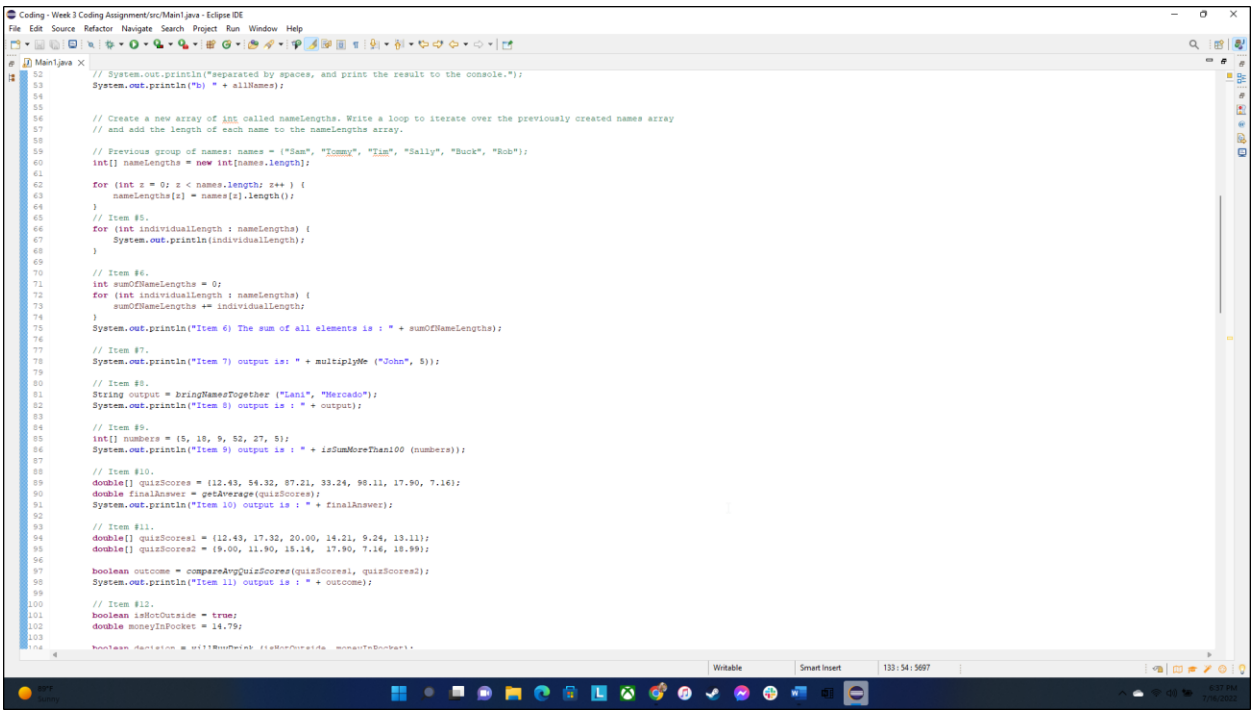
Coding Steps:

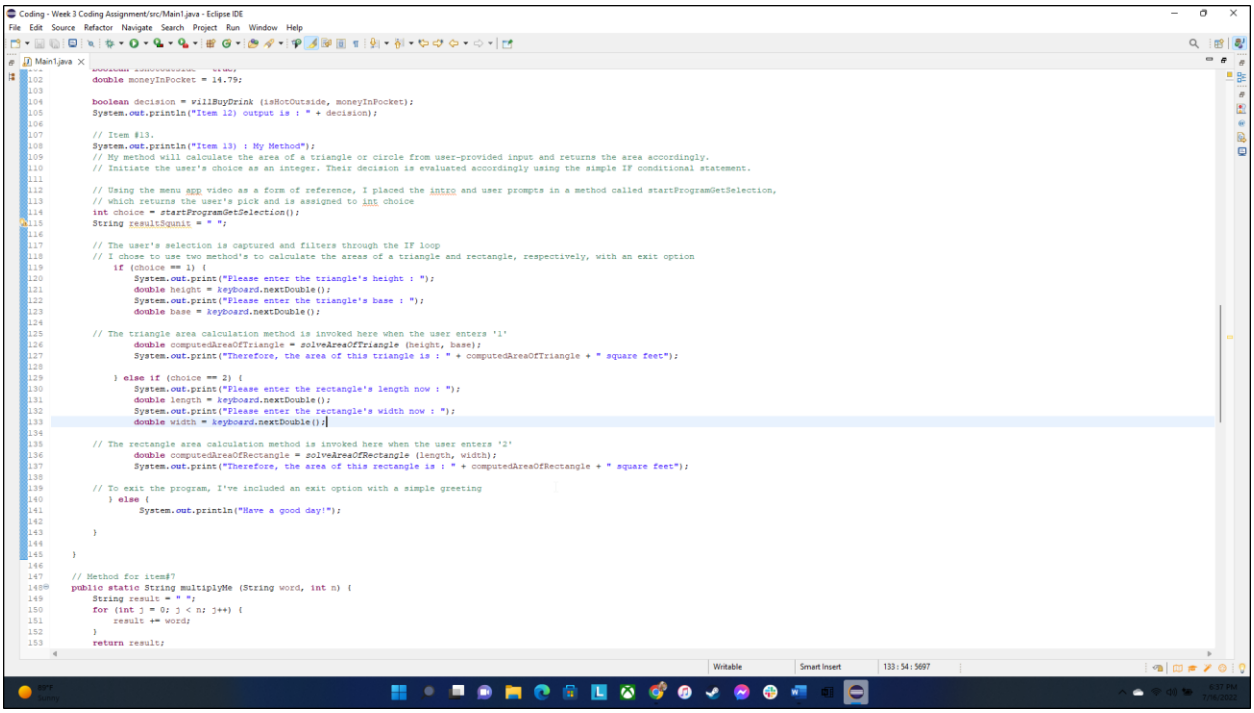
1. Create an array of int called ages that contains the following values: 3, 9, 23, 64, 2, 8, 28, 93.
    a. Programmatically subtract the value of the first element in the array from the value in the last element of the array (i.e. do not use ages[7] in your code). Print the result to the console.
    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.

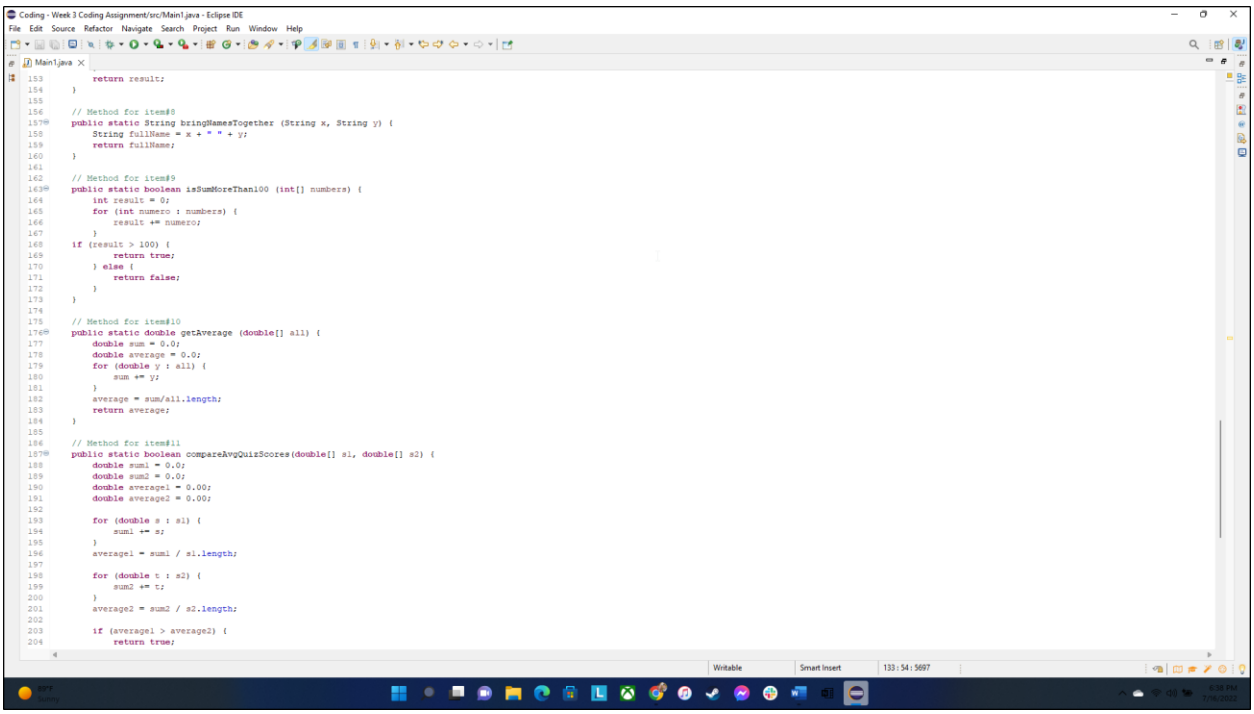
3. How do you access the last element of any array? Accessing the last element of an array is accomplished by: Using the .length() of the array minus 1. Because arrays are zero-based, when we declare any array with **n** items the first element is always at location 0 and the last element is at location (**n** – 1)
4. How do you access the first element of any array? You would always access the first element at location 0 because arrays are zero-based, therefore, the index locator always starts at 0.
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. **Answer:** I chose the area of a triangle for my method. It requires two inputs from the user and the area of a triangle will be returned. Both inputs are declared as doubles.

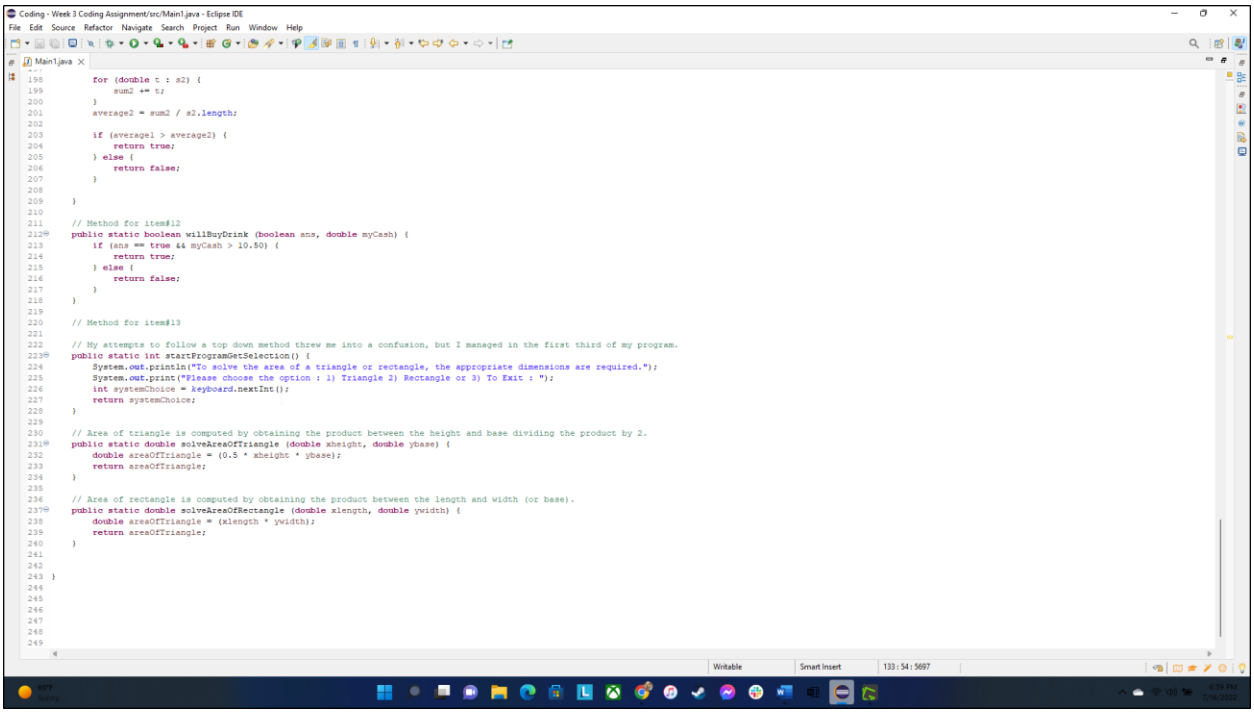
Screenshots of Code:


Coding - Week 3 Coding Assignment/src/Main1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Main1.java
import java.util.Scanner;
public class Main1 {
static Scanner keyboard = new Scanner(System.in);
public static void main(String[] args) {
System.out.println("1. Create an array of data type int called ages that contains the provided values");
int[] ages = {3, 9, 23, 64, 2, 8, 28};
// System.out.println(" a) Subtract the value of the first element of the array from the last element");
int diffLastFirst = 0;
diffLastFirst = ages[6] - ages[0];
System.out.println("a) The difference is : " + diffLastFirst);
// System.out.println(" b) Add a new age to your array and repeat the step above to ensure it is dynamic (works for arrays of different lengths");
int[] ages1 = {3, 9, 23, 64, 2, 8, 28, 72};
int diffLastFirst1 = 0;
diffLastFirst1 = ages1[ages1.length-1] - ages1[0];
System.out.println("b) Adding a random age, results in: " + diffLastFirst1);
// System.out.println(" c) Use a loop to iterate through the array and calculate the average age. Print the result to the console");
int result1 = 0;
for (int age : ages1) {
result1 += age;
}
System.out.println("c) The average age is : " + result1/ages1.length);
System.out.println("2. Create an array of String called names that contain the provided values.");
String[] names = {"Sam", "Tommy", "Tim", "Sally", "Buck", "Rob"};
//int i = 0;
//do {
// System.out.println(names[i] + " : " + names[i].length());
// i++;
//} while (i < names.length);
int j = 0;
String allNames = " ";
int sumOfLettersPerName = 0;
do {
sumOfLettersPerName += names[j].length();
allNames += names[j] + " ";
j++;
} while (j < names.length);
// System.out.println("a) Use a loop to iterate through the array calculating the average number of letters per name.");
System.out.println("a) The average number of letters per name is : " + sumOfLettersPerName/names.length);
System.out.println("The answer is a whole number because we cannot fairly demonstrate a portion of a letter.");
// System.out.println("Use a loop to iterate through the array again and concatenate all the names together");
// System.out.println("separated by spaces, and print the result to the console.");
Writable
Smart Insert
133 : 54 : 5697


Coding - Week 3 Coding Assignment/src/Main1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Main1.java
// System.out.println("separated by spaces, and print the result to the console.");
System.out.println("b) " + allNames);
// 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.
// Previous group of names: names = {"Sam", "Tommy", "Tim", "Sally", "Buck", "Rob"};
int[] nameLengths = new int[names.length];
for (int z = 0; z < names.length; z++) {
nameLengths[z] = names[z].length();
}
// Item #5.
for (int individualLength : nameLengths) {
System.out.println(individualLength);
}
// Item #6.
int sumOfNameLengths = 0;
for (int individualLength : nameLengths) {
sumOfNameLengths += individualLength;
}
System.out.println("Item 6) The sum of all elements is : " + sumOfNameLengths);
// Item #7.
System.out.println("Item 7) output is: " + multiplyMe ("John", 5));
// Item #8.
String output = bringNamesTogether ("Lani", "Mercado");
System.out.println("Item 8) output is : " + output);
// Item #9.
int[] numbers = {5, 18, 9, 52, 27, 5};
System.out.println("Item 9) output is : " + isSumMoreThan100 (numbers));
// Item #10.
double[] quizScores = {12.43, 54.32, 87.21, 33.24, 98.11, 17.90, 7.16};
double finalAnswer = getAverage(quizScores);
System.out.println("Item 10) output is : " + finalAnswer);
// Item #11.
double[] quizScores1 = {12.43, 17.32, 20.00, 14.21, 9.24, 13.11};
double[] quizScores2 = {9.00, 11.90, 15.14, 17.90, 7.16, 18.99};
boolean outcome = compareAvgQuizScores(quizScores1, quizScores2);
System.out.println("Item 11) output is : " + outcome);
// Item #12.
boolean isNotOutside = true;
double moneyInPocket = 14.79;
Writable
Smart Insert
133 : 54 : 5697

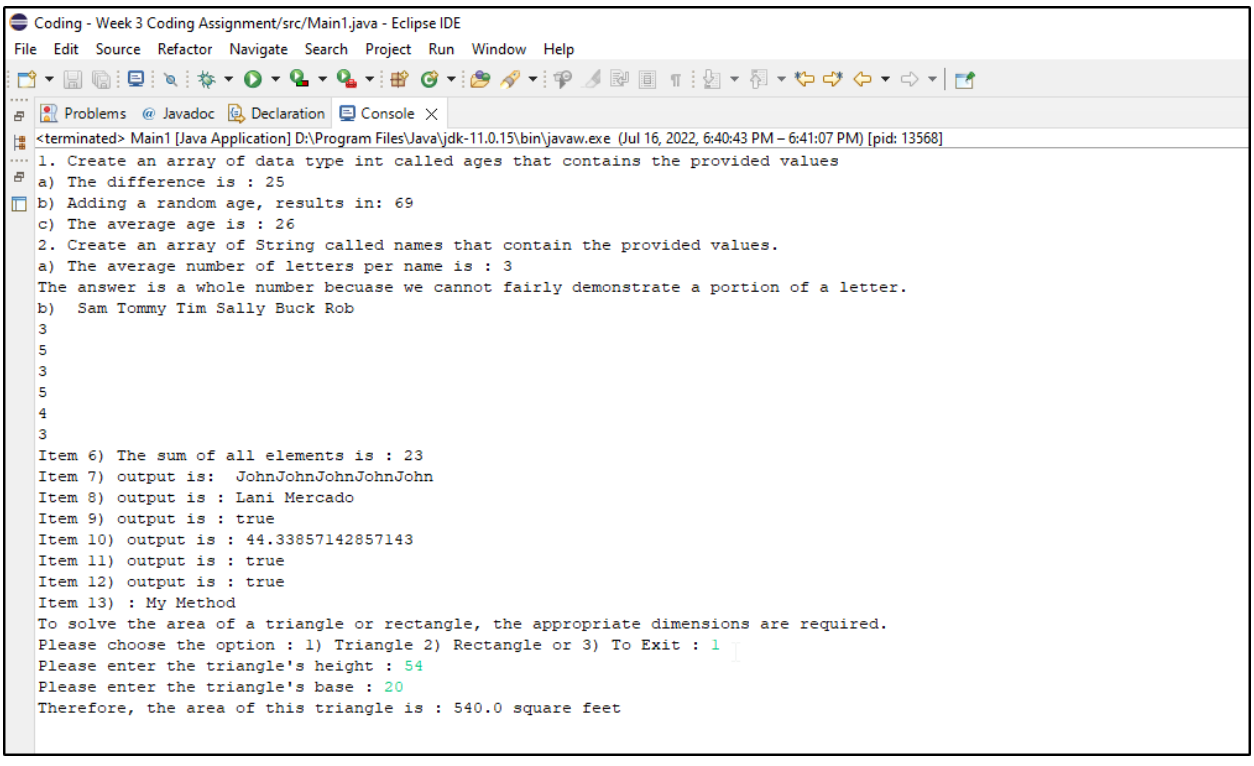

Coding - Week 3 Coding Assignment/src/Main1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Main1.java
double moneyInPocket = 14.79;
boolean decision = willBuyDrink (isHotOutside, moneyInPocket);
System.out.println("Item 12) output is : " + decision);
// Item #13.
System.out.println("Item 13) : My Method");
// My method will calculate the area of a triangle or circle from user-provided input and returns the area accordingly.
// Initiate the user's choice as an integer. Their decision is evaluated accordingly using the simple IF conditional statement.
// Using the menu app video as a form of reference, I placed the intro and user prompts in a method called startProgramGetSelection,
// which returns the user's pick and is assigned to int choice
int choice = startProgramGetSelection();
String resultSqunit = " ";
// The user's selection is captured and filters through the IF loop
// I chose to use two method's to calculate the areas of a triangle and rectangle, respectively, with an exit option
if (choice == 1) {
System.out.print("Please enter the triangle's height : ");
double height = keyboard.nextDouble();
System.out.print("Please enter the triangle's base : ");
double base = keyboard.nextDouble();
// The triangle area calculation method is invoked here when the user enters '1'
double computedAreaOfTriangle = solveAreaOfTriangle (height, base);
System.out.print("Therefore, the area of this triangle is : " + computedAreaOfTriangle + " square feet");
} else if (choice == 2) {
System.out.print("Please enter the rectangle's length now : ");
double length = keyboard.nextDouble();
System.out.print("Please enter the rectangle's width now : ");
double width = keyboard.nextDouble();
// The rectangle area calculation method is invoked here when the user enters '2'
double computedAreaOfRectangle = solveAreaOfRectangle (length, width);
System.out.print("Therefore, the area of this rectangle is : " + computedAreaOfRectangle + " square feet");
// To exit the program, I've included an exit option with a simple greeting
} else {
System.out.println("Have a good day!");
}
}
// Method for item#7
public static String multiplyMe (String word, int n) {
String result = " ";
for (int j = 0; j < n; j++) {
result += word;
}
return result;
Writable
Smart Insert
133 : 54 : 5697


Coding - Week 3 Coding Assignment/src/Main1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Main1.java
return result;
}
// Method for item#8
public static String bringNamesTogether (String x, String y) {
String fullName = x + " " + y;
return fullName;
}
// Method for item#9
public static boolean isSumMoreThan100 (int[] numbers) {
int result = 0;
for (int numero : numbers) {
result += numero;
}
if (result > 100) {
return true;
} else {
return false;
}
}
// Method for item#10
public static double getAverage (double[] all) {
double sum = 0.0;
double average = 0.0;
for (double y : all) {
sum += y;
}
average = sum/all.length;
return average;
}
// Method for item#11
public static boolean compareAvgQuizScores(double[] s1, double[] s2) {
double sum1 = 0.0;
double sum2 = 0.0;
double average1 = 0.00;
double average2 = 0.00;
for (double s : s1) {
sum1 += s;
}
average1 = sum1 / s1.length;
for (double t : s2) {
sum2 += t;
}
average2 = sum2 / s2.length;
if (average1 > average2) {
return true;
Writable
Smart Insert
133 : 54 : 5697

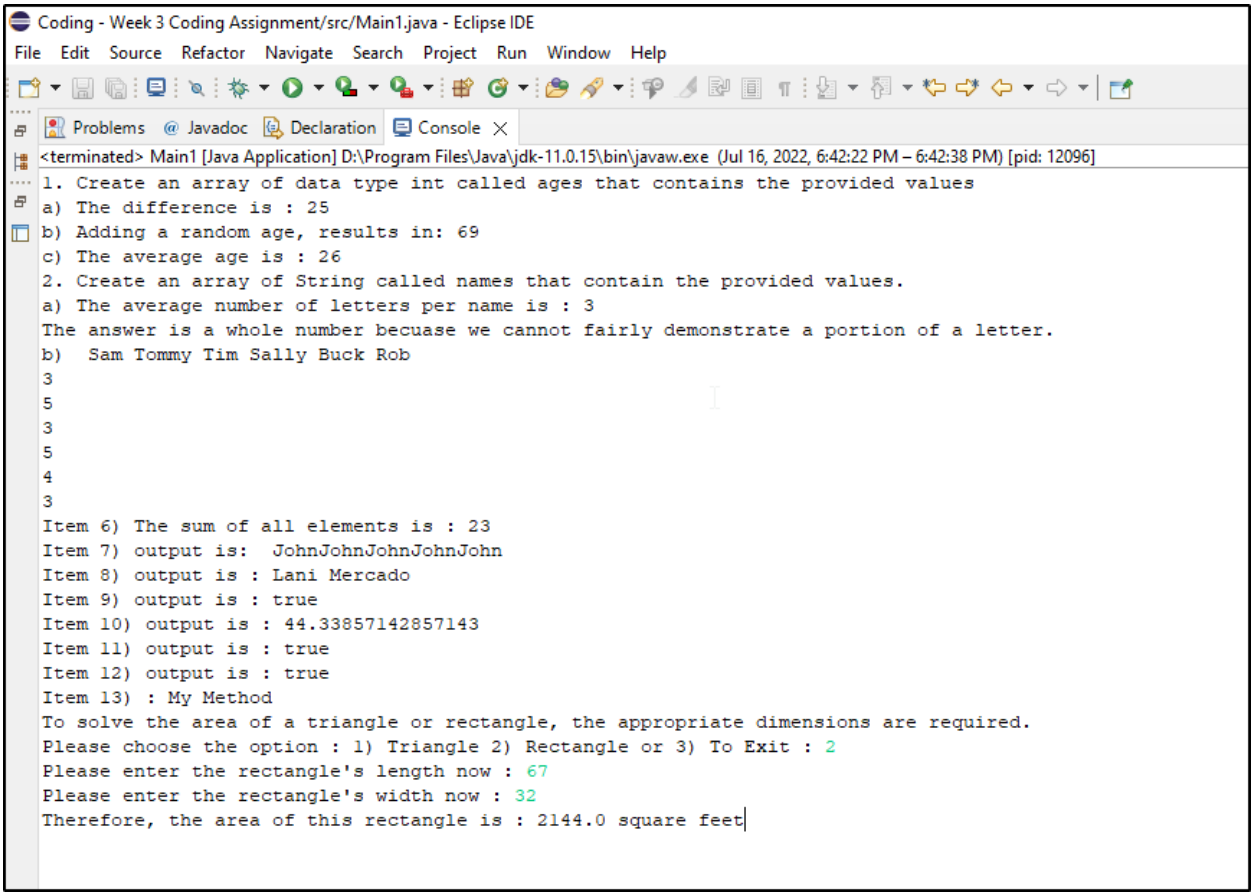


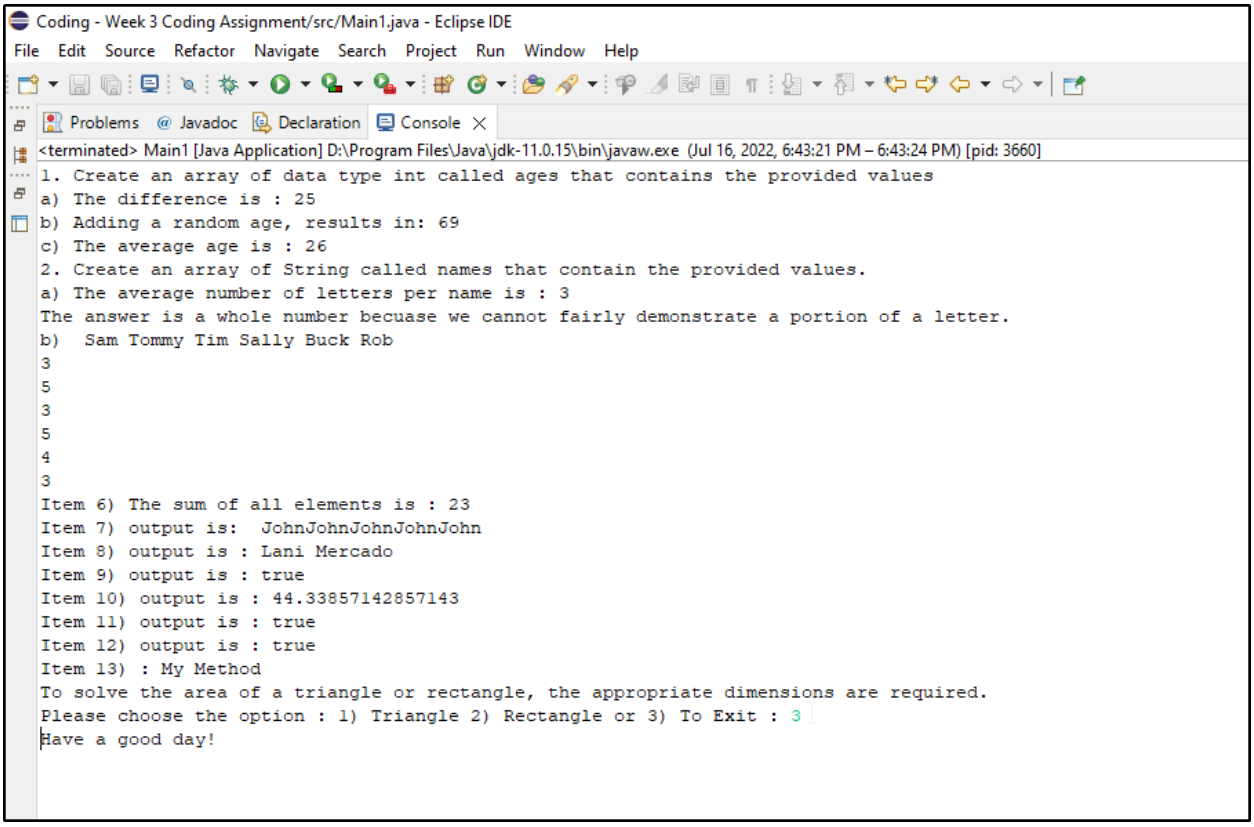
```
        for (double t : s2) {
            sum2 += t;
        }
        average2 = sum2 / s2.length;

        if (average1 > average2) {
            return true;
        } else {
            return false;
        }

    }

    // Method for item#12
    public static boolean willBuyDrink (boolean ans, double myCash) {
        if (ans == true && myCash > 10.50) {
            return true;
        } else {
            return false;
        }
    }

    // Method for item#13

    // My attempts to follow a top down method threw me into a confusion, but I managed in the first third of my program.
    public static int startProgramGetSelection() {
        System.out.println("To solve the area of a triangle or rectangle, the appropriate dimensions are required.");
        System.out.print("Please choose the option : 1) Triangle 2) Rectangle or 3) To Exit : ");
        int systemChoice = keyboard.nextInt();
        return systemChoice;
    }

    // Area of triangle is computed by obtaining the product between the height and base dividing the product by 2.
    public static double solveAreaOfTriangle (double xheight, double ybase) {
        double areaOfTriangle = (0.5 * xheight * ybase);
        return areaOfTriangle;
    }

    // Area of rectangle is computed by obtaining the product between the length and width (or base).
    public static double solveAreaOfRectangle (double xlength, double ywidth) {
        double areaOfTriangle = (xlength * ywidth);
        return areaOfTriangle;
    }

}
```

Screenshots of Running Application:



```
Coding - Week 3 Coding Assignment/src/Main1.java - Eclipse IDE
File  Edit  Source  Refactor  Navigate  Search  Project  Run  Window  Help
Problems  Javadoc  Declaration  Console
<terminated> Main1 [Java Application] D:\Program Files\Java\jdk-11.0.15\bin\javaw.exe  (Jul 16, 2022, 6:40:43 PM – 6:41:07 PM) [pid: 13568]
1. Create an array of data type int called ages that contains the provided values
a) The difference is : 25
b) Adding a random age, results in: 69
c) The average age is : 26
2. Create an array of String called names that contain the provided values.
a) The average number of letters per name is : 3
The answer is a whole number becuase we cannot fairly demonstrate a portion of a letter.
b)  Sam Tommy Tim Sally Buck Rob
3
5
3
5
4
3
Item 6) The sum of all elements is : 23
Item 7) output is:  JohnJohnJohnJohnJohn
Item 8) output is : Lani Mercado
Item 9) output is : true
Item 10) output is : 44.33857142857143
Item 11) output is : true
Item 12) output is : true
Item 13) : My Method
To solve the area of a triangle or rectangle, the appropriate dimensions are required.
Please choose the option : 1) Triangle 2) Rectangle or 3) To Exit : 1
Please enter the triangle's height : 54
Please enter the triangle's base : 20
Therefore, the area of this triangle is : 540.0 square feet
```


Coding - Week 3 Coding Assignment/src/Main1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Problems Javadoc Declaration Console
<terminated> Main1 [Java Application] D:\Program Files\Java\jdk-11.0.15\bin\javaw.exe (Jul 16, 2022, 6:42:22 PM – 6:42:38 PM) [pid: 12096]
1. Create an array of data type int called ages that contains the provided values
a) The difference is : 25
b) Adding a random age, results in: 69
c) The average age is : 26
2. Create an array of String called names that contain the provided values.
a) The average number of letters per name is : 3
The answer is a whole number becuase we cannot fairly demonstrate a portion of a letter.
b) Sam Tommy Tim Sally Buck Rob
3
5
3
5
4
3
Item 6) The sum of all elements is : 23
Item 7) output is: JohnJohnJohnJohnJohn
Item 8) output is : Lani Mercado
Item 9) output is : true
Item 10) output is : 44.33857142857143
Item 11) output is : true
Item 12) output is : true
Item 13) : My Method
To solve the area of a triangle or rectangle, the appropriate dimensions are required.
Please choose the option : 1) Triangle 2) Rectangle or 3) To Exit : 2
Please enter the rectangle's length now : 67
Please enter the rectangle's width now : 32
Therefore, the area of this rectangle is : 2144.0 square feet



URL to GitHub Repository:

https://github.com/aslbuhtig61108/Week-3-Coding-Assignment/blob/main/Week%203%20Coding%20Assignment/src/Main1.java