Intro to Java Week 2 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. What do each of the following Boolean expressions evaluate to?

Boolean Expression	Answer
true && false	false
true || false	true
false && false	false
true && (false || true)	true
false || (true && false)	false
false || 1 < 5	true
5 >= 4 && 1 > 3	false
10 < 4 || 1 > 4	false
12 >= 2 && 1 < 24	true
“Hello”.charAt(0) == ‘h’	false

2. In Eclipse, create the following Boolean variables and choose what values they hold:
    a. isHotOutside
    b. isWeekday
    c. hasMoneyInPocket
3. Create the following variables (not boolean type, choose the best data type for the variable):
    a. costOfMilk
    b. moneyInWallet
    c. thirstLevel (how thirsty you are on a scale of 1-10)
4. Using the variables you created above and Boolean operators, create variables for the following scenarios:
    a. shouldByIcecream – this should be true if it is hot outside and there is money in your pocket
    b. willGoSwimming – this should be true if it is hot outside and it is not a weekday
    c. isAGoodDay – this should be true if it is hot outside, there is money in your pocket, and it is not a weekday
    d. willBuyMilk – this should be true if it is hot outside, and thirstLevel is greater than or equal to 3, and moneyInWallet is greater than or equal to 2 times the cost of milk.

Example: If I had the variables isWeekday and isSummer and I was going to create a variable isSchoolDay, I would do something like the following:

boolean isSchoolDay = isWeekday && !isSummer;

5. Create a new class called Loops. In the main method of this class, create the following loops with any variables you feel are needed:
    a. A while loop that prints all even numbers from 0 to 100
    b. A while loop that prints every 3rd number going backwards from 100 until we reach 0
    c. A for loop that prints every other number from 1 to 100
    d. A for loop that prints every number from 0 to 100, but if the number is divisible by 3, it prints “Hello” instead of the number, and if the number is divisible by 5, it prints “World” instead of the number, and if it is divisible by both 3 and 5, it prints “HelloWorld” instead of the number.

Screenshots of Code:

Loops.java | Console

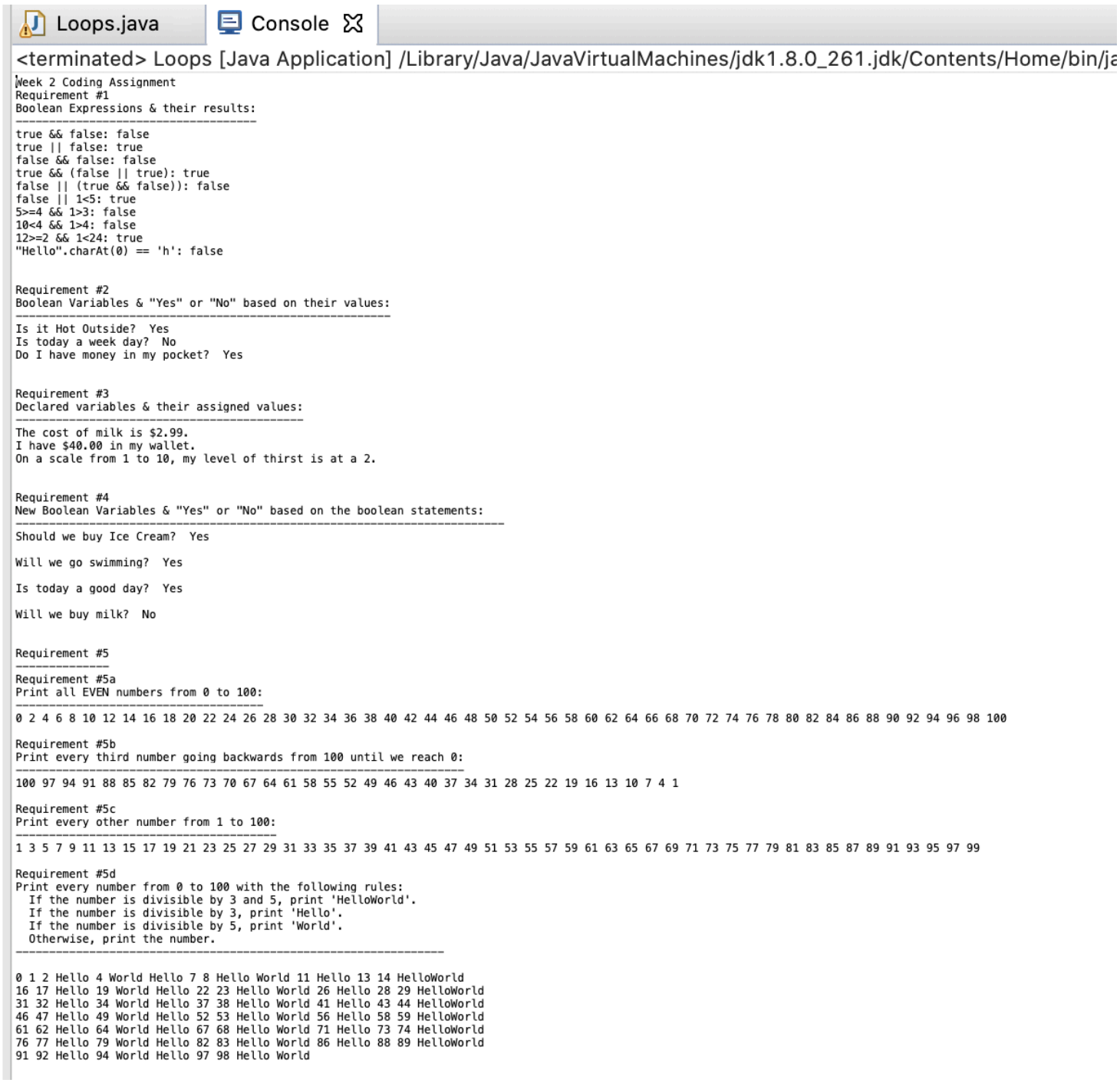
```java
package com.lisasmith.week2;

public class Loops {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        // Requirement 1
        // Evaluate and print out the following Boolean Expressions:
        System.out.println("Week 2 Coding Assignment");
        System.out.println("Requirement #1");
        System.out.println("Boolean Expressions & their results:");
        System.out.println("-----------------------------------");
        System.out.println("true && false: " + (true && false));
        System.out.println("true || false: " + (true || false));
        System.out.println("false && false: " + (false && false));
        System.out.println("true && (false || true): "
                + (true && (false || true)));
        System.out.println("false || (true && false)): "
                + (false || (true && false)));
        System.out.println("false || 1<5: " + (false || 1<5));
        System.out.println("5>=4 && 1>3: " + (5>=4 && 1>3));
        System.out.println("10<4 && 1>4: " + (10<4 || 1>4));
        System.out.println("12>=2 && 1<24: " + (12>=2 && 1<24));
        System.out.println("\"Hello\".charAt(0) == 'h': "
                +  ("Hello".charAt(0) == 'h'));
        System.out.println();
        System.out.println();

        // Requirement 2
        // Boolean variables assigned values
        boolean isHotOutside = true;
        boolean isWeekDay = false;
        boolean hasMoneyInPocket = true;

        // Printing out the Requirement 2 variables
        // using if-else statements
        // and appropriate answers based on values
        System.out.println("Requirement #2");
        System.out.println("Boolean Variables & \"Yes\" or \"No\" based on their values:");
        System.out.println("-----------------------------------------------------------");
        System.out.print("Is it Hot Outside?  ");
        if (isHotOutside) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }

        System.out.print("Is today a week day?  ");
        if (isWeekDay) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }

        System.out.print("Do I have money in my pocket?  ");
        if (hasMoneyInPocket) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }
        System.out.println();
        System.out.println();


        // Requirement 3
        // Variables with appropriate data types and values
        double costOfMilk = 2.99;
        double moneyInWallet = 40.00;
        byte thirstLevel = 2; // Restricted to a scale from 1-10


        // Printing out the Requirement 3 variables
        // showing chosen values for each variable
        System.out.println("Requirement #3");
        System.out.println("Declared variables & their assigned values:");
        System.out.println("-------------------------------------------");
        System.out.println("The cost of milk is $" + String.format("%.2f", costOfMilk) + ".");
        System.out.println ("I have $" + String.format("%.2f", moneyInWallet) + " in my wallet.");
        System.out.println ("On a scale from 1 to 10, my level of thirst"
                + " is at a "+ thirstLevel + ".");
        System.out.println();
        System.out.println();

        // Requirement 4
```

Loops.java | Console

```
        // Requirement 4
        // Use variables and boolean operators to create new variables
        boolean shouldBuyIcecream = isHotOutside && hasMoneyInPocket;
        boolean willGoSwimming = isHotOutside && !isWeekDay;
        boolean isAGoodDay = isHotOutside && hasMoneyInPocket && !isWeekDay;
        boolean willBuyMilk = isHotOutside && thirstLevel >= 3 && (moneyInWallet >= (2 * costOfMilk));

        // Based on new boolean variables, print the answer to each of the following
        // questions:
        // Print either "Yes" or "No" depending on the value of the new booleans.
        System.out.println("Requirement #4");
        System.out.println("New Boolean Variables & \"Yes\" or \"No\" based on the boolean statements:");
        System.out.println("-----------------------------------------------------------------------------");
        System.out.print("Should we buy Ice Cream?  ");
        if (shouldBuyIcecream) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }
        System.out.println();

        System.out.print("Will we go swimming?  ");
        if (willGoSwimming) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }
        System.out.println();

        System.out.print("Is today a good day?  ");
        if (isAGoodDay) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }
        System.out.println();

        System.out.print("Will we buy milk?  ");
        if (willBuyMilk) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }
        System.out.println();
        System.out.println();

        // Requirement 5.
        // Using loops to print out a variety of different requirements

        System.out.println("Requirement #5");
        System.out.println("--------------");

        // Requirement 5a.
        // Create a while loop that prints all even numbers from 0 to 100.

        System.out.println("Requirement #5a");
        System.out.println("Print all EVEN numbers from 0 to 100:");
        System.out.println("-------------------------------------");

        int counter = 0;
        while (counter <= 100) {
            if (counter % 2 == 0) {
                System.out.print(counter + " ");
            }
            counter++;
        }
        System.out.println();
        System.out.println();

        // Requirement 5b.
        // Create a while loop that prints every third number going backwards from 100
        // until we reach 0.

        System.out.println("Requirement #5b");
        System.out.println("Print every third number going backwards from 100 until we reach 0:");
        System.out.println("-------------------------------------------------------------------");

        int backwardscounter = 100;
        while (backwardscounter >= 0) {
            System.out.print(backwardscounter + " ");
            backwardscounter = backwardscounter - 3;
        }
        System.out.println();
        System.out.println();
```

```java
        // Requirement 5c.
        // Create a for loop that prints every other number from 1 to 100.

        System.out.println("Requirement #5c");
        System.out.println("Print every other number from 1 to 100:");
        System.out.println("-------------------------------------");

        for (int i = 1; i <= 100; i = i + 2) {
            System.out.print(i + " ");
        }

        System.out.println();
        System.out.println();

        // Requirement 5d.
        // Create a for loop that prints every number from 0 to 100, with the following
        // exceptions:
        //          If the number is divisible by 3, print "Hello" instead of the number,
        //          and if the number is divisible by 5, print "World" instead of the number,
        //          and if the number is divisible by both 3 and 5, print "Hello World" instead
        //          of the number.

        System.out.println("Requirement #5d");
        System.out.println("Print every number from 0 to 100 with the following rules:");
        System.out.println("  If the number is divisible by 3 and 5, print 'HelloWorld'.");
        System.out.println("  If the number is divisible by 3, print 'Hello'.");
        System.out.println("  If the number is divisible by 5, print 'World'.");
        System.out.println("  Otherwise, print the number.");
        System.out.println("-----------------------------------------------------------------");
        System.out.println();

        for (int c = 0; c <= 100; c++) {
            if ((c % 3 == 0) && (c % 5 == 0) && (c != 0)) {
                System.out.print("HelloWorld ");
                System.out.println();
            } else if ((c % 3 == 0) && (c != 0)) {
                System.out.print("Hello ");
            } else if ((c % 5 == 0) && (c != 0)) {
                System.out.print("World ");

            } else {
                System.out.print(c + " ");
            }
        }

    }

}
```

Screenshots of Running Application:



URL to GitHub Repository: https://github.com/sw-dev-lisa-s-nh/IntroToJava-week2