Lab 5

Booleans, Comparisons, Conditionals

Objectives of this Lab:

1. Learn about Java Boolean data type
2. Practice with comparison operators
3. Write conditional and switch statements

Update your eID in zyBooks

In order for zyBooks to talk to Canvas, your eid must be in zyBooks. This is entered in the "Student ID" field when registering. This must be your eid and not your CSUID. Your eid is the username you typed to log on to the CS Linux systems and to log into Canvas. Your CSUID is a 9-Digit number that is on the front of your student ID card. Treat your username with the same privacy you would treat your email address. Treat your CSUID with the same privacy as a Social Security Number (SSN).

Getting Started

Create a new Java Project named Lab5, and make a class named Lab5. Include the standard header that we have been using at the top of your class (points will be taken off for not having this):

```
//Assignment: Lab5
//Name: YOUR NAME
//Date: 6/25/2019
//Class: CS163
```

Boolean Variables

Your TA will explain Boolean variables, comparison operators, logical operators, if statements, and switch statements. After that you will code. See the sample output below to see exactly what should be printed. Following the instructions below to explore Boolean variables.

1. Declare a variable named `boolean0` of type boolean, with an initial value of true.
2. Declare a variable named `boolean1` of type boolean, with an initial value of false.
3. Write two System.out.println statements that print `boolean0` and `boolean1`, as shown below.
4. **NOTE:** Do not put quotes around boolean values, they aren't strings!

Comparison Operators

The instructions below introduce comparison operators, which are used to compare integer and floating-point values and other primitive types such as characters.

1. Declare a variable named `equals` of type boolean, and set its value to the comparison (11==33).
2. Declare a variable named `notEquals` of type boolean, and set its value to the comparison (22 != 44).
3. Declare a variable named `greaterThan` of type boolean, and set its value to the comparison (15 > 25).
4. Declare a variable named `lessThan` of type boolean, and set its value to the comparison (--11 < 13).
5. Write `System.out.println` statement to print each variable above, as shown below.

Conditional Statements

The instructions below introduce conditional statements, which use if, if/else, and if/else if/else to conditionally handle different values of integers.

1. Declare a `Scanner` and initialize it to read from the keyboard.
2. Declare integer variables named `integer0` and `integer1`.
3. Prompt the user as follows: "`Enter first integer: `" and read `integer0` from the keyboard.
4. Prompt the user as follows: "`Enter second integer: `" and read `integer1` from the keyboard.
5. Write an if statement that prints "`First integer is larger than the second.`" when `integer0 > integer1`.
6. Add an else if statement that prints "`Second integer is larger than the first.`" when `integer1 > integer0`.
7. Finish with an else statement that prints "`Both integers are equal.`" when `integer0 == integer1`.

Switch Statements

The program segment that you will write in this section introduces switch statements, which are really just a more efficient way of writing conditionals. You can write switch statements for integer values, including characters, or String values. Here are the instructions:

1. Declare a String variable named `myString`.

2. Use the Scanner from the previous section to read it, using the prompt: "Enter a state: ".

3. NOTE: You must use the `next()` method in Scanner, not nextLine().

4. Write a switch statement that does the following:
- Prints "Southern State" if `myString` is "Alabama" or "Florida".
- Prints "Western State" if `myString` is "Colorado" or "Utah".
- Prints "Northern State" if `myString` is "Michigan" or "Wisconsin".
- Prints "Eastern State" if `myString` is "Delaware" or "Maine".
- Prints "Not sure where that is, but must be the Midwest!" for any other value of `myString`.

Sample Output

```
boolean0 is true.
boolean1 is false.
(11 == 33) is false
(22 != 44) is true
(15 > 25) is false
(-11 < 13) is true
Enter first integer: 123
Enter second integer: 234
Second integer is larger than the first.
Enter a state: Colorado
Western State
```

Finishing Up

- Make sure that your Lab5 compiles and produces 11 lines of output.
- Have your TA review your output for credit.
- Submit your Lab5 to GitHub Classroom at this link:
  https://classroom.github.com/a/2sbxyACl
- Show your TA an activated zyBooks with your eid in the Student ID field.