

Lab 8

Control Structures, String Manipulation, & Debugging

The following exercises are to be completed during lab class. If you do not have time to finish during lab, they must be completed before the beginning of the following lab session.

Set-Up

- Create a new project in your Eclipse workspace named: **Lab08**
- In the *src* folder, create a package named: **edu.ilstu**
- Import into this new package the following:
 - SwitchErrors.java
 - FindTheErrors.java

Part 1 – Calculate Change

Write the Java source code to implement your pseudocode solution written for Pre-Lab Part 1. Everything can be written in one class named ChangeMaker with a main method.

Part 2 – String Manipulation

Write a class called GeographicAreaLookup. Implement your pseudocode solution written for Pre-Lab Part 2 in a method called `determineAreaByZip`. The method should receive a zip code and return the appropriate geographic area. (This class has no instance variables.)

Create a GeographicAreaTester with a main method. Request a zip code from the user, call the `determineAreaByZip` method to get the geographic area, and print both the zip code and geographic area.

Sample run

Enter a zip code: **61790**

61790 is in the Central Plains area.

Part 3 - Debugging

Open the provided file `SwitchErrors.java`. The Java source code is shown below. The program evaluates an integer entered by the user and displays the color assigned to the integer. Compile the program. The program has several syntax and logic errors. Fix the syntax errors and compile and run the program. Does the program run as you expected? Locate and correct the errors in the program logic. Be sure to make use of the debugger available in Eclipse to help identify errors.

```
package edu.ilstu;

import java.util.Scanner;

public class SwitchErrors
{
    public static void main(String[] args)
    {
        Scanner keyboard = new Scanner(System.out);

        System.out.println("Key: 1=blue, 2=red, 3=green");
        System.out.print("Enter a number and I'll return ");
        System.out.print(" the corresponding color. ");
        number = keyboard.nextInt();

        switch(number)
        {
            case 1:
                System.out.println("You chose red!");
                break;
            case 2:
                System.out.println("You chose blue!");
                break;
            case 3:
                System.out.println("You chose green!");
            default:
                System.out.println("Color not available!");
                break;
        }
    }
}
```

Part 4 - Debugging

You are to debug the given file `FindTheErrors.java`. The code has four individual problems. Problems 2 - 4 have been commented out. Fix Problem 1 and get it running correctly before moving on to Problem 2. Continue this way until the whole program runs properly. The comments in the program will tell you what each problem should do.

The existing code is as follows:

```
package edu.ilstu;

import java.util.Scanner;

/**
 * The following class has four independent debugging
 * problems. Solve one at a time, uncommenting the next
 * one only after the previous problem is working correctly.
 */

public class FindTheErrors {

    public static void main(String[] args) {

        Scanner keyboard = new Scanner(System.in);

        /*
         * Problem 1 Debugging
         *
         * This problem is to read in your first name,
         * last name, and current year and display them in
         * a sentence to the console.
         */

        String    firstName = "";
        String    lastName = "";
        String    school = "";
        int       year = 0;

        System.out.print("Enter your first name: ");
        firstName = keyboard.nextLine();

        System.out.print("Enter the current year: ");
        year = keyboard.nextInt();

        System.out.print("Enter your last name: ");
        lastName = keyboard.nextLine();
```

```

        System.out.println("You are " + firstName + " "
            + lastName + " and it is the year " + year);

keyboard.nextLine();
System.out.println("\n");

/*
 * Problem 2 Debugging
 *
 * This problem is to assign a value to num2 based on
 * the input value of num1. It should then print both
 * numbers.
 */
// int num1 = 0;
// int num2 = 0;
//
// System.out.print("Enter a number - 1, 2, or 3: ");
// num1 = keyboard.nextInt();
//
// if (num1 == 1);
//     num2 = 2;
// else if (num1 == 2);
//     num2 = 3;
// else if (num1 == 3);
//     num2 = 4;
//
// System.out.println("num1 = " + num1
//     + " and num2 = " + num2);
//
// System.out.println("\n");

/*
 * Problem 3
 *
 * This problem is to read the name of the course
 * you are taking and display a statement showing the
 * answer.
 */
// String courseName = "";
//
// System.out.print(
//     "Enter your course name (IT168 or IT177): ");
// courseName = keyboard.nextLine();
//

```

```

//      if (courseName == IT168))
//          System.out.println("You are taking IT168.");
//      else if (courseName == IT177))
//          System.out.println("You are taking IT177.");
//      else
//          System.out.println("Invalid input.");
//
//      System.out.println("\n");

/*
 * Problem 4
 *
 * This problem is to read a test grade from the
 * keyboard and assign the appropriate letter grade.
 */
//      int    score = 0;
//      char   grade = 'Z';
//
//      System.out.println("Enter your test grade (1-100): ");
//      score = keyboard.nextInt();
//
//      switch(score)
//      {
//          case (score > 60):
//              grade = 'A';
//              break;
//          case (score > 70):
//              grade = 'b';
//              break;
//          case (score > 80):
//              grade = 'C';
//              break;
//          case (score > 90):
//              grade = 'D';
//              break;
//          default:
//              grade = 'F';
//      }
//
//      System.out.println("The score " + score
//          + " will have a grade of " + grade + ".");
    }
}

```

To Be Submitted

The following files should be zipped together into a file called Lab08.zip and submitted to ReggieNet by the beginning of your next lab.

- ChangeMaker.java
- GeographicAreaLookup.java
- GeographicAreaTester.java
- SwitchErrors.java (corrected program)
- FindTheErrors.java (corrected program)