Computing Tip Exercise

1. Start NetBeans if you have exited and close any open projects. From the **File** menu, choose **New Project…**

2. Choose the **Java folder** on the left hand side of the window, then choose **Java Application.** Click **Next**.

3. In the New Java Application dialog, give your project the name **TipCalculator**, select the **location** of where you would like to save your file (Chapter3Exercises folder), make sure that the **Create Main Class** box is checked and change the Main Class name to **TipCalculator** instead of tipcalculator.TipCalculator. Click **Finish**.

4. The first thing to do in all Java programs is to put some comments about the program at the beginning of the program. There should be a comment line for name of program, author, date, and the JDK used. These lines should look something like this:

   ```
   /*  Computing tip amount
       written by your name on date and JDK version  */
   ```

5. Since we are going to use the JOptionPane dialog boxes to gather input from the user and to show output, we will need to add the import for the JOptionPane class:

   ```
   import javax.swing.JOptionPane;
   ```

6. Next, we are going to display the input dialog for the user to type the total bill that they would like to compute the tax. We will bring up the input dialog for entering the total bill and save in a String variable named input. Remember that the showInputDialog will give you a String even if you type a number into the box. After we have the information from the user saved in our input variable, we need to convert this value to a double and save as a new variable named bill.

   ```
   String input = JOptionPane.showInputDialog(null, "Enter the total bill");
   double bill = Double.parseDouble(input);
   ```

7. Now, we need to add the code to display an input dialog for the user to enter the tip percentage and to convert that percentage into a double. We will use the input variable that we previously declared to save the input from the user *(Note: we do not declare the input variable again since we already declared it as a String).* We will then convert that input variable which was declared as a String into a double and save in a new double variable which we will name percentage.

   ```
   input=JOptionPane.showInputDialog(null,"Enter the tip percentage as a decimal "
           + "(Example: 10% would be 0.1)");
   double percentage = Double.parseDouble(input);
   ```

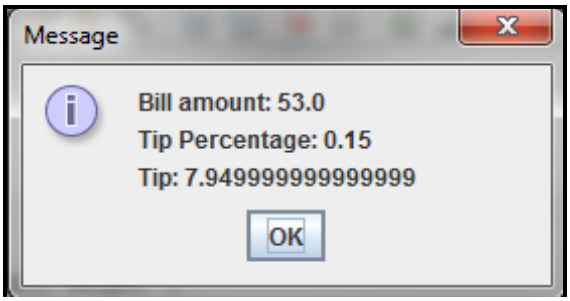
8. We now have the total bill amount in a variable called bill and we have the tip percentage in a variable called percentage. Let's compute the tip amount by multiplying the bill variable times the percentage variable.

   double tipAmount = bill * percentage;

9. Add a JOptionPane to print the tip result.

   JOptionPane.showMessageDialog(null, "Bill amount: " + bill
   + "\nTip Percentage: " + percentage
   + "\nTip: " + tipAmount);

10. This works fine for some numbers, but if you were to enter 53 dollars as the total bill and 0.15 as the percentage, you would get the following output:



11. Since there is no way to give a tip of 7.9499999999999999, we should format this output as currency. We could use the DecimalFormat and set up our own pattern with 2 decimal places, commas, and a dollar sign, but the NumberFormat class already has a pattern for currency. Let's add the import for the NumberFormat class. Place this import before the JOptionPane import so that the imports are in alphabetical order.

    import java.text.NumberFormat;

12. Now let's set up the NumberFormat object with currency.

    NumberFormat dollars = NumberFormat.getCurrencyInstance();

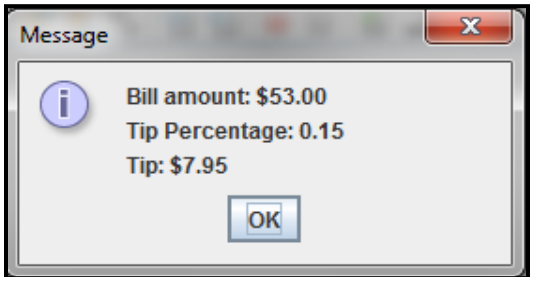
13. Next, we need to apply the formatting to the values that we want to format. To do this you will use the name of the formatting object with the format method. The value that you want to format will go in parenthesis. The value that we want to format is in our tipAmount variable.

    JOptionPane.showMessageDialog(null, "Bill amount: " + bill
    + "\nTip Percentage: " + percentage
    + "\nTip: " + **dollars.format(tipAmount)**);

14. We could also format the bill to have the currency format. To do this you could use the currency format object that you already created. The code should look as follows:

```
JOptionPane.showMessageDialog(null, "Bill amount: " + dollars.format(bill)
        + "\nTip Percentage: " + percentage
        + "\nTip: " + dollars.format(tipAmount));
```

15. Compile and execute your program. You should get the following result:



16. The final version of the program should appear as follows:

```
/* Computing tip amount
 * written by your name on date and JDK version  */

import java.text.NumberFormat;
import javax.swing.JOptionPane;

public class TipCalculator {

    public static void main(String[] args) {
        String input = JOptionPane.showInputDialog(null,
                "Enter the total bill");
        double bill = Double.parseDouble(input);
        input = JOptionPane.showInputDialog(null,
                "Enter the tip percentage as a decimal "
                + "(Example: 10% would be 0.1)");
        double percentage = Double.parseDouble(input);
        double tipAmount = bill * percentage;
        NumberFormat dollars = NumberFormat.getCurrencyInstance();
        JOptionPane.showMessageDialog(null, "Bill amount: "
                + dollars.format(bill)
                + "\nTip Percentage: " + percentage
                + "\nTip: " + dollars.format(tipAmount));
    }
}
```

17. Close the project.