PROGRAMMING EXERCISES

1. Design a message display application which will allow users to enter their name and favorite saying. Begin by providing instructions to the user about what the application will be requesting. Include one method for input. Invoke the input method two times. First call the method asking for the person's name. Send a `string` argument indicating what value should be entered. Invoke the method a second time to retrieve the favorite saying. Return the string values back to the `Main( )` method. Call another method, sending the name and saying. From that method, display the message showing the person's name and their saying surrounded by rows of greater than/less than symbols(<><><>).

2. Write an application that includes two additional methods in addition to the `Main( )` method. One method should return a string consisting of four or five lines of information about your school. The other method should return a string consisting of asterisks. First call the method that returns the string of asterisks. Call the method that returns the asterisk a second time after you invoke the method that displays the information about your school. Items you might include are the name of your school, number of students enrolled, and school colors. Include appropriate labels. The display should be aesthetically pleasing so include enough asterisks to surround your listing.

3. Write an application that allows a user to input the height and width of a rectangle. It should output the area and perimeter of the rectangle. Use methods for entering the values, performing the computations, and displaying the results. Results should be formatted with one position to the right of the decimal and printed number aligned in a tabular display.

4. Design an application using methods that convert an integer number of seconds into an equivalent number of hours, minutes, and seconds. Use methods for entering the initial seconds, performing the computations, and displaying the results. You should have separate methods for each computation. Results should be formatted and printed in a tabular display with the values number aligned.

5. Write a program that converts a temperature given in Fahrenheit into Celsius. Allow the user to enter values for the original Fahrenheit value. Display the original temperature and the formatted converted value. Number align values. Use appropriate methods for entering, calculating, and outputting results.

6. Write a program that can be used to convert meters into feet and inches. Allow the user to enter a metric meter value in a method. Provide input,

calculation, and display methods. Be sure to provide labels for values and number align them.

7. Write a program that can be used to determine the tip amount that should be added to a restaurant charge. Allow the user to input the restaurant charge, before taxes. Produce output showing the calculated values including the total amount due for both 15% and the 20% tips. Tax of 9% should be added to the bill before the tip is determined. Write appropriate methods for your solution. Display subtotal showing the amount owed prior to applying a tip. Show each tip amount and the totals with each tip amount. Be sure to provide labels for values and number align them.

8. Write a program that computes the amount of money the computer club will receive from proceeds of their granola bar sales project. Allow the user to enter the number of cases sold and the sale price per bar. Each case contains 12 bars; each case is purchased at $5.00 per case from a local vendor. The club is required to give the student government association 10% of their earnings. Display instructions to the user about the application. Display all inputs and calculated values. Proceeds should be formatted with currency. Modularize your solution by writing appropriate methods.

9. Write a program that calculates and prints the take-home pay for a commissioned sales employee. Allow the user to enter values for the name of the employee and the sales amount for the week. Employees receive 7% of the total sales as their commission. Use 18% as the federal tax rate. Retirement contribution is 15%. Use 9% as the social security tax rate. Define appropriate constants. Write input, display, and calculation methods for each of the deductions. Your final output should display all calculated values, including the total deductions and all defined constants.

10. Write an application that helps landowners determine what their property tax will be for the current year. Taxes are based on the property's assessed value and the annual millage rate. The established millage rate for the current year is $10.03 per $1000 value. Homeowners are given a $25,000 exemption, which means they may subtract $25,000 from the assessed value prior to calculating the taxes. Enable users to enter the property address and the prior year's assessed value. The township has decided to increase all properties' assessed value 2.7% for the current year to add additional monies to the school budget line. Provide methods to compute and return the new assessed value and the proposed taxes for the current year. Provide another method that displays the formatted values.