PROJECT: FINCH CONTROL S2 (DATA RECORDER)

INSTRUCTIONS

1. Extend the application framework for using the temperature sensor.
    a. **Method**: *void DataRecorderDisplayMenuScreen(Finch finchRobot)*
        i. Declare variables
            1. Int numberOfDataPoints.
            2. Double dataPointFrequency.
            3. Double[] temperatures
        ii. Display header.
        iii. Display the menu and validate the user's response.
            1. Number of Data Points
            2. Frequency of Data Points
            3. Get Data
            4. Show Data
            5. Return to Main Menu
        iv. Process user's choice using a switch/case block, calling the appropriate method.
    b. **Method:** *double DataRecorderDisplayGetDataPointFrequency()*
        i. Display header.
        ii. Prompt the user for the frequency of the readings in seconds.
        iii. Validate and convert the response to a double.
        iv. Echo the value to the user.
        v. Return the value.
        vi. Call *DisplayContinuePrompt*.
    c. **Method:** *int DataRecorderDisplayGetNumberOfDataPoints()*
        i. Display header.
        ii. Prompt the user for the number of the reading.
        iii. Validate and convert the response to a int.
        iv. Echo the value to the user.
        v. Return the value.
        vi. Call *DisplayContinuePrompt*.
    d. **Method:** *double[] DataRecorderDisplayGetData(int numberOfDataPoints, double dataPointFrequency, Finch finchRobot)*
        i. Display header.
        ii. Declare an array of *double* using the number of sensor readings provided by the user as the size.
        iii. Display the number and frequency of data readings.
        iv. Prompt the user that the application is ready to begin recording data and ask them to press any key to continue.
        v. Call the *DisplayContinuePrompt* to wait until the user is ready.
        vi. In a **for** loop, complete the following.
            1. Get a temperature reading from the Finch robot.
            2. Echo the reading to the user.
            3. Add the reading to the next element in the array.
            4. Wait the number of seconds specified by the user.
        vii. State to the user that the data recording is complete
        viii. Call *DisplayContinuePrompt*.

e. **Method**: *DataRecorderDisplayDataTable(double[] data)*
    i. Display table headers.
    ii. Display table of data
f. **Method**: *void DataRecorderDisplayData(double[] data)*
    i. Call *DisplayHeader* with appropriate header text.
    ii. Call *DataRecorderDisplayDataTable*.
    iii. Call *DisplayContinuePrompt*.

2. Coding challenges
    a. Modify the methods to allow the user to choose the light sensors and record an average value of the left and the right.
    b. Convert all readings to Fahrenheit before saving them.
    c. Use a method to convert the readings to Fahrenheit.
    Method: *static double ConvertCelsiusToFahrenheit(double celsiusTemp)*
        i. Convert the temperature to degrees Fahrenheit. You may need to research the conversion formula on the Internet.
        ii. Return the value in Fahrenheit.
3. Test the application thoroughly.

SUBMIT THE ASSIGNMENT

1. Complete the **Skills Checklist.**
    a. [Face-Face only] Demonstrate the application to the instructor.
    b. [Online only] Upload the checklist in Moodle.
2. Push the VS solution to GitHub.
3. Submit to Moodle.
    a. Click the ***Project: Finch Control S2 (Data Recorder)*** assignment link.
    b. [Online only] Submit the completed **Skills Checklist**.
    c. [Online only] Submit a link to the streaming video walk-through.
    d. Submit the link to the GitHub repository with the solution.
    e. Click **Save Changes**.
2. After receiving a grade, refer to Moodle to review the graded rubric and additional comments.

PROJECT: FINCH CONTROL (DATA RECORDER) - SKILLS CHECKLIST

Author _____ **Reviewer(s)** _____

[In-class Students Only]
Code Share – Discuss the following during the Peer Review.

- Describe the flow of the application, walking through the application's major components.
- State one coding issue you encountered and how you resolved it.
- Highlight one unique block of code (method or function) that you developed and are particularly proud of. Share how the code block functions.
- State something that you learned during the development of this application that will be useful as you develop future applications.

[All Students]
Check all demonstrated skills and submit.

Skills	
Declare and instantiate an array.	V
Add values to an array.	V
Read values from an array.	V
Use an array initializer.	V
Demonstrate the following array methods; **Sort**, **Sum**, **Average**	
Access and perform operations on an array member.	V
Use a **for** loop to read temperature data from the Finch robot and store it in an array.	V
Use a **for** loop to read light data from the Finch robot and store it in an array.	
Use a **for** or **foreach** loop to display the values of an array.	V
Convert Celsius to Fahrenheit.	V
Convert Celsius to Fahrenheit using a method that returns a value.	
Validate user input with a feedback message: string value	V
Validate user input with a feedback message: numeric value	V