Assignment 4 - Arrays

Overview:

In this lab, you will write a program to read data from the text file provided, and perform various operations on the data, and write the results to another set of text files.

Outcomes:

You will be able to process data in arrays which includes reading and writing to text files, searching, sorting, processing individual elements an array.

Reference Material:

Working With Arrays

Understanding Structures

Requirements:

The program will read temperature data from the provided Temps.txt file. The file data contains a list of pairs of numbers. The first number is a temperature set point (the desired temperature of an oven) and the second number is the measured temperature. Each line represents one data set.

The data is a combination of temperatures from 2 ovens. The first digit is the oven number, 1 or 2. The next 3 digits are the oven temperature. Given the following data set.

1115 1120

The first digit indicates these temperatures are for oven 1. The set point is 115 degrees. The measured temperature is 120 degrees. The difference (error) is +5 degrees.

2278 2273

The above data is for oven 2, with a set point of 278, a measurement of 273 and an error of -5 degrees.

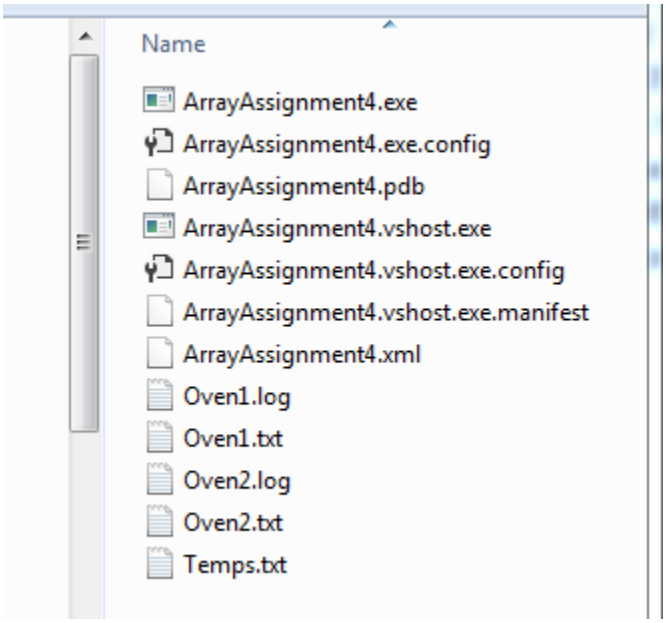
When the form loads, read the data file and put the numbers into an array of a structure that contains variables for each of the values.

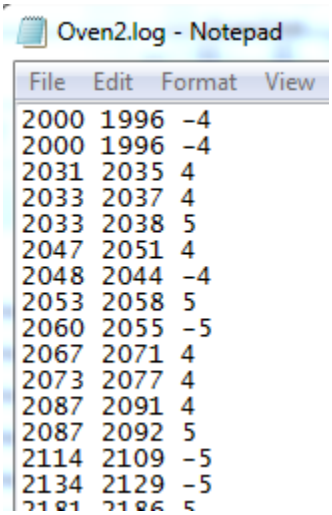
On the form, have one list box that will be used to display the data as required by the user. Initially, the list box is empty.

Add buttons to do the following.

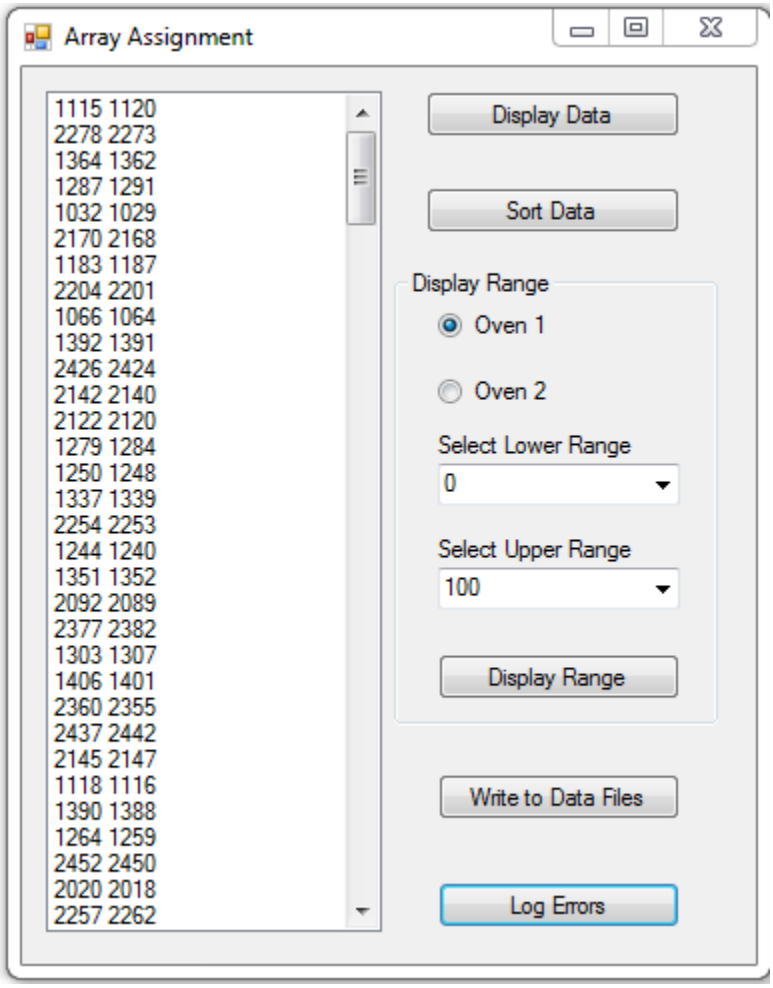
- Display the data in the array.
- Sort the array based on the set point. As discussed in class, this is not the same using the list box sort method.
- Display in the list box a range of numbers for each oven. For example, the user can select oven 1 with the range of 200 – 400 and have the data displayed in the list box.
- Create two new arrays using the data from the original array. One array contains oven 1 data and the other contains oven 2 data. Create a new file for each array and write the contents of the arrays. Use the file names "Oven1.txt" and "Oven2.txt" Put in the same location as the application.
- Process errors. If the temperature error is greater than ± 3. The data must be written to an error log. There must be a log file for each of the ovens. The name of the file should contain the application name and the oven number with a ".log" extension. Place the file in the same location as the application.

The left image shows all the data files and the .exe file in the Debug directory. The right image shows the oven 2 error log data.





The following is an example of how the form might look.



Hand-in:

Hand in a printout of your source code with a title page, a picture of your form layout, and the rubric page. Deposit a zipped copy of the entire project to eConestoga.

Assignment Evaluation

Category	Rating	Weighting Factor	Mark
Form Layout	0 1 2 3 4 5	1	
Tab Order	0 1 2 3 4 5	1	
Readability & Comments	0 1 2 3 4 5	1	
File Reading	0 1 2 3 4 5	1	
Structure	0 1 2 3 4 5	1	
Array Processing Functions	0 1 2 3 4 5	2	
Sorting	0 1 2 3 4 5	3	
Temperature Error Log	0 1 2 3 4 5	2	
Oven Files	0 1 2 3 4 5	2	
Range	0 1 2 3 4 5	2	
Coding Efficiency	0 1 2 3 4 5	2	
Error Handling	0 1 2 3 4 5	1	
User Friendly	0 1 2 3 4 5	1	
Assignment Mark			