

Pittsburg State University
Programming Assignments
EET 247 – Programming for Electronic Devices

PROBLEM SET 3: INTRODUCTION TO COMPUTER PROGRAMMING

LAB ASSIGNMENT – 3C Read File and Sort Contents

Overview:

The purpose of this exercise is to challenge your knowledge of pointers & arrays to read a data file of integers, and manipulate the data in such a way as to determine and display:

- The quantity or count of numbers
- The sum of the numbers
- The minimum and maximum values
- The average of the numbers
- The unsorted data
- The sorted data

Objective:

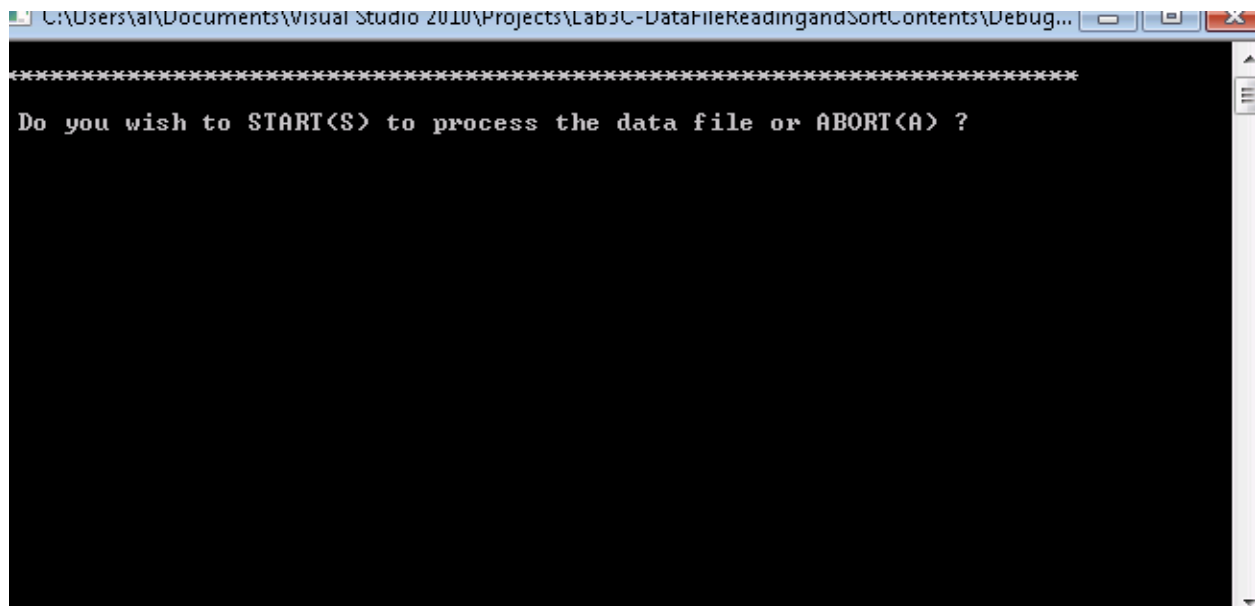
Using your textbook, notes and personal research material, write a program using the C Programming language that will read a data file and then manipulate the data to generate the displays per the specifications provided. **NOTE:** Your source code should be well documented as outlined in Handout #2

Specifications:

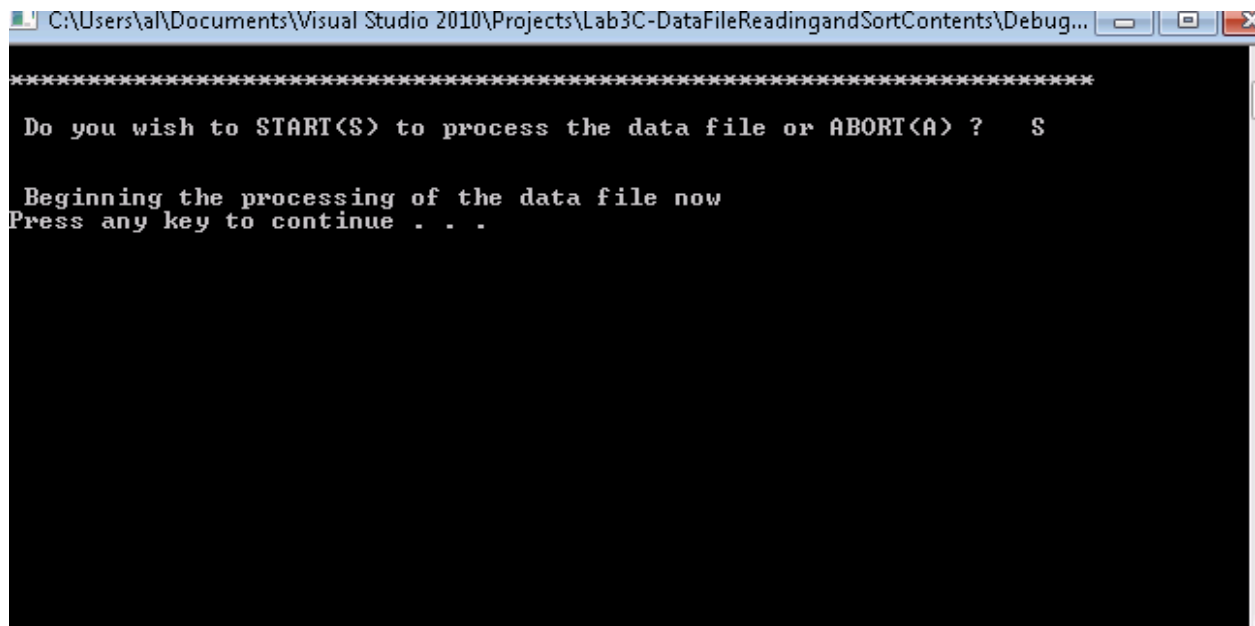
1. User Input:
 - a. Prompt the user to start or abort the process of reading the data file by striking a key. **S** to start, **A** to abort.
 - b. Include prompts for the user to proceed to display the summary, unsorted and sorted output data list
2. Output: (see examples)
 - a. Footer description of what is being displayed and the programmer's name needs to be included with items 2b, 2c & 2d.
 - b. Provide a summary screen as follows:
 - i. The quantity or count of numbers
 - ii. The sum of the numbers
 - iii. The average of the numbers
 - iv. The largest and smallest (minimum and maximum) values
 - v. The average of the numbers

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- c. Generate an **unsorted** output data list in a 9 column format, where the initial number is top left across the columns, thru the last. Provide a footer to identify data.
- d. Generate a **sorted** output data list in a 9 column list, ascending from the lowest number (top left) across the columns, thru the largest number. Provide a footer to identify.



```
C:\Users\al\Documents\Visual Studio 2010\Projects\Lab3C-DataFileReadingandSortContents\Debug...  
*****  
Do you wish to START(S) to process the data file or ABORT(A) ?
```



```
C:\Users\al\Documents\Visual Studio 2010\Projects\Lab3C-DataFileReadingandSortContents\Debug...  
*****  
Do you wish to START(S) to process the data file or ABORT(A) ?   S  
  
Beginning the processing of the data file now  
Press any key to continue . . .
```

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```
C:\Users\al\Documents\Visual Studio 2010\Projects\Lab3C-DataFileReadingandSortContents\Debug...

*****
The total COUNT of numbers is:                137
The SUM of the numbers is:                    1547856
The AVERAGE of the numbers is:              11298.22
The LARGEST number is:                      345923
The SMALLEST number is:                     -23516
*****

**** Data Summary of File ****
****   by Alec Ondrusek   ****

Press any key to continue . . .
```

```
C:\Users\al\Documents\Visual Studio 2010\Projects\Lab3C-DataFileReadingandSortContents\Debug...

*****
  0      -34      -3      -12      6      1      -1      51      62
 73      64      55      36      27      98      89      310     211
112     613     314     415     6616    417     158     129     220
2300    2321    23323    1800    29801     2      3      4      5
 6       7       8       9      10      11      12      13      14
15      16      17      18      19      20     200     221     223
1800    2980    -16     12567    3      45     983     16     789
-2356   18000    67     345623    88     1959    1897     23     44
28982    132     16     787     364     23     23     19     345
11      881     333     12     21     31     41     51     61
 72     821     92     101     111     121     131     141     151
161     171     181     1911    201     2001    2211    2231    18001
29801    -161    121567    31     451     9831    161     7891    -23516
180100    671    345923    881    19591    18917    231     442    289812
1321     161     7871    3641    232     231     191     3451     111
8811     3331

*****

**** Unsorted Data from File ****
****   by Alec Ondrusek   ****

Press any key to continue . . .
```

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```
C:\Users\ai\Documents\Visual Studio 2010\Projects\Lab3C-DataFileReadingandSortContents\Debug...
*****
-23516  -2356  -161  -34  -16  -12  -3  -1  0
  1      2      3      3      4      5      6      6      7
  8      9     10     11     11     12     12     13     14
 15     16     16     16     17     18     19     19     20
 21     23     23     23     27     31     31     36     41
 44     45     51     51     55     61     62     64     67
 72     73     88     89     92     98    101    111    111
 112    121    129    131    132    141    151    158    161
 161    161    171    181    191    200    201    211    220
 221    223    231    231    232    310    314    333    345
 364    415    417    442    451    613    671    787    789
 821    881    881    983    1321   1800   1800   1897   1911
 1959   2001   2211   2231   2300   2321   2980   3331   3451
 3641   6616   7871   7891   8811   9831  12567  18000  18001
 18917  19591  23323  28982  29801  29801  121567 180100 289812
345623 345923
*****

      **** Sorted Data from File ****
      ****   by Alec Ondrusek   ****
Press any key to continue . . .
```

Instructions

1. Develop and test the program such that it:
 - a. Generates the desired output screens based on user input and the source file **Lab3cdata.txt**
NOTE: The data file contains different numbers from those used in creating the lab exercise. This will yield different results than those depicted in this document.
 - b. **HINT:** The maximum amount of integers in the data file is 200.

REPORTING: Include your executable file, documented source code and screen shots of the summary, unsorted data and sorted data, and submit in a ZIP file for proper consideration.