CP3L1 Script and Output

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Listing 1: CP3L1 Script

```cpp
/*
 * ==================================================
 *
 *        Filename:   CP3L1_MBROD.cpp
 *        Assignment: C++ Lab #3 Lesson 1
 *        Title: File Input Sorter (w/ Functions)
 *
 *     Description:   Takes in a file as an array of characters
 *     and sorts by ASCII values, using helper functions
 *
 *          Version:   1.1
 *          Created:   11/08/2022
 *         Revision:   11/29/2022
 *         Compiler:   GCC
 *
 *           Author:   M. Brodskiy
 *
 * ==================================================
 */

// — Libraries & Directives —
#include <iostream> // Needed for normal cin & cout
#include <fstream> // Needed to read or write files on disk
using namespace std;

void bubSort(char arr[100], int size) {

  // Sort array data using a common sorting method
  // Use Bubblesort
  // FOR j from 0 to
```

```cpp
31    for (int j = 0; j < size; j++) {
32      // Last j elements are already in place so
33      // FOR k from
34      for (int k = 0; k < size - j; k++) {
35        // If element is greater than the next
36        if (arr[k] > arr[k + 1]) {
37          // Switch their positions
38          swap(arr[k], arr[k + 1]);
39          // Pass by reference
40        } // ENDIF
41      } // ENDFOR
42    } // ENDFOR

44 }

46 // PROGRAM CharacterSorter
47 int main() {
48    // -- Declare Variables --
49    ifstream infile;
50    // An input stream object for the text file data

52    char arr[100];// An oversized array for the text characters


55    int charCount = 0; // Keep track of number of characters




60    // -- Main Program --
61    // Introduce Program to user
62    cout << " -- Character Sorter -- " << endl;
63    cout << " Loads a text file and then sorts " << endl;
64    cout << " sorts its characters by ASCII value. "
   << endl << endl;

66    // Open text file as an input stream
67    infile.open("CP2L2_MBROD.txt");


70    // Check the file stream
71    if (!infile) {
72      // Provide user warning
73      cout << "Warning: Unable to open file" << endl;
74      // end program with error
```

```cpp
        cout << "Exiting with Error" << endl;
        return 1;
    }

    // FOR each element in the array
    for (int i = 0; i < 100; i++) {

        // load character from file stream into array element
        infile >> arr[i];
        // Print array element to console
        cout << arr[i];

        if (infile.eof()) break;

        charCount++;

    }
    cout << endl;

    cout << "Completed import of " << charCount <<
" characters." << endl;

    bubSort(arr, charCount); // Call the bubblesort by reference

    // Print sorted array
    // For each used element in the array (from 0 to n)
    for (int i = 0; i <= charCount; i++) {
        // Print array element to console
        cout << arr[i];
    } // ENDFOR
} // ENDPROGRAM

void swap(char& init, char& fin) { // Pass by ref

        char temp = init;
        init = fin;
        fin = temp; // Swap character positions

}
```

Listing 2: CP3L1 Output

```
—— Character Sorter ——
Loads a text file and then sorts
sorts its characters by ASCII value.
```

```
4
5  167Fhjil05x3cvBnMS.−DerPzXiD02JkEmVbKlaDcerSdIoUP342s8C29sAdjaMNwE
6  Completed import of 66 characters.
7  −.00122233456789ABCDDDEEFIJKMMNPPSSUVXaabccddeehiijjkllmnorrssvwxz
8  Press ENTER or type command to continue
```