

CS 280
Fall 2021
Recitation Assignment 3
September 22, 2021

Due Date: Sunday, September 26, 2021, 23:59
Total Points: 6

Write a C++ program that accepts one command line argument for a file name, and ignores any extra command line arguments that may be provided after the file name. If no file name is provided, the program should print on a new line "No file is found", and exit. If the file cannot be opened, print on a new line "File cannot be opened: ", followed by the file name, and exit. The program should read from the file character by character until the end of file. If the input file is empty, print out the message "File is empty." on a new line and then exit. The program should count the number of lines, total number of characters (with spaces and newlines), number of digit characters ('0' - '9'), number of alphabetic characters, number of punctuation characters, number of words, and number of integers seen in the file.

A word is defined, similar to our definition in RA2, as a sequence of one or more non-whitespace characters separated by whitespace. An integer is defined as one or more digits. For example, 2345 is an integer, while 4.5 is not, but 4 and 5 are two separate integers. In this assignment, we follow the <cctype> (ctype.h) C/C++ header files definition for the function *ispunct(c)*, which checks whether *c* is a punctuation character. Punctuation characters are all graphic characters (as in *isgraph()* function), that are not alphanumeric (as in *isalnum()* function), as defined in the original 127-character ASCII set. For example, the subset of characters {!"#\$%&'()*+,-./} and {;:<=>?@} are considered punctuation characters.

For more details, see the <cctype> (ctype.h) C/C++ header files definition at:
<https://www.cplusplus.com/reference/cctype/>

For example, with an input file of the following contents:

Line number	File contents
1	3456 Georgre 10.25
2	1234 smith 4.5
3	4321 staci 12.75
4	278 sandra 25.35
End of File	→

The displayed output is as shown below:

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LINES: 4
CHARS: 75
DIGITS: 29
LETTERS: 23
PUNCTUATIONS: 4
WORDS: 12
INTEGERS: 12

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Hints:

1. Use <cctype> functions such as: isdigit(), isalpha(), isspace(), isalnum(), ispunct().
2. You can use *get()* method for reading from the input.
3. Download the zipped file for the test cases from Canvas. These are the test cases you will be graded against on your submission to Vocareum. Use the test cases to test your implementation.
4. There are 5 test cases, these are case0-case4. Case0 is checking whether your program displays a message if there is no file name provided as an argument to your program. Note that case1 is for “myfile1” which is not included in the set. Your program will be checked against a file name, “myfile1”, that does not exist. Case2 is for an empty file, called “empty”. Case3 and case4 are for reading from the two files IntOnly and countAll, respectively, which they include data to be processed. Expected correct outputs are included in the files case0.correct-case4.correct.
5. If you want to look at the input for one of the test cases, use the linux "cat" command. The cases are in the directory \$LIB/public/RA_Fall2021/RA3. You can, for example, look at countAll by saying "cat \$LIB/public/ RA_Fall2021/ countAll ", and you can look at the expected output by saying "cat \$LIB/public/ RA_Fall2021/case4.correct".

Submission Guidelines

1. Please name your file as “RAx_firstinitial_lastname.cpp”. Where, “firstinitial” and “lastname” refer to your first name initial letter and last name, respectively, and “x” refers to the recitation assignment number (e.g., 1, 2, etc). Your program Submission is to Vocareum environment. Follow the link of Recitation Assignment 2 on Canvas in the Modules or Assignments pages to connect to the current assignment on Vocareum.
2. **Submissions after the due date are accepted with a fixed penalty of 25%. No submission is accepted after Tuesday 11:59 pm, September 28, 2021.**

Grading Table:

Testing Cases	Points
Case 1: No file is found	1.0
Case 2: File cannot be opened	1.0
Case 3: Empty File	1.0
Case 4: Counting integers only	1.0
Case 5: Counting everything	1.0
Compiles Successfully	1.0
Total	6