

Project 9

Functions

- In Project 9, you will utilize functions to process characters in an input file.
 - Count the number of vowels and lines in a file.
 - Count the number of consonants and lines in a file
 - Output information is written to standard out – average is output to 3 decimal places
- A menu is used to obtain a users selection.
- Program continues to loop until the user selects to exit

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Project 9 Constraints

- Use only material from Chapters 1-9 of your textbook
- Use at least the 4/5 non-trivial functions mentioned in the description
- *Echo print all inputs read using cin*
- *No Global Variables allowed*

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Project 9 information

- A menu is printed with a list of three options
- The users selection is read and processed – assume that any character may be entered
- The user decides to (0) Exit the program (1)Count the number of vowels, or (2) Count the number of consonants
- A loop is used to allow the user to process several files – one after the other
- An input file is opened when the user selects option 1 or 2

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Project 9 information Continued

- Opening the input file
 - Prompt the user for the file name
 - Read the name and echo print it
 - Open the file, and If the opening fails,
 - Print out an error message and do not continue with the current selection being processed.
- For processing the menu choice, the program must handle invalid character entry (i.e. user enters in a letter instead of an integer)

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Project 9 information Continued

- Each time option 1 or 2 is selected:
 - an input file is opened, (test for successful open)
 - The input file is processed and output written to the terminal (run the sample solution).
 - The input file stream is reset (must be done for unsuccessful opens of the input file as well)
- After processing an integer value, print the menu and obtain the next integer choice.

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Project 9 information continued

- An empty input file results in an empty file message to the terminal
- **Read the entire handout – there is some useful information in the Help, Hints and concepts section.**
- *Verify operation with invalid input file names and invalid (out of range integer values and characters) for menu choices*
- **Sample Solution and comparison script**
`/home/work/cpe112/Executables/Project_09/Project_09_solution`
`/home/work/cpe112data/Project_09/CompareSolution.bash Project_09.cpp`

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Hints

- Required to use at least 4 or 5 functions – print menu, obtain an integer, open input file, count vowels and count consonants (last 2 could be contained in one function)
- Process valid menu selections by using a loop that processes an integer entered and terminates when exit is selected
- Before entering the loop, create a priming read of a menu selection by printing the menu and obtaining the users first choice

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Hints Continued

- Inside the loop, process the user selection (an integer value) using if-then-else-if statements or a switch statement
- Look at the P9_error page for information on error messages
- At the end of the loop
 - Reset the input file stream variable (see below).
 - Print the menu and
 - Obtain another menu selection
- To reset the input file stream use
filestream.close();
filestream.clear();
Where filestream is the name of your file stream variable

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Hints Continued

- To error proof the menu choice:
 - Use a function that returns an integer value
 - Prompt for the menu selection (could be at end of PrintMenu)
 - Read the selection entered by the user
 - While the input stream is in the fail state
 - Reset the input stream (cin) by using cin.clear();
 - Use the extraction operator to read a character
 - Echo print the character
 - Remove the invalid character(s) from cin
 - Print the menu
 - Prompt for the menu selection (could be at end of PrintMenu)
 - Read the selection entered by the user
 - After loop exits, echo print the integer value entered
 - Remove any extraneous characters from cin
 - Return the integer value entered

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Partial Functional Decomposition

- Print menu
- Obtain integer value (menu choice)
- While integer value is not 0 (exit not selected)
 - Process selection
 - vowels,
 - Open input file, process vowels and output results
 - consonants
 - Open input file, process consonants and output results
 - invalid integer choice – error message
 - Close and clear the input and output file streams
 - Print menu and obtain next integer value to process

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