Experiment 2: Advanced Linux Command Line Mastery Challenge

COS 350 System Programming

2024 Spring

In this experiment, you are asked to use Linux command lines to accomplish the following tasks. Task 1 takes 20 points, task 2 and task 3 takes 40 points, totally 100 points.

For this experiment, you are **allowed** to leverage the resources available on the Internet and AI tools for assistance. Nonetheless, bear in mind that the ultimate goal is not merely to complete the task, but rather to ensure that you gain valuable insights and knowledge from the experience.

Task 1: Create an empty text file named 'task1.txt'. Utilize any text editor such as Vi, Vim, or Nano to input the text 'I love Linux Commands' into the file. Save your changes and exit the text editor. Proceed to adjust the file permissions to 544 using **symbolic notation**. Next, open 'task1.txt' again in a text editor and modify its content to 'everyone loves Linux Commands'. Save the changes and exit the text editor. If there is any issues, provide solutions to address them.

Task 2: Using command-line tools only, complete the following advanced tasks. And for each sub-task, you are only allowed to accomplish it by **one single command**, several commands connected by pipes are counted as one command.

1.Download a text file from the URL https://www.gutenberg.org/cache/epub/1342/pg1342.txt.

2.Create a new file named "task2.txt".

3.Add one line "How many lines are in this file?" to it (do **not** use any text editor).

4.Analyze the number of lines in the downloaded file and append the count to "task2.txt" without overwriting.

5.Extract the top 1000 lines of "pg1342.txt" and find any lines containing the word ‘you’ (case-insensitive). Then, append these lines to "task2.txt" and display them in the terminal.

6.Determine the average line length in the downloaded file and append the result to "task2.txt".

7.Identify the line with the most characters (longest line) in the downloaded file, append this line to task2.txt and display it in the terminal.

8.Identify the line with 10 characters in the downloaded file, append these lines to task2.txt.

9.Overwrite the downloaded file by removing any consecutive duplicate lines from the downloaded file.

10.Count the occurrences of the word “you” (determine how many times the word 'you' appears in this file), then print the number to the terminal and append it to “task2.txt”.

Hints: for step 6,7,10, ‘awk’ command may be a solution.

Task 3: Practicing Vi commands.

1. Download the file “task3.txt” from BrightSpace (not required to do this step by command lines).
2. Using Vi to open the file, navigate to the 10th line of the file, then append the text “YOUR NAME” (replace it by your name) on a new line after the current line, save and exit the file.
3. Reopen the “task3.txt” file using Vi, search for the word “Linux” only in lines 5 to 15 and replace it with “Unix”, save and exit the file.
4. Open “task3.txt” file once again, move lines 10 through 15 to the end of the file, then save and exit the file.
5. Open the “task3.txt” file once again, delete the lines containing the word “Linux”.
6. Open the “task3.txt” file using Vi, search for all occurrences of the word “Linux” and replace them with “Unix” globally in the file. Save and exit the file.
7. Open the file “task3.txt”, navigate to line 20 and join line 21 and line 22 to line 20. Then save and exit the file.
8. Use Vi to open “task3.txt” again, then append the line “Operating System Unix” at the end of the file. Save and exit the file.
9. Count the number of lines, words, and characters in “task3.txt”, and print these information to the terminal.

Deadline

This experiment will be due on Feb. 27th 11:59 PM.

Submission

Download Experiment Report Template 2 from BrightSpace and complete your report adhering closely to the provided template. Your submission should include the finalized report only, either PDF file or DOC file. Submit your work to BrightSpace.