**OPERATING SYSTEM**

**ASSIGNMENT 2**

**PART 1**

**1.Outputs of the following commands:**

**pwd (Print Working Directory):**

* Output: The absolute path of the current directory.
* Example: /home/user/documents

**cd (Change Directory):**

* Output: No direct output to the terminal. It changes the current working directory.
* Example: If you execute cd /var/log, then the next pwd command will output /var/log.

**ls (List Directory Contents):**

* Output: A list of files and directories in the current directory.
* Options can modify the output (e.g., ls -l for detailed information, ls -a for hidden files).

**mkdir (Make Directory):**

* Output: No direct output to the terminal. It creates a new directory.
* If there is an error, an error message is displayed.

**rm (Remove):**

* Output: No direct output to the terminal. It removes files or directories.
* If there is an error, an error message is displayed.
* rm -r is needed to remove directories.

**touch (Create Empty File or Update** **Timestamp):**

* Output: No direct output to the terminal. It creates an empty file or updates the timestamp of an existing file.

**hostname (Print or Set System Hostname):**

* Output: The system's hostname.
* Example: my-ubuntu-machine

**cat (Concatenate and Print Files):**

* Output: The contents of the specified file(s) printed to the terminal.
* If multiple files are specified, their contents are concatenated.

**chmod (Change File Permissions):**

* Output: No direct output to the terminal. It modifies file permissions.
* If there is an error, an error message is displayed.

**echo (Display a Line of Text):**

* Output: The text provided as an argument.
* Example: echo "Hello, world!" outputs Hello, world!

**grep (Global Regular Expression Print):**

* Output: Lines from the input that match the specified pattern.
* Example: grep "error" logfile.txt outputs lines containing "error".

**fgrep (Fixed-string grep):**

* Output: Lines from the input that contain the specified fixed string.
* It is like grep, but does not interperet regular expressions.

**mv (Move or Rename Files/Directories):**

* Output: No direct output to the terminal. It moves or renames files or directories.
* If there is an error, an error message is displayed.

**cp (Copy Files/Directories):**

* Output: No direct output to the terminal. It copies files or directories.
* If there is an error, an error message is displayed.

**more (Display File Contents Page by Page):**

* Output: The contents of the file, displayed one screenful at a time.
* Users can navigate forward using the spacebar.

**less (Similar to more, but More Advanced):**

* Output: The contents of the file, displayed one screenful at a time.
* less allows for backward navigation and more advanced searching.

**wc (Word Count):**

* Output: The number of lines, words, and bytes in a file.
* Example: wc logfile.txt might output 10 50 300 logfile.txt.

**awk (Text Processing Tool):**

* Output: Formatted output based on specified patterns and actions.
* It's used for complex text processing.

**sed (Stream Editor):**

* Output: Modified text based on specified editing commands.
* It's used for text transformation.

**tail (Output the Last Part of Files):**

* Output: The last few lines of a file (default is 10 lines).
* tail -f can be used to follow a file as it grows.

**PART 2**

**Answers to the following Questions:**

1. How to navigate to a Specific Directory?

As explained before, use the

cd (change directory) command.

cd /path/to/directory (absolute path)

cd directory\_name (relative path)

cd .. (go up one level)

cd ~ (go to home directory)

2. How to see detailed information about files and directories using ls?

Use ls -l. This provides a long listing format, showing permissions, owner, group, size, and modification time.

ls -a shows hidden file.

ls -la shows hidden files with long listing format.

ls -h shows file sizes in human readable format.

3. How to create multiple directories in Linux using mkdir command?

mkdir dir1 dir2 dir3 (creates dir1, dir2, and dir3)

mkdir -p path/to/dir1 path/to/dir2 (creates nested directories if they don't exist)

4. How to remove multiple files at once with rm?

rm file1 file2 file3

rm \*.txt (removes all files ending with .txt)

5. Can rm be used to delete directories?

No, rm by itself cannot delete directories.

Use rm -r (recursive) to delete directories and their contents. Be very careful with this!

rm -rf (recursive force) is even more dangerous, it will suppress error messages and delete everything, use with extreme care.

6. How Do You Copy Files and Directories in Linux?

cp file1 file2 (copies file1 to file2)

cp file file\_destination\_directory/ (copies file to a directory)

cp -r directory1 directory2 (copies directory1 to directory2, including all subdirectories and files)

7. How to Rename a file in Linux Using mv Command

mv old\_filename new\_filename

8. How to Move Multiple files in Linux Using mv Command

mv file1 file2 file3 destination\_directory/

9. How to Create Multiple Empty Files by Using Touch Command in Linux

touch file1 file2 file3

10. How to View the Content of Multiple Files in Linux

cat file1 file2 file3 (displays contents sequentially)

less file1 file2 file3 (allows navigation)

11. How to Create a file and add content in Linux Using cat Command

cat > filename (then type your content, and press Ctrl+D to save)

12. How to Append the Contents of One File to the End of Another File using cat command

cat file1 >> file2 (appends the content of file1 to file2)

13. How to use cat command if the file has a lot of content and can’t fit in the terminal.

Use less filename or more filename to page through the content.

14. How to Merge Contents of Multiple Files Using cat Command

cat file1 file2 file3 > merged\_file (creates a new file with the merged content)

15. How to use cat Command to Append to an Existing File

cat >> existing\_file (then type the content to append, and press Ctrl+D)

16. What is “chmod 777 “, “chmod 755” and “chmod +x “or “chmod a+x”?

chmod 777: Gives read, write, and execute permissions to everyone (owner, group, and others).

chmod 755: Gives read, write, and execute permissions to the owner, and read and execute permissions to the group and others.

chmod +x or chmod a+x: Adds execute permission to everyone.

17. How to find the number of lines that matches the given string/pattern

grep -c "pattern" filename (counts the number of matching lines)

18. How to display the files that contains the given string/pattern.

grep -l "pattern" file1 file2 file3 (lists filenames with matching lines)

19. How to show the line number of file with the line matched.

grep -n "pattern" filename

20. How to match the lines that start with a string using grep

grep "^string" filename (^ matches the beginning of a line)

21. Can the ‘sort’ command be used to sort files in descending order by default?

No, sort sorts in ascending order by default.

Use sort -r filename to sort in reverse (descending) order.

22. How can I sort a file based on a specific column using the ‘sort’ command?

sort -k [column\_number] filename (sorts by the specified column)

sort -t',' -k 2 filename (sorts by the second column, using comma as delimiter)