OPERATING SYSTEMS

LAB ASSIGNMENT 2

PART 1 : OUTPUT OF THE COMMANDS

1. pwd

The pwd command displays the present working directory.

```
$ pwd
/home/user
```

2. cd

The cd command is used to change directories.

```
$ cd Documents/
$ pwd
/home/user/Documents
```

3. ls

The ls command lists the files and directories in the current directory.

```
$ ls
file1.txt  file2.txt  Documents  Downloads
```

4. mkdir

The mkdir command is used to create a new directory.

```
$ mkdir NewFolder
$ ls
NewFolder  file1.txt  file2.txt
```

5. rm

The rm command is used to remove a file.

```
$ rm file1.txt
$ ls
file2.txt  NewFolder
```

6. touch

The touch command creates a new empty file.

```
$ touch newfile.txt
$ ls
newfile.txt  file2.txt  NewFolder
```

7. hostname

The hostname command displays the system's hostname.

```
$ hostname
my-laptop
```

8. cat

The cat command is used to view the contents of a file.

```
$ cat newfile.txt
Hello, this is a test file.
```

9. chmod

The chmod command changes file permissions.

```
$ chmod 777 newfile.txt
```

10. echo

The echo command prints a message to the terminal.

```
$ echo "Hello, World!"
Hello, World!
```

11. grep

The grep command searches for a pattern in a file.

```
$ grep "Hello" newfile.txt
Hello, this is a test file.
```

12. fgrep

The fgrep command searches for a fixed string in a file.

```
$ fgrep "Hello" newfile.txt
Hello, this is a test file.
```

13. mv

The mv command moves or renames a file.

```
$ mv newfile.txt oldfile.txt
$ ls
oldfile.txt
```

14. cp

The cp command copies a file.

```
$ cp oldfile.txt copyfile.txt
$ ls
oldfile.txt  copyfile.txt
```

15. more

The more command displays file content page by page.

```
$ more largefile.txt
```

16. less

The less command is similar to more, allowing backward navigation.

```
$ less largefile.txt
```

17. wc

The wc command counts words, lines, and characters in a file.

```
$ wc oldfile.txt
5  10  50 oldfile.txt
```

18. awk

The awk command is used for pattern scanning and processing.

```
$ awk '{print $1}' oldfile.txt
```

19. sed

The sed command is used for stream editing.

```
$ sed 's/Hello/Hi/' oldfile.txt
```

20. tail

The tail command shows the last lines of a file.

```
$ tail -n 5 oldfile.txt
```

PART 2 : ANSWERING THE FOLLOWING QUESTIONS

1. How to navigate to a Specific Directory?

To change to a specific directory, use cd followed by the directory path.
```
cd /path/to/directory
```

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

ls -l provides detailed information such as permissions, owner, size, and modification date.

```
ls -l
```

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

You can create multiple directories simultaneously using mkdir.

```
mkdir dir1 dir2 dir3
```

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

rm allows deleting multiple files by specifying them in one command.

```
rm file1.txt file2.txt file3.txt
```

5. Can rm be used to delete directories?

Yes, with the -r flag, rm can remove directories and their contents.

```
rm -r dir_name
```

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

Copy a file using cp:

```
cp file1.txt /path/to/destination/
```

Copy a directory using -r flag:

```
cp -r dir1 /path/to/destination/
```

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

mv is used to rename files by specifying the old and new names.

```
mv oldfile.txt newfile.txt
```

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

mv can move multiple files to a specified destination.

```
mv file1.txt file2.txt /path/to/destination/
```

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

touch can create multiple empty files at once.

```
touch file1.txt file2.txt file3.txt
```

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

cat displays the contents of multiple files sequentially.

```
cat file1.txt file2.txt
```

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

cat > filename creates a file and lets you add content directly.

```
cat > file.txt

This is the content.

Ctrl + D
```

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

cat with >> appends content from one file to another.

```
cat file1.txt >> file2.txt
```

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

Use less to view large files one page at a time.

```
cat largefile.txt | less
```

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

cat can combine multiple files into one using > redirection.

```
cat file1.txt file2.txt > merged.txt
```

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

Append content to an existing file using cat >>.

```
cat >> file.txt
Appending new content.
Ctrl + D
```

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

- chmod 777 — Full read, write, and execute permissions for all.
- chmod 755 — Owner has all permissions; others can read and execute.
- chmod +x — Makes the file executable.

```
chmod 777 file.txt
chmod 755 file.txt
chmod +x script.sh
```

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

grep -c counts the number of lines that match a given pattern.

```
grep -c 'pattern' file.txt
```

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

grep -l lists files containing the specified pattern.

```
grep -l 'pattern' *.txt
```

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

grep -n shows matching lines along with their line numbers.

```
grep -n 'pattern' file.txt
```

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

Use grep '^string' to find lines that start with a particular string.

```
grep '^string' file.txt
```

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

Yes, using -r sorts the file in reverse (descending) order.

```
sort -r file.txt
```

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

sort -k sorts the file based on the specified column.

```
sort -k 2 file.txt
```