Linux Programming: Assignment 6

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ROLL NO:7

SECTION:B

Q1. Which command is used to list the contents of a directory? Justify with proper example. (CO1)

Answer:
The command used to list the contents of a directory is **ls**.

- By default, ls lists files and directories in the current directory.
- We can use options for detailed views:
    - ls -l → long listing (permissions, ownership, size, modification time).
    - ls -a → includes hidden files.

Example:

ls

Output might be:

file1.txt file2.c notes.txt myfolder

Example with options:

ls -la

Shows hidden files:

drwxr-xr-x 5 user user 4096 Oct 10 10:00 .

drwxr-xr-x 12 user user 4096 Oct 10 09:30 ..

-rw-r--r-- 1 user user   25 Oct 10 08:00 .hiddenfile

-rw-r--r-- 1 user user 100 Oct 10 07:45 file1.txt

Q2. Write the command to create a new directory named 123test_dir. (CO1)

Answer:
The command is **mkdir**.

Example:

mkdir 123test_dir

This creates a new directory named 123test_dir in the current working directory.

Q3. What is the purpose of the sed command? Justify with proper example. (CO1)

Answer:

The **sed (stream editor)** command is used to **search, find, replace, insert, and delete text** in files or streams without opening them in an editor.

Purpose: Automates editing tasks such as substitution and deletion.

Example: Replace all occurrences of "Linux" with "Unix" in a file notes.txt.

sed 's/Linux/Unix/g' notes.txt

Output:
If notes.txt contains:

Linux is powerful.

Linux is open-source.

The result will be:

Unix is powerful.

Unix is open-source.

Q4. Which distinct command is used to display one-line descriptions of any commands? (CO1)

Answer:
The command is **whatis**.

Example:

whatis ls

Output:

ls (1) - list directory contents

Justification:
whatis provides a concise, one-line description of a command taken from the manual page. Useful for quickly understanding the purpose of a command.

Q5. Write the command to create an empty file named notes.txt. (CO1)

Answer:
We can create an empty file using **touch**.

Example:

touch notes.txt

This creates an empty file notes.txt if it doesn't exist, or updates its timestamp if it already exists.

Q6. Differentiate between grep and awk commands with an example. (CO2)

Answer:

Feature	grep (Global Regular Expression Print)	awk (Pattern Scanning&Processing)
Purpose	Searches for patterns in text	Processes and extracts fields from text
Usage	Simple searching and filtering	Advanced text manipulation, field-wise operations
Output	Prints matching lines	Prints selected columns, performs calculations

Example using grep:
Find all lines containing"error"in logfile.txt:

grep"error"logfile.txt

Example using awk:
Print the second column of a file data.txt:

awk'{print $2}'data.txt

Q7. Write the command to give read, write, and execute permission to the owner of a file script.sh. (CO1)

Answer:
Use **chmod** command.

Example:

chmod u+rwx script.sh

or simply:

chmod 700 script.sh

Explanation:

- u → user (owner).
- +rwx → add read, write, and execute permissions.
- 700 means full permissions for owner, none for others.

Q8. How is chown different from chgrp? Give one example for each. (CO1)

Answer:

- **chown (change owner):** Changes the ownership of a file/directory.
- **chgrp (change group):** Changes the group ownership of a file/directory.

Example – chown:

sudo chown user1 script.sh

Changes the owner of script.sh to user1.

Example – chgrp:

chgrp developers project/

Changes the group ownership of directory project/ to developers.

Q9. A user complains that they cannot execute a file even though it exists in their directory. How would you troubleshoot this using ls -l, chmod, and whoami? (CO3)

Answer:

Step 1 – Check file permissions using ls -l:

ls -l script.sh

Output might be:

-rw-r--r-- 1 user user 123 Oct 10 09:00 script.sh

Here, no **execute (x)** permission for user.

Step 2 – Identify current user using whoami:

whoami

If result is user, compare with file ownership.

Step 3 – Grant execute permission using chmod:

chmod u+x script.sh

Now the user can execute it:

./script.sh

Q10. Design a command pipeline to: find all .log files modified in the last 2 days in /var/log, display them on screen, and save the results into a file recent_logs.txt using tee command. (CO4)

Answer:

find /var/log -name"*.log"-mtime -2 -type f | tee recent_logs.txt

Explanation:

- find /var/log → search inside /var/log.
- -name"*.log"→ only .log files.
- -mtime -2 → modified in the last 2 days.
- -type f → only files.
- tee recent_logs.txt → displays result on screen and simultaneously saves it into recent_logs.txt.