SRUSHTI
ENG25CY1005
ROLL NO-65

ASSIGNMENT - 2

1. What does the command pwd, whoami, and hostname display?

Ans: pwd-print work directory

The command is used to display the absolute path of the current directory in which the user is working.
It tells you the exact location inside the filesystem hierarchy.

Whoami

The command is used to display the username of the current logged-in user .
This is especially useful when multiple users have access to the same system.

hostname

The command is used to display the name of the computer (system hostname).
It is useful for identifying the machine, especially in a network where many systems are connected.

2. Write the command to create a directory named “project” inside the /home/student folder and keep three .txt file into it. Give output snapshot.

```
student@ubuntu:~$ mkdir /home/student/project

student@ubuntu:~$ cd /home/student/project

student@ubuntu:~/project$ touch file1.txt file2.txt file3.txt

student@ubuntu:~/project$ ls -l
total 0
```

```
-rw-r--r-- 1 student student 0 Sep 25 18:00 file1.txt
-rw-r--r-- 1 student student 0 Sep 25 18:00 file2.txt
-rw-r--r-- 1 student student 0 Sep 25 18:00 file3.txt
```

3. Explain the difference between absolute path and relative path with proper examples.

1. Absolute Path

- An absolute path gives the complete location of a file or directory starting from the root / directory.
- It is independent of the current working directory.
- Always starts with `/`.

ex: /home/student/project/file1.txt

2. Relative Path

A relative path gives the location of a file relative to the current working directory.

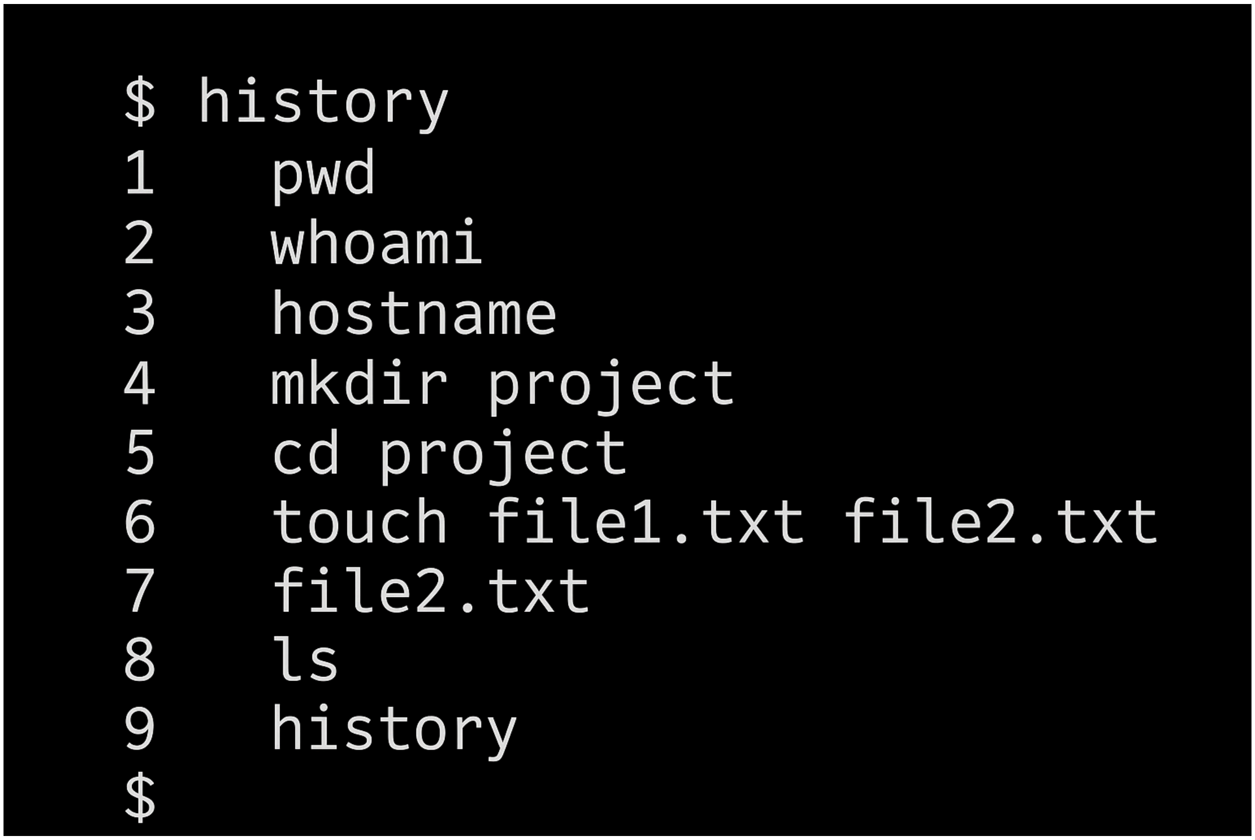
Characteristics:

Does not start with /.

Can use special symbols like (current directory) and (parent directory).

Example:
If the current directory is /home/student.

4. What command will give you the already executed command traces in the terminal. Give output snapshot.



```
$ history
1   pwd
2   whoami
3   hostname
4   mkdir project
5   cd project
6   touch file1.txt file2.txt
7   file2.txt
8   ls
9   history
$
```

5. Compare the working functionality of find and locate command. Which one is faster and why?

Comparison of `find` and `locate` Commands

The `find` and `locate` commands in Linux are both used to search for files and directories, but they work in very different ways.

Working of `find`:
The `find` command searches the filesystem in real-time. It starts from a specified directory and examines every file and folder to see if it matches the given criteria, such as file name, type, size, permissions, or modification time. For example, you can search for all `.txt` files in your home directory and even filter them by size or date. Since it scans the actual filesystem, it always provides the most accurate and up-to-date results. However, this real-time searching makes it slower, especially in large directories.

Working of `locate`:
The `locate` command works differently. It uses a prebuilt database that stores the names and paths of files on the system. When you search using `locate`, it matches your query against this

database instead of scanning the filesystem. This makes the search extremely fast. However, because it relies on the database, it may not reflect recently created or deleted files until the database is updated using the `update db` command.

Performance Comparison:

- `locate` is **faster** than `find` because it does not traverse the filesystem but looks up results in a database.
- `find` is **slower** but more precise, allowing complex searches and showing real-time results.

Conclusion:

- Use `find` when you need accurate, real-time search results with advanced filtering options.
- `locate` when you need a quick search for filenames and can tolerate slightly outdated results.

6. Which command is used to modify file permissions in Linux? Give an example.

Modifying File Permissions in Linux

In Linux, the command used to modify file permissions is chmod, which stands for change mode. This command allows you to control the read, write, and execute permissions for three types of users: the owner of the file, the group, and others.

How `chmod` Works

1. **Symbolic Mode:**
   You can specify permissions using letters:

- `r` → read
- `w` → write
- `x` → execute

- `u` → owner (user)
- `g` → group
- `o` → others

Example:
Giving the owner all permissions, the group read and execute, and removing read permission from others:

```
chmod u+rwx,g+rx,o-r file.txt
```

2. **Numeric (Octal) Mode:**
 Permissions can also be represented with numbers:

- Read = 4
- Write = 2
- Execute = 1

You add the numbers for each category (owner, group, others).

Example:

```
chmod 754 file.txt
```

- Owner (7 = 4+2+1) → read, write, execute
- Group (5 = 4+0+1) → read, execute
- Others (4 = 4+0+0) → read only

conclusion

- `chmod` is the standard command to modify file permissions in Linux.
- Symbolic mode is easy to read and understand.
- Numeric mode is compact and precise.

7. A file has permissions -rw -r- -r- -. What does this mean?

Explanation of File Permissions `-rw-r--r--`

The file permission string -rw-r--r-- shows the access rights for a file in Linux.

1. First character (-)
   - Indicates the type of file.
   - - means it is a regular file.
2. Next nine characters (rw-r--r--)
   - These are divided into three sets of three characters each: owner, group, and others.

Breakdown:

- Owner (rw-) → can read and write the file, but cannot execute it.
- Group (r--) → can only read the file.
- Others (r--) → can only read the file.

Summary:

- The file is a regular file.
- Group and others have read-only permissions.
- No one has execute permission.

8. Explain the difference between chown and chgrp with an example.

Difference between chown and chgrp

In Linux, the chown and chgrp commands are used to modify file ownership.
chown : This command changes of a file or directory. It can also change the group at the same time. For example, chown alice file.txt changes the owner of file.txt to alice. You can also change both owner and group together using chown alice:developers file.txt, which makes alice the owner and developers the group.

chgrp (change group): This command changes only the group of a file or directory without affecting the owner. For example, chgrp developers file.txt sets the group of file.txt to developers.
Key Difference: chown modifies the owner (and optionally the group), while chgrp modifies only the group.
Summary: Use chown when you need to transfer ownership of a file, and chgrp when you only need to change its group.

9. A file needs to be accessible by multiple users but only writable by the owner. How will you set permissions?

Setting File Permissions for Multiple Users

To make a file accessible by multiple users but writable only by the owner, the permissions should be set so that:

- Owner can read and write
- Group can read only
- Others can read only

The corresponding permission string is: -rw-r--r--.
This can be set using the command: chmod 644 filename.
Explanation:

- The first digit 6 gives the owner read (4) and write (2) permissions.
- The second digit 4 gives the group read-only permission.
- The third digit 4 gives others read-only permission.

This setup allows the owner to modify the file while all other users can only view it.

10. How do you check the manual page for any Linux commands?

Checking the Manual Page for a Linux Command

To view the manual page of any Linux command, use the man command.

Syntax:

```
man command_name
```

Example:

man ls – This opens the manual for the ls command, showing its description, options, and usage.

You can scroll through the manual using the arrow keys or Page Up/Page Down, and press q to exit.

Summary:

The man command is used to access detailed information about Linux commands.