# File permissions in Linux

## Project description

File permissions in Linux control who can read, write, or execute a file. Permissions are assigned to three types of users: the file owner (user), the group, and others

## Check file and directory details

To check the details of a file or directory, use the ls -l command. This will list the permissions, owner, group, size, and modification date.

Example:

ls -l project\_m.txt

## Describe the permissions string

The output of ls -l shows a string like -rwxr-xr--. Here’s what it means:

* The first character indicates the file type (- for a regular file, d for a directory).
* The next three characters (rwx) are the permissions for the user (owner): read (r), write (w), and execute (x).
* The next three characters (r-x) are the permissions for the group: read (r) and execute (x), but no write (w).
* The last three characters (r--) are the permissions for others: read (r), but no write (w) or execute (x).

## Change file permissions

To change file permissions, use the chmod command.

##### **Symbolic Mode**

* Add permissions: chmod u+rwx project\_m.txt
* Remove permissions: chmod g-rw project\_m.txt

##### **Numeric Mode**

Permissions can also be represented numerically:

* Read (4), Write (2), Execute (1)

For example:

* Full permissions (rwx) = 7 (4+2+1)
* No permissions (---) = 0 (0+0+0)

To set full permissions for the user and no permissions for the group and others:

Example:

chmod 700 project\_m.txt

## Change file permissions on a hidden file

Hidden files in Linux start with a dot (.). For example, .hidden\_file.txt.

To change permissions for a hidden file:

Example:

chmod u+rwx .hidden\_file.txt

## Change directory permissions

Directory permissions determine who can list, add, or remove files within the directory.

For example, to change permissions for a directory:

Example

chmod 755 my\_directory

This gives the user full permissions and read/execute permissions to the group and others.

To remove write permissions for the group:

Example:

chmod g-w my\_directory

## Summary

In Linux, file permissions control who can read, write, or execute files and directories. These permissions are assigned to three types of users: the owner (user), the group, and others. The permissions string, like `-rwxr-xr--`, indicates access rights for each user category. The `chmod` command is used to change these permissions, either symbolically (e.g., `chmod u+rwx filename`) or numerically (e.g., `chmod 700 filename`). Hidden files, which start with a dot (`.`), and directories can also have their permissions modified to control access. Proper management of these permissions is essential for system security.