chmod – Change File Permissions

Every file/directory has 3 types of access:

- **r** = read

- **w** = write

- **x** = execute

For 3 types of users:

- **u** = user (owner)

- **g** = group

- **o** = others

- **a** = all (u+g+o)

```
chmod [permissions] [file/directory]
```

You can use:

- **Symbolic mode**: chmod u+x file.txt

- **Numeric mode (Octal)**: chmod 755 file.txt

🔢 Octal Permission Table

Symbol	Octal	Meaning
r--	4	Read
-w-	2	Write
--x	1	Execute
rw-	6	Read + Write
r-x	5	Read + Execute
rwx	7	Read + Write + Exec

Examples (Symbolic Mode)

```
chmod u+x script.sh      # Add execute for owner
chmod g-w file.txt       # Remove write for group
chmod o=r file.txt       # Set others to read only
chmod a+x file.sh        # Give everyone execute permission
chmod ug+r file.txt      # Add read to user and group
```

Examples (Numeric Mode)

```
chmod 777 file.txt       # All can read/write/execute
chmod 755 file.sh        # Owner full, others read & execute
chmod 644 file.txt       # Owner read/write, others read-only
chmod 600 secret.txt     # Only owner can read/write
```

Check Ownership & Permissions

```
-rw-r--r-- 1 priyanka dev 1234 Aug 3 12:00 file.txt
```

- `rw-` = user (priyanka) can read/write
- `r--` = group (dev) can read
- `r--` = others can read

- **Make a script executable by everyone:** chmod +x deploy.sh
- **Restrict private file to owner only:** chmod 600 secrets.env
- **Change permissions of all files in a directory:** chmod -R 644 /var/www/html

chown – Change Ownership of File/Directory

```
chown [new_owner] file
chown [user]:[group] file
```

```
chown priyanka myfile.txt        # Change owner to priyanka
chown root:root server.log       # Change owner and group to root
chown -R priyanka:dev /myfolder  # Recursive: all files in /myfolder
```

Change Owner of a File: chown priyanka report.txt

Meaning: report.txt will now be owned by user priyanka.

Change Owner and Group: chown priyanka:devteam report.txt

Meaning:

- Owner = `priyanka`
- Group = `devteam`

Change Only the Group: chown :devteam report.txt

Meaning: Keeps current owner, but changes group to devteam.

Change Ownership for Multiple Files: chown priyanka:devteam file1.txt file2.txt

Recursive Ownership Change for Folders: chown -R priyanka:devteam /project

Meaning: Changes ownership for /project **and everything inside** (files & subfolders).

Verify Ownership

Use this command to confirm the change:

ls -l file.txt

Example output:

-rw-r--r-- 1 priyanka devteam 1200 Aug 3 10:00 file.txt