

Linux File Permissions & Chmod Cheat Sheet

Quick reference for octal permissions (755, 644, 600), symbolic modes, special bits (SUID, SGID, Sticky), and CLI commands.

Live Interactive Calculator: <https://lotsofnetwork.com/chmod-calculator>

PERMISSION VALUES (BINARY & OCTAL)

- Read (r) = 4 (Binary: 100) — Allows viewing file contents or listing directory files (ls).
- Write (w) = 2 (Binary: 010) — Allows modifying, editing, deleting files or creating files in a directory.
- Execute (x) = 1 (Binary: 001) — Allows executing script/program or traversing/entering a directory (cd).

Octal	Symbolic	Owner	Group	Others	Common Production Use Case
755	-rwxr-xr-x	rwX (7)	r-x (5)	r-x (5)	Standard executables, shell scripts (.sh), web root directories
644	-rw-r--r--	rw- (6)	r-- (4)	r-- (4)	Standard web assets (HTML, CSS, images, static files)
600	-rw-----	rw- (6)	--- (0)	--- (0)	Private credentials, SSH keys (id_rsa), .env files, config
700	-rwx-----	rwX (7)	--- (0)	--- (0)	Private root directories, ~/.ssh directory, private scripts
775	-rwxrwxr-x	rwX (7)	rwX (7)	r-x (5)	Shared team folders, web development group collaboration
664	-rw-rw-r--	rw- (6)	rw- (6)	r-- (4)	Shared group writable documents and database dump files
444	-r--r--r--	r-- (4)	r-- (4)	r-- (4)	Locked read-only audit logs and immutable configuration files
400	-r-----	r-- (4)	--- (0)	--- (0)	High-security read-only SSL certificates and secret keyfiles
777	-rwxrwxrwx	rwX (7)	rwX (7)	rwX (7)	Full unrestricted access (Severe security risk — avoid in production!)

SPECIAL PERMISSION BITS (4-DIGIT CHMOD)

- SUID (4000):** Set User ID — Executable runs with file owner privileges (e.g. chmod 4755 /usr/bin/passwd)
- SGID (2000):** Set Group ID — Files created in directory inherit directory group ownership (e.g. chmod 2775 /var/www)
- Sticky (1000):** Sticky Bit — Users can only delete files they own within shared directories (e.g. chmod 1777 /tmp)

PRACTICAL RECURSIVE CHMOD COMMANDS

- Set all directories to 755: `find /path/to/folder -type d -exec chmod 755 {} +`
- Set all files to 644: `find /path/to/folder -type f -exec chmod 644 {} +`