
2026
LINUX USER AND GROUP MANAGEMENT COMMANDS AND EXAMPLES

Explanation:

`root:x:0:` → Group root, GID 0, no additional users.

`sudo:x:27:doe,bob` → Group sudo with members doe and bob.

`developers:x:1001:doe,charlie` → Custom group for developers.

Relation to /etc/passwd

Each user in /etc/passwd has a primary group (via the GID field), and may also belong to supplementary groups listed in /etc/group

For example:

/etc/passwd

```
doe:x:1001:1001:doe:/home/doe:/bin/bash
```

/etc/group

```
developers:x:1001:doe,charlie
```

Here, doe's primary group is developers (GID 1001), but she could also be in other groups like sudo

Managing Groups

View all groups:

```
$ cat /etc/group
```

View groups for a user doe:

```
$ groups doe
```

Add a new group:

```
$ sudo groupadd projectx
```

4 /etc/gshadow

The /etc/gshadow file is the secure companion to /etc/group in Linux and other Unix-like systems. It stores encrypted group passwords and detailed group administration information - - things that are too sensitive to keep in /etc/group, which is world-readable.

Purpose

Holds secure group account information.

Ensures only privileged processes (like groupadd, gpasswd, or usermod) can modify or view sensitive group data.

Used by the system when verifying group membership or managing shared access.

Permissions

For security, only the root user and certain system processes can read or modify it:

-rw-r----- 1 root shadow /etc/gshadow

Readable only by root and the shadow group.

Never world-readable (unlike /etc/group)

File Format

Each line in /etc/gshadow corresponds to one group and has 4 colon-separated fields:

`group_name:password:administrators:members`

Field	Name	Description
1	**`group_name`**	Must match a group name in /etc/group
2	**`password`**	Encrypted group password (or a special symbol). Usually unused (! or *)
3	**`administrators`**	Comma-separated list of users who can manage the group (add/remove members)
4	**`members`**	Comma-separated list of users who are members of the group

Example Entries

```
root:::
sudo:!:doe,bob:charlie
developers:!::doe,charlie
projectx:$6$Gsh....$Fd8bsl3...:doe:bob,charlie
```

Explanation:

Field	Explanation
`root:::`	Group root, locked (no password)
`sudo:!:doe,bob:charlie`	Group sudo, locked password; doe,bob are admins; charlie is a member
`developers:!::doe,charlie`	Group developers with members doe and charlie
`projectx:$6$Gsh.... $Fd8bsl3...:doe:bob,charlie`	Group projectx with a SHA-512 password, doe is admin, bob and charlie are members

Password Field Values

Symbol	meaning
`!`	Locked group (cannot use password to join)
`*`	No password set / disabled
`Blank`	Group has no password (security risk)
`$id$salt$hash`	Encrypted password using algorithm indicated by $id

Group passwords are rarely used in modern Linux systems

Managing /etc/gshadow

Command	description
`sudo gpasswd groupname`	Set or change the group's password
`sudo gpasswd -a user groupname`	Add a user to a group
`sudo gpasswd -d user groupname`	Remove a user from a group
`sudo gpasswd -A user groupname`	Set a user as group administrator
`sudo grpck`	Verify consistency between /etc/group and

	/etc/gshadow
`sudo grpconv`	Generate /etc/gshadow from /etc/group (if missing)
`sudo grpunconv`	Merge /etc/gshadow back into /etc/group

Relation Between Files

File	Purpose	Security level
`/etc/group`	Public group information	World-readable
`/etc/gshadow`	Secure group passwords & admin info	Restricted access

Consistency Example

/etc/group

`developers:x:1001:doe,charlie`

/etc/gshadow

`developers:!::doe,charlie`

Both entries define the same group, with matching members

If they get out of sync, use:

`sudo grpck`

`sudo grpconv`

5 adduser

adduser - add a user to the system

To install the adduser package in ubuntu, debian, mint distros

```
$ sudo apt install adduser
```

To install adduser on a system using dnf (like Fedora, Rocky Linux, AlmaLinux):

```
$ sudo dnf install shadow-utils
```

To add a new user doe (Interactive Mode)

```
$ adduser doe
```

What it does:

Creates a new user doe

Creates a home directory /home/doe

Prompts for a password

Prompts for user details (full name, etc.)

Adds default groups (like doe, sudo, users, depending on system)

To add a user doe with a different shell zsh

```
$ sudo adduser doe --shell /bin/zsh
```

To add a new user doe with a different configuration file

```
$ sudo adduser doe --conf custom_config.conf
```

To add a user doe with different home directory thirstyminds

```
$ sudo adduser doe --home /home/thirstyminds/
```

To get the version of the adduser command

```
$ sudo adduser --version
```

To display the help section of the adduser command

```
$ sudo adduser -h
```

Non-interactive User Creation for user doe (for scripts)

```
$ sudo adduser --disabled-password --gecos "" doe
```

Creates user , Skips all prompts (no password, no questions)

Add User doe with Custom UID/GID

```
$ sudo adduser --uid 1050 --gid 1050 doe
```

Disable Password Login for user john (e.g., for SSH key only)

```
$ sudo adduser --disabled-password john
```

creates user john but disables password login (you can still use SSH keys).

To Add a existing user doe to a Specific Group devops

```
$ sudo adduser doe devops
```

To Add a User doe Without a Home Directory

```
$ sudo adduser --no-create-home doe
```

To Add a System User backupuser

```
$ sudo adduser --system backupuser
```

Creates a system account (UID < 1000 typically)

No password login

Used for services or daemons

6 addgroup

addgroup - add group to the system

addgroup command is primarily associated with Debian/Ubuntu-based systems. On CentOS and other RHEL-based distributions, the equivalent command for creating a new group is groupadd

Basic Syntax

```
$ sudo addgroup [options] <groupname>
```

install addgroup package

```
$ sudo apt install addgroup
```

To add a new group devops

```
$ sudo addgroup devops
```

To Create a System Group

```
$ sudo addgroup --system nginx
$ sudo addgroup --system apache
```

it will Create a system group (with a lower GID, typically < 1000) for daemons/services

To Add an Existing User doe to a Group devops

```
$ sudo adduser doe devops
```

To View Group Information

```
$ getent group devops
```

or

```
$ grep devops /etc/group
```

To add a new group devops with specified group id 6789

```
$ sudo addgroup devops --gid 6789
```

To create a group with a specific shell

```
$ sudo addgroup devops --shell /bin/sh
```

To enter verbose mode

```
$ sudo addgroup devops --debug
```

To display help related to addgroup command.

```
$ addgroup –help
```

7 deluser

deluser - remove a user from the system

Basic Syntax

```
$ sudo deluser [options] <username>
```

To delete an user account doe and Keep Home Directory

```
$ sudo deluser doe
```

To delete a user doe and their home directory

```
$ sudo deluser --remove-home doe
```

To remove a user doe and all associated files

```
$ sudo deluser --remove-all-files doe
```

To remove a user doe from a specific group devops

```
$ sudo deluser doe devops
```

To delete user account doe even while the user logged in

```
$ sudo deluser --force doe
```

To delete user account doe and backup the doe's home directory into /backup_dir

```
$ sudo deluser --backup-to /backup_dir doe
```

To view Verbose Mode of removing a user doe

```
$ sudo deluser --verbose doe
```

To Simulate (Dry Run) deleting a user doe

```
$ sudo deluser --dry-run doe
```

To remove user doe but keep their files in /backup directory

```
$ sudo deluser --remove-home --backup-to /backup/ doe
```

To remove a system user

```
$ sudo deluser --system nginx
```

To delete a group

```
$ sudo deluser --group devops
```

To view help options

```
$ deluser --help
```

8 delgroup

delgroup - remove a group from the system

Basic Syntax

```
$ sudo delgroup [options] <group_name>
```

To remove a group devops from the system

```
$ sudo delgroup devops
```

To Delete a System Group

```
$ sudo delgroup --system nginx
$ sudo delgroup --system apache
```

To view Verbose Mode

```
$ sudo delgroup --verbose devops
```

To Simulate Group Deletion of devops

```
$ sudo delgroup --dry-run devops
```

To Delete a Group Used by a System User

```
$ sudo delgroup --only-if-empty devops
```

To Check if Group Exists Before Deletion

```
$ getent group devops && sudo delgroup devops
```

To view help options

```
$ delgroup --help
```

9 useradd

useradd - create a new user or update default new user information

Basic Syntax

```
$ useradd [options] <username>
```

To add a new user doe

```
$ sudo useradd doe
```

To set a password for account doe

```
$ sudo passwd doe
```

To Create a user doe with a home directory */home/doe*

```
$ sudo useradd -m doe
```

To create a User doe with Different Home Directory

```
$ sudo useradd -d /data/myprojects doe
```

To view user doe related info

```
$ sudo cat /etc/passwd | grep doe
```

To create a User doe with a Specific User ID 1007

```
$ sudo useradd -u 1007 doe
```

Create a User with a Specific Group ID

```
$ sudo useradd -u 1007 -g devops doe
```

To verify the user's GID

```
$ id -gn doe
```

To Add a User doe to Multiple Groups

```
$ sudo groupadd admins
$ sudo groupadd devops
$ sudo groupadd cloud
$ sudo usermod -a -G admins,devops,cloud doe
```

or

```
$ sudo useradd -m -G sudo,developers doe
```

To verify

```
$ id doe
```

To Create a user doe with a specific group developers

```
$ sudo useradd -g developers doe
```

To Add a User doe without Home Directory

```
$ sudo useradd -M doe
```

to check

```
$ ls -l /home/doe
```

To Create a user doe with a specific shell

```
$ sudo useradd -m -s /bin/bash doe
```

To Create a User doe with Account Expiry Date

```
$ sudo useradd -e 2025-12-31 doe
```

To verify the age of the account and password of the user doe

```
$ chage -l doe
```

To Create a User doe with Password Expiry Date

```
$ sudo useradd -E 2025-12-31 doe
```

or

```
$ sudo chage -M 100 doe
```

-M 100 → password will expire after 100 days.

To verify

```
$ sudo chage -l doe
```

To Add a User doe with Custom Comments

```
$ sudo useradd -c "Welcome to foss world” doe
```

To verify

```
$ sudo tail -1 /etc/passwd
```

To Create a System User apache Without Login shell

```
$ sudo useradd -r -s /sbin/nologin -m apache
```

To check

```
$ grep apache /etc/passwd
```

To Create a system user (for services or daemons)

```
$ sudo useradd -r nginx
```

10 userdel

userdel - delete a user account and related files

syntax

```
$ userdel [OPTIONS] <username>
```

To delete a user account doe

```
$ sudo userdel doe
```

To remove the user's and home directory and mail spool of user doe

```
$ sudo userdel -r doe
```

To forcefully remove the user account doe

```
$ sudo userdel -f doe
```

To display help options

```
$ sudo userdel --help
```

To remove any SELinux(Security-Enhanced Linux) user mapping for the user's login.

```
$ sudo userdel -Z doe
```

11 usermod

usermod - modify a user account

syntax

$ usermod [options] username

To add Information to user account doe

$ sudo usermod -c "This is test message" doe

To change user doe home directory

$ sudo usermod -d /home/john/ doe

To set user account expiry date

$ sudo usermod -e 2025-12-31 doe

To change user primary group

$ sudo usermod -g devops doe

To add group to an existing user

$ sudo usermod -G web doe

To add supplementary and primary group to user

$ sudo usermod -aG wheel doe (for RHEL based systems)

$ sudo usermod -aG sudo doe (for Debian/Ubuntu based systems)

To change user login name

```
$ sudo usermod -l new_username old_username
$ sudo usermod -l john doe
```

To lock user account

```
$ sudo usermod -L doe
```

To unlock user account

```
$ sudo usermod -U doe
```

To move user home directory to new location from /home/doe to /var/doe

```
$ sudo usermod -d /var/doe/ -m doe
```

To create unencrypted password for user

```
$ sudo usermod -p passcode123 doe
```

To change user shell

```
$ sudo usermod -s /bin/sh doe
```

To change user ID

```
$ sudo usermod -u 666 doe
```

To modify the UID and GID.

```
$ sudo usermod -u 555 -g 665 doe
```

To Force User to Change Password at Next Login

```
$ sudo passwd -e doe
```

12 groupadd

groupadd - used to create a new group on the system

Basic Syntax

```
$ sudo groupadd [options] <groupname>
```

To create a group devops

```
$ sudo groupadd devops
```

To create a group devops with specific groupid

```
$ sudo groupadd devops -g 1234
```

To create a system group

```
$ sudo groupadd -r sysadmin
```

To set a custom group password

```
$ sudo groupadd devops
$ sudo gpasswd devops
```

To Create a Group with a Specific GID Range

```
$ sudo groupadd -g 5000 devops
```

To Verify Group Creation

```
$ getent group devops
```

or

```
$ grep devops /etc/group
```

To List All Groups on the System

```
$ getent group
```

or

```
$ cat /etc/group
```

To create a new group devops with group ID from 5000 to 7000

```
$ sudo groupadd devops -K GID_MIN=5000 -K GID_MAX=7000
```

To use an encrypted password for the group

```
$ sudo groupadd devops -p pa55code123!@#
```