# 🐧 Linux User and Group Management

Managing **users, groups, and permissions** is one of the most important jobs of a Linux administrator. These commands help you **control who can access the system and what they can do**.

## 👤 User and Group Management

### 1. useradd → Create a New User

This command creates a **new user account**. It also creates a personal group for them (called the **primary group**).

**useradd sachin**

📌 *How it works:*

* Adds a new entry in **/etc/passwd and /etc/shadow.**
* Runs silently — no output if it succeeds.

### 2. groupadd → Create a New Group

Groups are used to **organize users** and manage permissions together.

groupadd IBM\_Group

📌 *How it works:*

* Creates a new entry in /etc/group.

### 3. passwd → Set or Change a Password

This command sets or updates a user’s password.

**passwd sachin**

📌 *How it works:*

* System asks you to type the new password twice.
* Password is stored as an encrypted hash in /etc/shadow.

### 4. gpasswd → Manage Group Members

This is a **multi-purpose command** for adding/removing users in groups or setting group admins.

* **Add a user to group (-a)**
* **gpasswd -a ajay IBM\_Group**
* ✅ Output: Adding user ajay to group IBM\_Group
* **Remove a user from group (-d)**
* **gpasswd -d salman IBM\_Group**
* ✅ Output: Removing user salman from group IBM\_Group
* **Add multiple users (-M)**
* **gpasswd -M ajay,salman,virat IBM\_Group**
* ⚠️ Be careful — this **overwrites existing members**.
* **Set group administrator (-A)**
* **gpasswd** **-A ajay IBM\_Group**
* ✅ Ajay can now add/remove members. Info is stored in /etc/gshadow.

### 5. userdel → Delete a User

Removes a user account. Often used with -r to also delete their files.

**userdel -r harry**

📌 *How it works:*

* -r removes home directory + files along with the account.

### 6. groupdel → Delete a Group

Deletes only the **group entry**. Users stay on the system but lose membership in that group.

**groupdel IBM\_Group**

## 🔎 Verifying User and Group Information

### 1. grep → Search for User/Group in System Files

Useful to check if a user or group exists.

**grep sachin /etc/passwd**

📌 *How it works:*

* Shows the line with sachin → includes UID, GID, home directory, etc.

### 2. ls -ld → Check Ownership of a Directory

Displays permissions, owner, and group of a directory.

**ls -ld Chennai**

📌 *How it works:*

* By default: root root (user owner = root, group owner = root).

### 3. whoami → See Current User

Quickly check which account you’re logged in as.

**whoami**

📌 Prints your **effective username**. Handy after switching users with su.

## 📂 File and Directory Ownership

### 1. chown → Change File/Directory Owner

**chown Mahindra Chennai**

📌 Now Chennai belongs to user **Mahindra**.

### 2. chgrp → Change Group Ownership

**chgrp CSK\_Group Chennai**

📌 Now group ownership is **CSK\_Group**.

### 3. chown user:group → Change Both Owner and Group

**chown rohit:MI\_Group Mumbai**

📌 Owner = **rohit**, Group = **MI\_Group**.

### 4. chmod → Change File/Directory Permissions

**chmod 750 Chennai**

📌 Meaning of 750:

* 7 → Owner: read + write + execute
* 5 → Group: read + execute
* 0 → Others: no permissions