

```

elsayed@SIC:~$ sudo groupadd iot_team
[sudo] password for elsayed:
elsayed@SIC:~$ sudo usermod -aG iot_team Elsayed
usermod: user 'Elsayed' does not exist
elsayed@SIC:~$ sudo usermod -aG iot_team elsayed
elsayed@SIC:~$ sudo adduser developer
Adding user `developer' ...
Adding new group `developer' (1002) ...
Adding new user `developer' (1001) with group `developer' ...
Creating home directory `/home/developer' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password fails the dictionary check - it is too simplistic/systematic
Retype new password:
passwd: password updated successfully
Changing the user information for developer
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] n
Changing the user information for developer
Enter the new value, or press ENTER for the default
    Full Name []: elsayed elemam
    Room Number []: 1
    Work Phone []: 01063082463
    Home Phone []: 0504338870
    Other []:
Is the information correct? [Y/n] y
elsayed@SIC:~$ sudo chown -R developer:iot_team /home/elsayed/iot_logger
elsayed@SIC:~$ sudo chmod -R 770 /home/elsayed/iot_logger/logs
elsayed@SIC:~$ su - developer
Password:
developer@SIC:~$ echo "test entry" >> /home/elsayed/iot_logger/logs/temp.log
-bash: /home/elsayed/iot_logger/logs/temp.log: Permission denied
developer@SIC:~$ echo "test entry" >> /home/developer/iot_logger/logs/temp.log
-bash: /home/developer/iot_logger/logs/temp.log: No such file or directory
developer@SIC:~$ echo "test entry" >> /home/elsayed/iot_logger/logs/temp.log
-bash: /home/elsayed/iot_logger/logs/temp.log: Permission denied
developer@SIC:~$ sudo deluser developer
[sudo] password for developer:
developer is not in the sudoers file. This incident will be reported.
developer@SIC:~$ sudo deluser developer
[sudo] password for developer:
developer is not in the sudoers file. This incident will be reported.
developer@SIC:~$ sudo deluser developer iot_team
[sudo] password for developer:
developer is not in the sudoers file. This incident will be reported.
developer@SIC:~$ ^C
developer@SIC:~$ exit
logout
elsayed@SIC:~$ sudo deluser developer
Removing user `developer' ...
Warning: group `developer' has no more members.

```

## 1. File permissions (r, w, x)

- **For files:**
  - `r` → read file contents.
  - `w` → modify file contents.
  - `x` → execute file as program/script.
- **For directories:**
  - `r` → list directory contents (`ls`).
  - `w` → create/delete files inside the directory.
  - `x` → enter the directory (`cd`) and access its files.

Example:

```
ls -l temperature.log
-rw-r----- 1 developer iot_team 120 Aug 30 01:00 temperature.log
```

- Owner: read/write
- Group: read
- Others: no access

## 2. Octal notation + umask

- Permissions use 3-digit octal:
  - `r=4, w=2, x=1`
  - Example: `chmod 754 file` → `rw-r-xr--`

**umask:** default permission mask when creating new files.

Example:

- Default for new file = 666
- `umask = 022`
- Resulting permission =  $666 - 022 = 644$  (`rw-r--r--`)

## 3. Root vs. normal user

- **Root:** superuser with `UID=0`, full system control. Can install packages, manage users, change permissions, and delete system files.
- **Normal user:** limited to their home and owned files.