

# Day3

Create a new group `iot_team` and add your user to it.

```
tosson@LAPTOP-8TFQP2MT: x + v
├── temperature.log
├── scripts
│   ├── sensor_script.py
│   └── sym_temp.log -> /home/tosson/iot_logger/logs/temperature.log
└── my_app
    └── task1.py

6 directories, 6 files
tosson@LAPTOP-8TFQP2MT:~$ sudo groupadd iot_team
[sudo] password for tosson:
tosson@LAPTOP-8TFQP2MT:~$ sudo usermod -aG iot_team tosson
tosson@LAPTOP-8TFQP2MT:~$ newgrp iot_team
tosson@LAPTOP-8TFQP2MT:~$ id tosson
uid=1000(tosson) gid=1000(tosson) groups=1000(tosson),4(adm),20(dialout),24(cdrom),25(floppy),27(sudo),29(audio),30(dip),44(video),46(plugdev),100(users),107(netdev),1001(iot_team)
tosson@LAPTOP-8TFQP2MT:~$ |
```

Create a new developer user, add it to the group.

```
tosson@LAPTOP-8TFQP2MT: x + v
tosson@LAPTOP-8TFQP2MT:~$ sudo adduser developer
info: Adding user `developer' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `developer' (1002) ...
info: Adding new user `developer' (1002) with group `developer (1002)' ...
info: Creating home directory `/home/developer' ...
info: Copying files from `/etc/skel' ...
New password:
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] y
info: Adding new user `developer' to supplemental / extra groups `users' ...
info: Adding user `developer' to group `users' ...
tosson@LAPTOP-8TFQP2MT:~$ sudo usermod -aG iot_team developer
tosson@LAPTOP-8TFQP2MT:~$ id developer
uid=1002(developer) gid=1002(developer) groups=1002(developer),100(users),1001(iot_team)
tosson@LAPTOP-8TFQP2MT:~$ |
```

Change ownership of `iot_logger` to the developer + group.

```
tosson@LAPTOP-8TFQP2MT: x + v
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y
info: Adding new user `developer' to supplemental / extra groups `users' ...
info: Adding user `developer' to group `users' ...
tosson@LAPTOP-8TFQP2MT:~$ sudo usermod -aG iot_team developer
tosson@LAPTOP-8TFQP2MT:~$ id developer
uid=1002(developer) gid=1002(developer) groups=1002(developer),100(users),1001(iot_team)
tosson@LAPTOP-8TFQP2MT:~$ sudo chown -R developer:iot_team /home/tosson/iot_logger
tosson@LAPTOP-8TFQP2MT:~$ ls -ld /home/tosson/iot_logger
drwxr-xr-x 5 developer iot_team 4096 Aug 31 14:56 /home/tosson/iot_logger
tosson@LAPTOP-8TFQP2MT:~$ |
```

Set permissions: group can read/write logs, others blocked.

```
tosson@LAPTOP-8TFQP2MT: x + v
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y
info: Adding new user `developer' to supplemental / extra groups `users' ...
info: Adding user `developer' to group `users' ...
tosson@LAPTOP-8TFQP2MT:~$ sudo usermod -aG iot_team developer
tosson@LAPTOP-8TFQP2MT:~$ id developer
uid=1002(developer) gid=1002(developer) groups=1002(developer),100(users),1001(iot_team)
tosson@LAPTOP-8TFQP2MT:~$ sudo chown -R developer:iot_team /home/tosson/iot_logger
tosson@LAPTOP-8TFQP2MT:~$ ls -ld /home/tosson/iot_logger
drwxr-xr-x 5 developer iot_team 4096 Aug 31 14:56 /home/tosson/iot_logger
tosson@LAPTOP-8TFQP2MT:~$ sudo chmod -R 770 /home/tosson/iot_logger
tosson@LAPTOP-8TFQP2MT:~$ |
```

Test access as new user, then remove test user.

```

tosson@LAPTOP-8TFQP2MT: ~$ exit
logout
tosson@LAPTOP-8TFQP2MT:~$ sudo chmod o+x /home/tosson
[sudo] password for tosson:
tosson@LAPTOP-8TFQP2MT:~$ ls -ld /home/tosson/
drwxr-x--x 8 tosson tosson 4096 Aug 31 13:35 /home/tosson/
tosson@LAPTOP-8TFQP2MT:~$ su - developer
Password:
developer@LAPTOP-8TFQP2MT:~$ cd /home/tosson/iot_logger/logs
developer@LAPTOP-8TFQP2MT:/home/tosson/iot_logger/logs$ echo "test line from developer" >> temperature.log
developer@LAPTOP-8TFQP2MT:/home/tosson/iot_logger/logs$ cat temperature.log
test line from developer
developer@LAPTOP-8TFQP2MT:/home/tosson/iot_logger/logs$ exit
logout
tosson@LAPTOP-8TFQP2MT:~$ sudo deluser --remove-home developer
info: Looking for files to backup/remove ...
info: Removing files ...
info: Removing crontab ...
info: Removing user `developer' ...
tosson@LAPTOP-8TFQP2MT:~$ id developer
id: `developer': no such user
tosson@LAPTOP-8TFQP2MT:~$ |

```

## How do Linux file permissions (r, w, x) work for files vs directories? Give an example using ls -l.

in directories: (r) list the names of files inside

(w) create or delete files

(x) lets you enter the directory with (cd) and access its contents

in files: (r) you can read the content

(w) allows you to modify or delete the file

(x) lets you execute it as a program or script

example:

```

tosson@LAPTOP-8TFQP2MT:~$ ls -l
total 8
drwxrwx--- 5 1002 iot_team 4096 Aug 31 14:56 iot_logger
drwxr-xr-x 2 tosson tosson 4096 Aug 28 11:36 my_app
tosson@LAPTOP-8TFQP2MT:~$

```

## Explain octal notation for permissions and what the umask command does. Give one calculation example.

each permission set (owner, group, others) is given a number:  $r=4$ ,  $w=2$ ,  $x=1$ . By adding them, you get a single digit for each set. For example,  $rw x = 7$ ,  $rw- = 6$ ,  $r-- = 4$ , so a file with  $rw-r--r--$  equals 644. The `umask` command defines the default permissions for new files and directories by “masking out” certain bits. The system usually starts with defaults of `666` for files and `777` for directories, then subtracts the `umask` value.

example :

if the umask is `022`, then new files get  $666 - 022 = 644$  (`rw-r--r--`), and new directories get  $777 - 022 = 755$  (`rw-r-xr-x`).

## **What is the difference between the root user and a normal user? Why is root considered dangerous?**

The root user in Linux has full control over the system, while a normal user is limited to their own files and basic tasks. Root is considered dangerous because one wrong command (like deleting a system folder) can damage the whole OS or cause security risks, so it's safer to use normal accounts and only switch to root when needed.