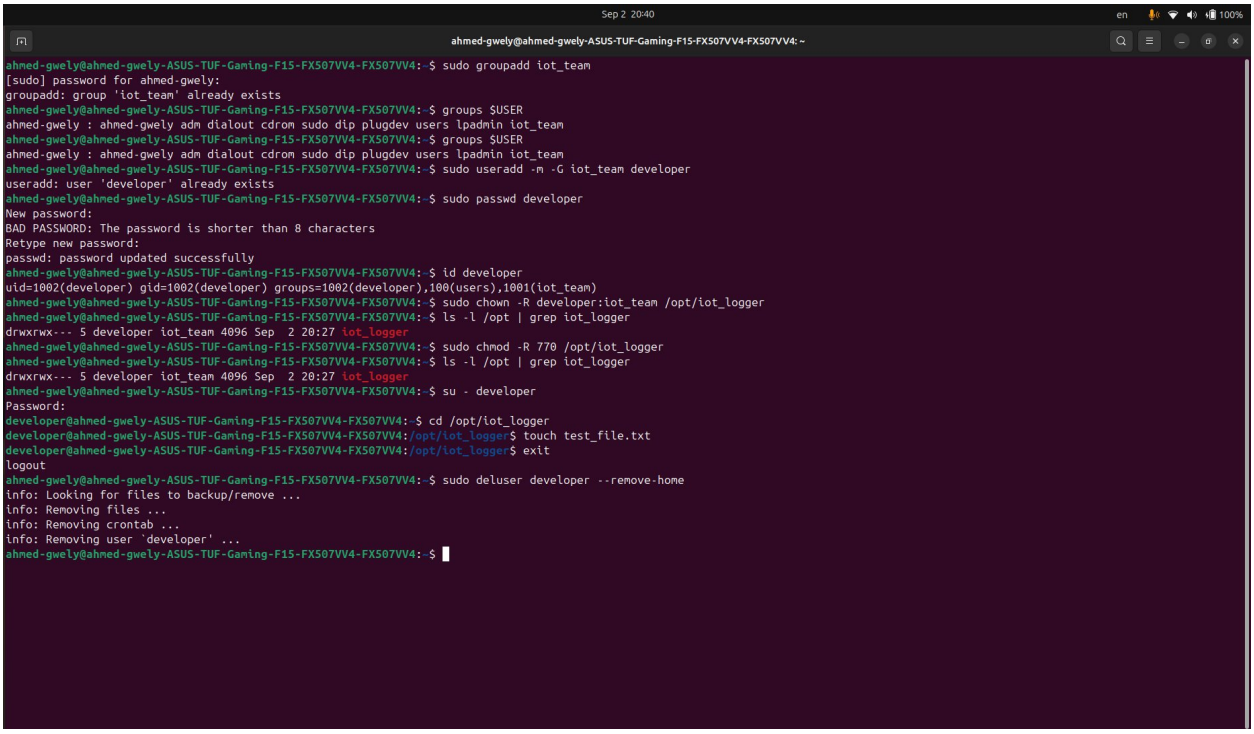
Day 3

- Create a new group iot_team and add your user to it.
- Create a new developer user, add it to the group.
- Change ownership of iot_logger to the developer + group.
- Set permissions: group can read/write logs, others blocked.
- Test access as new user, then remove test user.



How do Linux file permissions (`r, w, x`) work for files vs directories?

Permissions meaning:

Permission	Files	Directories
`r`	Read file contents	List files in directory
`w`	Modify file contents	Add, delete, or rename files
`x`	Execute file (run program)	Enter directory (`cd`)

-rw-r----- 1 user iot_team 1024 Sep 2 20:00 report.txt

drwxrwx--- 2 developer iot_team 4096 Sep 2 19:00 iot_logger

- report.txt (file) → Owner can read/write, group can read, others cannot access.
- iot_logger (directory) → Owner & group can read/write/enter, others have no access.

Explain octal notation for permissions and the `umask` command

Octal notation:

- Each permission is represented by a number:
  - `r` = 4
  - `w` = 2
  - `x` = 1
- Add them for **owner/group/others**.
  - Example: `rwx` → 4+2+1 = 7
  - `rw-` → 4+2+0 = 6

So, `chmod 770 file` means:

- Owner: 7 → `rwx`
- Group: 7 → `rwx`
- Others: 0 → `---`

`umask` command:

- Defines default permissions for **new files/directories**.
- Example: `umask 022`

- New files default: 666 - 022 = 644 → `rw-r--r--`
- New directories default: 777 - 022 = 755 → `rwxr-xr-x`

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

Feature	Root User	Normal User
Privileges	Full access to all files and commands	Limited access (cannot change system files without sudo)
System impact	Can modify or delete system-critical files	Mostly affects only own files
Risk	Mistakes can break entire system	Mistakes usually affect only user's environment

Root is dangerous because a single wrong command (e.g., `rm -rf /`) can destroy the system, whereas a normal user cannot easily damage critical system files.

If you want, I can also make a **quick visual cheat sheet** showing:

- `rwx` vs octal numbers
- File vs directory permissions
- umask calculation