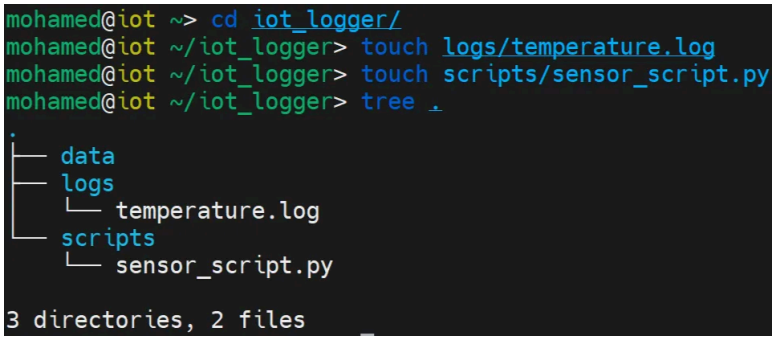
Day 2 – Phase 2: File & Directory Management + Search

Boss's Request: Organize project files and simulate sensor config checks.

Tasks:

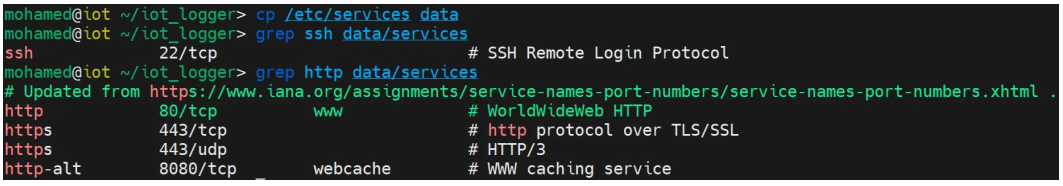
- Inside `iot_logger`, create `logs/temperature.log` and `scripts/sensor_script.py`.

```
cd iot_logger
touch logs/temperature.log
touch scripts/sensor_script.py
```



- Copy `/etc/services` into `data` and search for patterns like `ssh` or `http`.

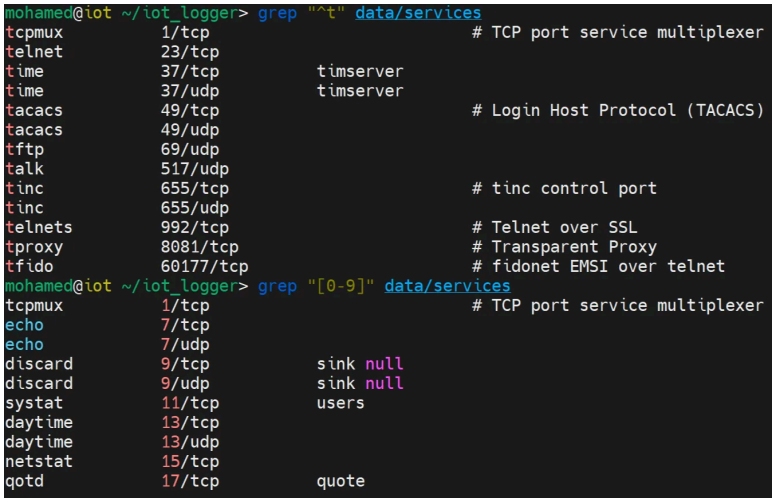
```
cp /etc/services data
grep ssh data/services
grep http data/services
```



- Use regex to find lines starting with `t` or containing **numbers**.

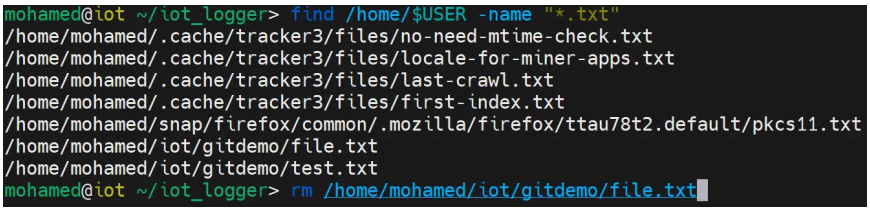
```
grep ^t data/services
grep "[0-9]" data/services # we can use less (grep "[0-9]" data/services | less)

# or
grep -e "^t" -e "[0-9]" data/services
```



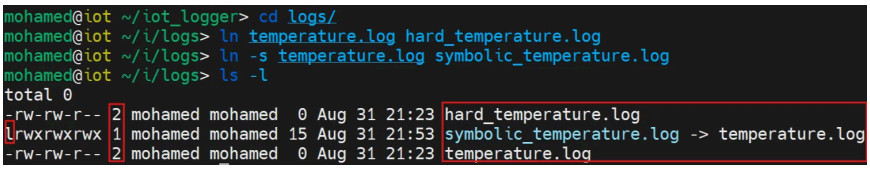
- Locate `.txt` files in `/home/<username>` and remove temporary ones if needed.

```
find /home/$USER -name "*.txt"
# if wanted to remove use rm
rm /home/mohamed/iot/gitdemo/file.txt
```



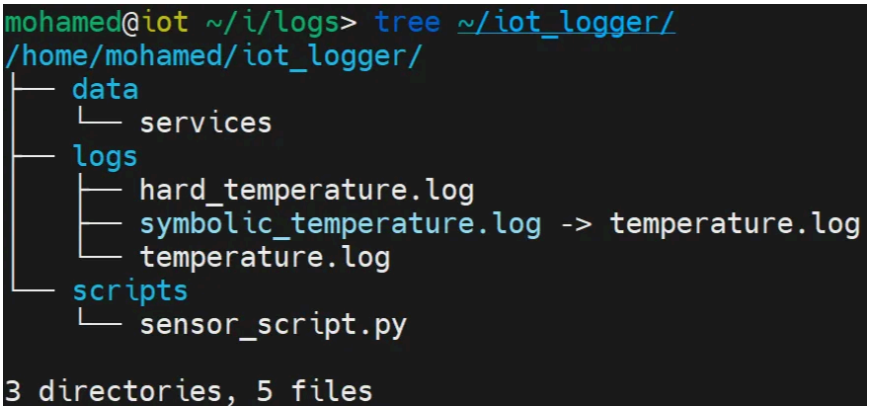
- Create **hard** and **symbolic** links for `temperature.log`.

```
# hard link
ln ./logs/temperature.log hard_temperature.log
# symbolic link
ln -s ./logs/temperature.log symbolic_temperature.log
```



- Display directory structure to confirm organization.

```
tree ~/iot_logger
```



Open-Ended Questions:

- Explain the different types of files in Linux (regular, directory, symbolic link, device, etc.) and how to check them with commands.

Type	Symbol	Explain
Regular	`-`	file (txt, binary,...)
Directory	`d`	Folder
Symbolic	`l`	pointer to another file (shortcut)
Device	`b` or `c`	block (disk) or character (keyboard)

  - check them with:
    - `ls -l`
    - `file <file_name>`
- What's the difference between a **hard link** and a **symbolic link**? Give real examples of when to use each.
  - **Hard Link →**
    - Another name for the same **inode**
    - File exists even if original is deleted
  - **Symbolic Link →**
    - **Pointer (shortcut)** to original path
    - Breaks if original is delete.
  - Examples:
    - **Hard link** for backup-like copies
    - `/bin` → `/usr/bin` (To keep old programs working without duplicating files) (& easy)
- Is `rmdir` the same as `rm -r` when deleting directories? Explain.
  - `rmdir` → removes empty directories only
  - `rm -r` → removes directory and its contents recursively